

*Sergio Bonin*

INTERNATIONAL  
**BIODEFENSE HANDBOOK 2007**

AN INVENTORY OF NATIONAL AND INTERNATIONAL  
BIODEFENSE PRACTICES AND POLICIES

**Series Editors**

Andreas Wenger, Victor Mauer, and Myriam Dunn

Center for Security Studies, ETH Zurich

The **Biodefense Handbook** is also available on the Internet in full text: [www.crn.ethz.ch](http://www.crn.ethz.ch)  
All comments on the **Biodefense Handbook** are most welcome.

Sergio Bonin  
Series Editors Andreas Wenger, Victor Mauer, and Myriam Dunn  
Center for Security Studies at ETH Zurich (Swiss Federal Institute of Technology)

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Contact  
Center for Security Studies  
Seilergraben 45–49  
ETH Zentrum/SEI  
CH-8092 Zurich  
Switzerland

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*Sergio Bonin*

INTERNATIONAL  

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**BIODEFENSE HANDBOOK**

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An Inventory of National and International  
Biodefense Practices and Policies

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# CONTENTS

Preface	7
Foreword	11
Abbreviations	13
<b>Introduction</b>	<b>27</b>

## **PART ONE: COUNTRY SURVEYS** 49

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<b>France</b>	<b>51</b>
France's Approach to the Biological Threat	51
Organizational Overview – Roles and Responsibilities	52
Past and Present Initiatives and Policies	72
Laws and Legislation	77
<b>Germany</b>	<b>81</b>
Germany's Approach to the Biological Threat	81
Organizational Overview – Roles and Responsibilities	83
Past and Present Initiatives and Policies	105
Laws and Legislation	108
<b>Russian Federation</b>	<b>111</b>
Russia's Approach to the Biological Threat	111
Organizational Overview – Roles and Responsibilities	113
Past and Present Initiatives and Policies	130
Laws and Legislation	133

<b>Sweden</b>	139
Sweden's Approach to the Biological Threat	139
Organizational Overview – Roles and Responsibilities	141
Past and Present Initiatives and Policies	156
Laws and Legislation	160
<b>Switzerland</b>	163
Switzerland's Approach to the Biological Threat	163
Organizational Overview – Roles and Responsibilities	165
Past and Present Initiatives and Policies	181
Laws and Legislation	186
<b>United Kingdom</b>	189
The UK's Approach to the Biological Threat	189
Organizational Overview – Roles and Responsibilities	190
Past and Present Initiatives and Policies	217
Laws and Legislation	223
<b>United States</b>	227
The US Approach to the Biological Threat	227
Organizational Overview – Roles and Responsibilities	228
Past and Present Initiatives and Policies	262
Laws and Legislation	269
<b>PART TWO: INTERNATIONAL ORGANIZATIONS</b>	273
.....	
<b>World Health Organization (WHO)</b>	275
The WHO's Approach to the Biological Threat	275
Past and Present Initiatives and Policies	275

<b>The European Union (EU)</b>	291
The EU's Approach to the Biological Threat	291
Past and Present Initiatives and Policies	293
Organizational Overview – Roles and Responsibilities	309
<b>North Atlantic Treaty Organisation (NATO)</b>	319
NATO's Approach to the Biological Threat	319
Past and Present Initiatives and Policies	320
Organizational Overview – Roles and Responsibilities	321
<b>The International Committee of the Red Cross (ICRC)</b>	325
The ICRC's Approach to the Biological Threat	325
Past and Present Initiatives and Policies	325
<b>The G8 Group</b>	331
Past and Present Initiatives and Policies	331
<b>PART THREE: CIVIL SOCIETY INITIATIVES</b>	339
.....	
<b>The BioWeapons Prevention Project (BWPP)</b>	341
<b>The Sunshine Project</b>	347
<b>Conclusions</b>	355
Glossary of Key Terms	383
Select Bibliography	403
Important Links	417
List of Experts	433





## PREFACE

The nature of risks and vulnerabilities in modern societies is becoming more and more transnational today. An open, non-hierarchical dialog on newly recognized vulnerabilities is needed at the physical, virtual, and psychological levels to create new knowledge and a better understanding of new risks and of their causes, interactions, probabilities, and costs.

It was on the basis of these premises that the “Crisis and Risk Network” (CRN; [www.crn.ethz.ch](http://www.crn.ethz.ch)) was launched in the year 2000 as a joint Swiss-Swedish initiative. The CRN (the former Comprehensive Risk Analysis and Management Network) is an initiative for international dialog on security risks and vulnerabilities, risk analysis and management, emergency preparedness, and crisis management. Through the interchange of views, the CRN helps to promote a better understanding of the complex challenges and opportunities confronting the risk community today and serves to establish a collaborative relationship and exchange among likeminded experts. The CRN is run by the Center for Security Studies (CSS) at the Swiss Federal Institute of Technology (ETH Zurich), in cooperation with the current CRN partner institutions:

- The Swedish Emergency Management Agency (SEMA), Sweden;
- The Directorate for Civil Protection and Emergency Planning (DSB), Norway;
- The Federal Office of Civil Protection and Disaster Assistance (BBK), Germany;
- The Danish Emergency Management Agency (DEMA), Denmark;
- The Ministry of the Interior and Kingdom Relations (BZK), the Netherlands;

- The Federal Department of Defense, Civil Protection and Sports (DDPS), Switzerland; and
- The Federal Office for National Economic Supply (FONES), Federal Department of Economic Affairs (FDEA), Switzerland.

The menace of diseases caused by naturally or deliberately released viruses, bacteria, or toxins poses a serious challenge to society and politics. It confronts states with a multitude of complex tasks, many of which have an interdisciplinary character affecting various distinct government entities. In an analysis of various national frameworks, the “International Biodefense Handbook” compares different political, strategic, and structural approaches to biosecurity in seven countries and five international and supra-national organizations. It provides an overview of national and multilateral biodefense efforts by examining important policies in this field and through an inventory of the institutions and actors involved. It is an important step towards a comprehensive overview of existing efforts in biodefense.

Because of the dynamics in the field and in order to include additional country surveys, a regular update of the Biodefense Handbook is planned. We therefore ask the readers to inform us of any inaccuracies or to submit any comments regarding the content. Those countries not yet included are especially encouraged to submit information to us. Please see the front inside cover for contact information. The entire publication plus additional features will be freely available on the internet (<http://www.crn.ethz.ch/>).

The editors would like to thank Sergio Bonin, researcher at the Center for Security Studies (CSS) at the Swiss Federal Institute of Technology (ETH Zurich), for his efforts and high-quality contribution to this important topic. Additionally, the editors would like to thank all the partners involved, in particular the national experts who generously shared their experience and knowledge with us. We also thank the following for their help in the completion of this project: Isabelle Abele-Wigert, Ryan Cross, Christopher Findlay, Fabian

Furter, Susanne Schmid, Manuel Suter, and Reto Wollenmann, who prepared the ground for this project. We look forward to continuing the development of the CRN and further enhancing cooperation within the network.

Zurich, March 2007

**Prof. Dr. Andreas Wenger**

Director

Center for Security Studies,  
ETH Zurich

**Dr. Victor Mauer**

Deputy Director, Head of Research

Center for Security Studies,  
ETH Zurich

**Dr. Myriam Dunn**

CRN Coordinator

Center for Security Studies,  
ETH Zurich



# FOREWORD

Dear Reader,



In recent years, biological threats and hazards have been discussed and investigated intensely all over the world. Scientists, public health agencies, policymakers in the security field, military leaders, intelligence services, journalists, industrial experts, international organizations, and many other professionals are concerned with this issue. With regard to natural biological threats, many experts believe that a global influenza pandemic occurs about every 25 years. However, with regard to man-made biological threats, there is no scientifically sound way to forecast the next deliberate use of germs by states, terrorists, or criminals. In the face of the vast potential for damage from a bioterrorist attack, this threat can certainly not be neglected. Governments must protect their citizens.

A plethora of agencies and experts in various countries are working on different programs to this end, including the Spiez Laboratory. To achieve efficient protection, all these players must coordinate their work closely.

The “International Biodefense Handbook” describes the preparations made by various countries in this context, listing the relevant civilian and military authorities as well as important scientific and economic players. I am strongly convinced of the usability of this Handbook: the synopsis of the different countries, their similarities and differences, their originalities, and their common structures helps to improve the efficiency of the protective systems currently in place. Biological threats and hazards are not at all solely national issues. In the case of an adverse event, the biological agent would certainly not stop at any frontier. Therefore,

it is crucial that international cooperation should already begin in the area of precautionary measures. This handbook offers a great overview with comprehensive information and will further foster international cooperation. It should serve as a useful reference book for all of the concerned parties mentioned above.

**Dr. Marc Cadisch**  
Director,  
SPIEZ LABORATORY  
[www.labor-spiez.ch](http://www.labor-spiez.ch)

# ABBREVIATIONS

ABAS	Board for Biological Substances
ABC/SeS	NBC- and Self-Protection School
ACDP	Advisory Committee on Dangerous Pathogens
ADNS	Rapid Alert System for Animal Health
AECA	Arms Export Control Act
AFLO	Armed Forces Logistics Organization
AFSSA	Food Safety Agency
AFSSAPS	Health Products Safety Agency
AHRQ	Agency for Healthcare Research and Quality
AKNZ	Academy for Crisis Management, Emergency Planning, and Civil Protection
ANSIR	Awareness of National Security Issues and Response
APHIS	Animal and Plant Health Inspection Service
APHL	Association of Public Health Laboratories
APHL	Association of Public Health Laboratories
ARGUS	General Rapid Alert System run by the EU Commission Secretariat General / EU Commission Crisis Management Structure
ARS	Agricultural Research Service
ATSDR	Agency for Toxic Substances and Disease Registry
BAFA	Federal Office of Economics and Export Control
BAG	Biosafety Advisory Group
BAuA	Federal Institute for Occupational Safety and Health
BBK	Federal Office of Civil Protection and Disaster Assistance
BBSRC	Biotechnology and Biological Sciences Research Council
BfEL	Federal Research Centre for Nutrition and Food
BfN	Federal Agency for Nature Conservation
BfR	Federal Institute for Risk Assessment
BfV	Federal Office for the Protection of the Constitution
BGS	British Geological Survey
BICHAT	Programme of Cooperation on Preparedness and Response to Biological and Chemical Agent Attacks / Health Security Programme
BIS	Bureau of Industry and Security
BKA	Federal Criminal Police Office

## Abbreviations

BMAS	Federal Ministry of Labour and Social Affairs
BMBF	Federal Ministry of Education and Research
BMELV	Federal Ministry of Food, Agriculture, and Consumer Protection
BMG	Federal Ministry of Health
BMI	Federal Ministry of the Interior
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BMVg	Federal Ministry of Defense
BMWi	Federal Ministry of Economics and Technology
BND	Federal Intelligence Service
BNI	Bernhard Nocht Institute
BSL	Biosafety Level
BSN	Basic Surveillance Network
BTCC	Biological Threat Characterization Center
BTCDP	Bioterrorism and Curriculum Development Program
BTWC	Biological and Toxin Weapons Convention
BVL	Federal Office of Consumer Protection and Food Safety
BW	Biological Weapons
BWB	Federal Agency for Defense Technology and Procurement
BWP	EMEA's Biologics Working Party
BWPP	BioWeapons Prevention Project
CBER	Center for Biologics Evaluation and Research
CBIAC	Chemical and Biological Defense Information Analysis Center
CBRN	Chemical, Biological, Radiological, Nuclear
CBW	Chemical and Biological Weapons
CCBS	Central Commission for Biological Safety
CCID	Coordinating Center for Infectious Diseases
CCL	Commerce Control List
CCS	Civil Contingencies Secretariat
CDC	Centers for Disease Control and Prevention
CDER	Center for Drug Evaluation and Research
CDNBC	Center for Nuclear, Biological, and Chemical Defense
CDRH	Center for Devices and Radiological Health
CDSC	Communicable Disease Surveillance Centre
CDTR	Communicable Disease Threats Reports
CEB	Le Bouchet Research Center
CEH	Centre for Ecology and Hydrology



## Abbreviations

CEPR	Centre for Emergency Preparedness and Response
CFG	Central Field Epidemiology Team
Cfi	Centre for Infections
CHF	Swiss Francs
CHMP	EMA's Committee for Medicinal Products for Human Use
CIA	Central Intelligence Agency
CIBU	Emergency Biological Intervention Unit
CIEEMG	Interministerial Commission for the Study of Military Equipment Exports
CILAT	Interministerial Committee for the Fight against Terrorists
CIRE	Regional Epidemiology Bureaus
CIS	Commonwealth of Independent States
CJIS	Criminal Justice Information Services Division
CMC	Civil-Military Cooperation
CMS	Coordinated Medical Services
CNAMTS	National Health Insurance Fund for Salaried Employees
CNR	National Reference Centers
CNRS	National Center of Scientific Research
COBRA	Civil Contingencies Committee
COGIC	Interministerial Operational Crisis Management Center
ComNBC	Federal Commission for NBC Protection
COSHH	Control of Substances Hazardous to Health Regulations
COTPER	Coordinating Office for Terrorism Preparedness and Emergency Response
CPMP	EMA's Committee for Proprietary Medicinal Products
CRD	Civil Resilience Directorate
Crismart	National Centre for Crisis Management, Research, and Training
CRSSA	Research Center of the Armed Force's Health Service
CSR	Communicable Diseases Surveillance and Response
CSS	Center for Security Studies
CTC	Director of National Intelligence Counterterrorism Center
CTID	Counter-Terrorism and Intelligence Directorate
CTR	Collective Threat Reduction treaty
CTSA	Counter Terrorism Security Advisors
CWC	Chemical Weapons Convention
DARPA	Defense Advanced Research Projects Agency
DCI	Central Intervention Detachment
DCI	Director of Central Intelligence

## Abbreviations

DCLG	Department for Communities and Local Government
DCPJ	Central Criminal Investigation Directorate
DCRG	General Intelligence Directorate
DDPS	Federal Department of Defense, Civil Protection, and Sports
DDSC	Directorate of Civil Defense and Security
DDSV	Departmental Directorates of Veterinary Services
DDTC	Directorate of Defense Trade Controls
Defra	Department for Environment, Food and Rural Affairs
deNIS	German Emergency Preparedness Information System
DETEC	Federal Department of Environment, Transport, Energy and Communications
DFID	Department for International Development
DG ECHO	Directorate-General for Humanitarian Aid
DG ENTR	Directorate-General for Enterprise and Industry
DG ENV	Directorate-General for Environment
DG JLS	Directorate-General for Justice, Freedom, and Security
DG JRC	Directorate-General Joint Research Centre
DG RELEX	Directorate-General for External Relations
DG RTD	Directorate-General for Research
DG SANCO	Directorate-General for Health and Consumer Protection
DG TREN	Directorate-General for Transport and Energy
DGA	Arms Procurement Agency
DGAL	General Directorate of Alimentation
DGGN	General Directorate of the National Gendarmerie
DGP	Senior Defence Group on Proliferation
DGS	General Directorate of Health
DGSE	General Directorate of External Security
DH	Department of Health
DHA	Federal Department of Home Affairs
DHOS	Directorate of Hospitalization and Organization of Care
DHS	Department of Homeland Security
DMA	Digital Mapping Archive
DMID	Division of Microbiology and Infectious Diseases
DNAT	National Anti-Terrorist Division
DNI	Director of National Intelligence
DoD CBDP	Department of Defense Chemical and Biological Defense Program
DoD	Department of Defense
DOJ	Department of Justice

## Abbreviations

DOT	Department of Transport
DPPR	Directorate for the Prevention of Pollution and Risks
DPSD	Directorate of Defense Protection and Security
DRM	Military Intelligence Directorate
DRT	Directorate of Labor Relations
DSCA	Defense Security Cooperation Agency
DSNS	Division of Strategic National Stockpile
DSO	Defense Science Office
DST	Directorate of Territorial Surveillance
DSTL	Defence Science and Technology Laboratory
DTI	Department of Trade and Industry
DTRA	Defense Threat Reduction Agency
EA	Environment Agency
EADRCC	Euro-Atlantic Disaster Response Coordination Centre
EAPC	Euro-Atlantic Partnership Council
EAR	Export Administration Regulations
ECBC	Chemical and Biological Center
ECDC	European Centre for Disease Prevention and Control
ECO	Export Control Organization
ECURIE	Rapid Alert System for Radioprotection
EEVBS	Einsatzequipe VBS
EFSA	European Food Safety Authority
EMEA	European Medicines Agency
EMERCOM	Ministry of the Russian Federation for Civil Defense, Emergencies and the Elimination of the Consequences of Natural Disasters
EMM	European Media Monitor
ENSOSP	National School for Fire Fighter Officers
EOR	Emergency Organisation Radioactivity
EPA	Environmental Protection Agency
EPC	Emergency Planning College
EPCU	Emergency Planning Coordination Unit
EPD	Emergency Preparedness Division
EPR	Epidemic and Pandemic Alert and Response
EPS	Emergency Planning Society
ERS	External Reconnaissance Service
ESD	Electronic Situation Display
ETH	Federal Institute of Technology, Zurich
EU	European Union

## Abbreviations

EU-OSHA	European Agency for Safety and Health at Work
EUROPHYT	Rapid Alert System for Plant Health
EWRS	Early Warning and Response System
FAC	Foreign Affairs Committee
FAO	Food and Agriculture Organization of the United Nations
FASI	Federal Agency of Science and Innovations
FBI	Federal Bureau of Investigation
FCO	Foreign and Commonwealth Office
FDA	Food and Drug Administration
FDEA	Federal Department of Economic Affairs
FDFA	Federal Department of Foreign Affairs
FDJP	Federal Department of Justice and Police
fedpol	Federal Office of Police
FEMA	Federal Emergency Management Administration
FhCMB	Fraunhofer Center for Molecular Biotechnology
FhG	Fraunhofer Gesellschaft
FIT	Fraunhofer Institute for Applied Information Technology
FLI	Friedrich Loeffler Institute
FM	Swedish Armed Forces
FMV	Swedish Defence Material Administration
FNS	Food and Nutrition Service
FOCP	Federal Office for Civil Protection
FOEN	Federal Office for the Environment
FOI	Swedish Defence Research Agency
FONES	Federal Office for National Economic Supply
FOPH	Federal Office of Public Health
FP6	European Sixth Framework Programme
FRA	National Defense Radio Centre
FRD	Fire and Resilience Directorate
FRSD	Fire and Rescue Service Directorate
FSA	Food Standards Agency
FSB	Federal Security Service
FSO	Federal Guarding Service
FSTA	Military Operations Directorate
FSTEC	Federal Service of Technical and Export Control
FTE	Research Institute on Terrorism / Extremism
FVO	Federal Veterinary Office
FWE	Food, Water and Environmental Microbiology Testing Service

## Abbreviations

G&T	Office of Grants and Training
GCHQ	Government Communications Headquarters
GDS	Government Decontamination Service
GHSAG	Global Health Security Action Group
GHSI	Global Health Security Initiative
GIGN	Intervention Group of the National Gendarmerie
GLEWS	Global Early Warning System
GMLZ	Joint Reporting and Situation Centre
GOARN	Global Outbreak Alert & Response Network
GPHIN	Global Public Health Intelligence Network
GSA	Administrator of General Services
GTAZ	Joint Terrorism Defense Centre
HEDIS	Health Emergency & Diseases Information System
HEOF	Health Emergency Operations Facility
HFD	High Functionaries of Defense
HHS	Department of Health and Human Services
HPA	Health Protection Agency
HRSA	Health Resources and Services Administration
HSC	Health Security Committee
HSC	Homeland Security Council
HSE	Health and Safety Executive
HSGP	Homeland Security Grant Program
HSIN	Homeland Security Information Network
HSOC	Homeland Security Operations Center
HSPD	Homeland Security Presidential Directive
IAC	Department of Defense Information Analysis Center
IAEA	International Atomic Energy Agency
IBBS	Federal Information Centre for Biological Safety
IBCH	Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry
IC	Intelligence Community
ICRC	International Committee of the Red Cross
IES	Internet Based Information System
IHR	International Health Regulations
IMB	Engelhardt Institute of Molecular Biology
IME	Fraunhofer Institute for Molecular Biology and Applied Ecology
IMK	Permanent Conference of Interior Ministers and Senators of the Federal States

## Abbreviations

IMPACT	Innovative Measures for Protection against CBRN Terrorism
INERIS	National Institute of the Industrial Environment and Risks
INRS	National Institute of Research and Security
INSERM	French National Institute of Health and Medical Research
InVS	National Institute for Public Health Surveillance
IPTF	Influenza Pandemic Task Force
IRTPA	Intelligence Reform and Terrorism Prevention Act
ISIT	Fraunhofer Institute for Silicon Technology
ISP	National Inspectorate of Strategic Products
ISTC	International Science and Technology Center
ITAR	International Traffic in Arms Regulations
IVI	Institute of Virology and Immunoprophylaxis
JIC	Joint Intelligence Committee
JPEO-CBD	Joint Program Executive Office for Chemical and Biological Defense
JTAC	Joint Terrorism Analysis Centre
JTTF	Joint Terrorism Task Force
KAMEDO	Swedish Disaster Medicine Study Organization
KCB	Centre for Microbiological Preparedness
KemI	Swedish Chemicals Inspectorate
KoKo	Coordination Committee of the Regional Laboratory Network
Komp Zen ABC	NBC Competence Center
LAABC	Steering Committee NBC
LAR	Steering Committee on Radioactivity
LCV	Central Laboratory of Virology
LfV	State Offices for the Protection of the Constitution
LGSi	Security Steering Group
LLNL	Lawrence Livermore National Laboratory
LRF	Local Resilience Forums
LRN	Laboratory Response Network
LS	Spiez Laboratory
LWND	Air Force Intelligence Service
MACA	Military Aid to the Civil Authority
MCX	Ministry of Agriculture
MECOM	Federal Service on Hydrometeorology and Control of the Environment
MEDD	Ministry of Ecology and Sustainable Development
MedISys	Medical Intelligence System

## Abbreviations

MI <sub>5</sub>	British Security Service
MIC	Monitoring and Information Centre
MID	Ministry of Foreign Affairs
MND	Military Intelligence Service
MNR	Ministry of Natural Resources
MoD	Ministry of Defence
MON	Ministry of Education and Science
MRC	Medical Research Council
MTE	Ministry of Industry and Energy
MUST	Joint Military Intelligence and Security
MVD	Ministry of Internal Affairs
MZSRRF	Ministry of Public Health and Social Development
NaCTSO	National Counter Terrorism Security Office
NANT	National Reference Center for Anthrax
NATO	North Atlantic Treaty Organisation
NAVI	National Reference Center for Emerging Virus Infections
NBACC	National Biodefense Analysis and Countermeasures Center
NBC	National Biomanufacturing Centre
NBC	Nuclear, Biological, Chemical
NBC/M	Nuclear, Biological, Chemical, and Missile
NBFAC	National Bioforensic Analysis Center
NCEA	National Center for Environmental Assessment
NCID	National Center for Infectious Diseases
NCPC	Director of National Intelligence National Counterproliferation Center
NCTC	National Collection of Type Cultures
NCTC	National Counterterrorism Center
NCTR	National Center for Toxicological Research
NEMO	European Network on Mathematical Modelling
NEOC	National Emergency Operations Centre
NERC	Natural Environment Research Council
NFA	National Food Administration
NHS	National Health Service
NIAID	National Institute of Allergy and Infectious Diseases
NIBSC	National Institute for Biological Standards and Control
NIH	National Institutes of Health
NIP	National Immunization Program

## Abbreviations

NIPC	National Infrastructure Protection Center
NLETS	National Law Enforcement Telecommunications System
NMRC	Naval Medical Research Center
NOAH	Central Agency for Aftercare and Aid for Victims and Relatives
NOC	National Operations Center
NPAC-TWG	Nonproliferation and Arms Control Technology Working Group
NPS	National Pharmaceutical Stockpile
NRPB	National Radiological Protection Board
NRZ	National Reference Centers
NSABB	National Science Advisory Board for Biosecurity
NSAC	National Security Advice Centre
NTWS	National Threat Warning System
OCRТАEMS	Central Office for the Repression of Arms Trafficking
ODNI	Office of the Director of National Intelligence
OIE	World Organisation for Animal Health
OPCW	Organisation for the Prohibition of Chemical Weapons
OPHEP	Office of Public Health Emergency Preparedness
OSA	
CBD&CDP	Office of the Special Assistant for Chemical and Biological Defense and Chemical Demilitarization Programs
OSD	Office of the Secretary of Defense
OSEL	Office of Science and Engineering Laboratories
OST	Office of Science and Technology
OTA	Office of Terrorism Analysis
OTI	Office of Transnational Issues
OVL	Outbreak Verification List
PBA	U.S. Army Pine Bluff Arsenal
PEI	Paul Ehrlich Institute
PHEIC	Public Health Emergency of International Concern
PHLS	Public Health Laboratory Service
PIADC	Plum Island Animal Disease Center
PML	Plymouth Marine Laboratory
POL	Proudman Oceanographic Laboratory
PSI	Proliferation Security Initiative
RAA	Russian Academy of Agriculture
RAID	Elite police intervention unit (Recherche Assistance Intervention Dissuasion)



## Abbreviations

RAMS	Russian Academy of Medical Sciences
RAS	Russian Academy of Sciences
RAS	Rapid Alert System
RAS-BICHAT	Rapid Alert System for Biological and Chemical Agents
RAS-CHEM	Rapid Alert System for Chemical Incidents
RASFF	Rapid Alert System for Food and Feed
RCEs	Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases
RDECOM	United States Army Research, Development and Engineering Command
RF	Russian Federation
RKI	Robert Koch Institute
RLN	Regional Laboratory Network
RPS	National Police Board
S&T	
Directorate	Directorate for Science and Technology
SAMU	Urgent Medical Services
SAP	Service for Analysis and Prevention
SAP	Select Agent Program
SÄPO	Swedish Security Service
SARS	Severe Acute Respiratory Syndrome
SatWas	Satellite-based Warning System
SDC	Swiss Agency for Development and Cooperation
SDGR	DDSC Sub-Directorate for the Management of Risks
SDSO	DDSC Sub-Directorate of Operational Services
SDSPA	DGAL's Sub-Directorate of Animal Health and Protection
SDSPAS	DDSC Sub-Directorate for Fire Fighters and Security Actors
SEB-ABC	THW's NBC Rescue Units
SECB	Swiss Expert Committee for Biosafety
SECO	State Secretariat for Economic Affairs
SEMA	Swedish Emergency Management Agency
SEPA	Swedish Environmental Protection Agency
SES	Sanitary Epidemiological Service
SGDN	General Secretariat of National Defense
SGP	Senior Politico-Military Group on Proliferation
SHA	Swiss Humanitarian Aid Unit
SHOC	Strategic Health Operations Centre
SiA	Security Board of the Federal Council
SIS	Secret Intelligence Service

## Abbreviations

SIS	Strategic Intelligence Service
SJV	Swedish Board of Agriculture
SkyddC	National NBC Defence Centre
SMI	Swedish Institute for Infectious Disease Control
SMUR	Hospital Mobile Intensive Care Units
SNDC	Swedish National Defence College
SNS	Strategic National Stockpile
SoS	National Board of Health and Welfare
SRC VB	
VECTOR	State Research Center of Virology and Biotechnology Vector
SRSA	Swedish Rescue Services Agency
SSP	Scientific Support to Policies
Stab SiA	Permanent Task Force of the Security Board of the Federal Council
StAKoB	Permanent Working Group of Centres of Expertise and Treatment
SVA	National Veterinary Institute
SWEA	Swedish Work Environment Authority
THW	Federal Agency for Technical Relief
TTIC	Terrorist Threat Integration Center
UBA	Federal Environment Agency
UCLAT	Anti-Terrorist Coordination Unit
UN	United Nations
UNMOVIC	UN Monitoring, Verification, and Inspection Commission
UNSCOM	UN Special Commission on Iraq
USAMRIID	United States Army Medical Research Institute for Infectious Diseases
USDA	United States Department of Agriculture
USML	United States Munitions List
UWERN	Universities Weather Research Network
VLA	Veterinary Laboratories Agency
VRC	Dale and Betty Bumpers Vaccine Research Center
VWP	EMEA's Vaccine Working Party
WEF	World Economic Forum
WER	Weekly Epidemiological Record
WHO	World Health Organization
WINPAC	Center for Weapons Intelligence, Nonproliferation, and Arms Control

## Abbreviations

WIS	Armed Forces Scientific Institute for Protection Technologies and NBC-Protection
WMD	Weapons of Mass Destruction
WMDOU	Weapons of Mass Destruction Operations Unit
XNP	Export Control and Non-Proliferation Directorate
ZBS	Centre for Biological Safety
ZKA	Customs Criminal Investigation Office



# INTRODUCTION

*By Andreas Wenger and Sergio Bonin*

## BACKGROUND

In the aftermath of the anthrax letters disseminated in the US only weeks after the 9/11 attacks, and following the devastating outbreaks of foot-and-mouth and mad cow disease, as well as the emergence of previously unknown viruses such as SARS and the influenza sub-strain H<sub>5</sub>N<sub>1</sub>, the international community has been starkly reminded of an ancient threat to humankind: the threat of pathogenic microorganisms either occurring naturally or being released deliberately. However, several developments in recent years – such as the increased mobility of people, animals, and goods, the advances in biosciences and genetic engineering, as well as the stronger focus on global terrorism – have added new dimensions to the threat, making an appropriate defense against biological hazards more complex while increasing the vulnerability of societies.

The menace of diseases caused by naturally or deliberately released microorganisms poses serious challenges to society. Besides the fact that biodefense measures must cope with a threefold menace that may originate from states, non-state actors, or natural developments, the complexities of a comprehensive biological defense stem from its cross-sectoral nature that affects many diverse government entities in areas ranging from the public health and civil protection sectors to law enforcement and intelligence agencies as well as the military, but also including research institutions, veterinary offices, and export control organizations.

In order to provide an overview of the various measures taken, the ‘International Biodefense Handbook’ compares the various political and strategic approaches adopted by selected countries and international organizations, based on an examination of various components in this field, on an inventory of institutions and actors involved, and on an analysis of their respective roles and responsibilities.

The terms “biological defense” or “biodefense” are of military origin and frequently used to denote “the methods, plans, and procedures involved in establishing and executing defensive measures against attacks using biological agents.”<sup>1</sup> However, since many defensive measures can be applied irrespective of the exact source of the threat, and keeping in mind that natural outbreaks are inevitable, whereas terrorist or state-supported bioattacks are not, it is more beneficial to propagate an “all-hazards” approach, which allows for a comprehensive and integrated understanding of the problem. Such an approach is also far more cost-effective and politically sustainable, especially in the absence of a deliberate release.<sup>2</sup>

For the purposes of this study, we will therefore assume a broader definition that includes the civilian dimension and takes into account the full spectrum of threat sources, and regard the terms “biodefense” and “biosecurity” as representing two sides of the same coin:

*Biodefense refers to the policies, structures, methods, plans, and procedures involved in maintaining biosecurity, or in restoring biosecurity after a natural, accidental, or deliberate outbreak of pathogenic microorganisms and toxins.*

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- 1 US Department of Defense, Dictionary of Military and Associated Terms. Joint Publication 1-02. 12 April 2001 (As Amended Through 8 August 2006), p. 67. [http://www.dtic.mil/doc-trine/jel/new\\_pubs/jp1\\_02.pdf](http://www.dtic.mil/doc-trine/jel/new_pubs/jp1_02.pdf) [January 2007].
  - 2 Andrew J. Grotto and Jonathan B. Tucker (2006): Biosecurity – A Comprehensive Action Plan. Center for American Progress. [http://www.americanprogress.org/atf/cf/%7BE9245FE4-9A2B-43C7-A521-5D6FF2E06E03%7D/BIOSECURITY\\_A\\_COMPREHENSIVE\\_ACTION\\_PLAN.PDF](http://www.americanprogress.org/atf/cf/%7BE9245FE4-9A2B-43C7-A521-5D6FF2E06E03%7D/BIOSECURITY_A_COMPREHENSIVE_ACTION_PLAN.PDF) [January 2007].

The Handbook primarily focuses on policies and structures relevant for managing the risk of extraordinary events such as pandemics and bioterrorist attacks, including preventive activities of great importance, such as regular disease and trade control mechanisms. Key activities with respect to the management of biological incidents are further outlined below on the basis of the classical risk management cycle.

## A THREEFOLD THREAT

One of the challenges of a comprehensive management of biological incidents lies in the variable manifestations of biological risks, encompassing state use, terrorist attacks, and natural developments. In order to secure society from these risks and successfully cope with them, we must consider the similarities between different scenarios, but also the particular aspects of each individual threat source, as well as the specific problems associated with each of them.

### STATES

Assessments of state capabilities regarding biological weapons rely heavily on intelligence estimates and are hard to undertake, not least because the boundaries between defensive and offensive research programs on biological agents are blurred and many components have dual-use applications. Nevertheless, around ten to twelve states are believed to maintain an offensive biological weapons program, a number that seems to have remained more or less stable over the last 20 years.<sup>3</sup>

State parties to the 1972 Biological and Toxin Weapons Convention (BTWC) are prohibited from research, development, production, stockpiling, and acquisition of biological agents for other than peaceful purposes. Many of these countries have either never pursued an offensive

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3 Milton Leitenberg (2005): *Assessing the Biological Weapons and Bioterrorism Threat*. Carlisle: Strategic Studies Institute (SSI).

biological weapons program, or have officially terminated such programs on their accession to the convention. However, the BTWC is a weak treaty that lacks a compliance and verification mechanism, and some states, whether they are party to the convention or not, may find it useful to employ non-conventional weapons in certain, particularly asymmetric situations. Such use may include biological weapons, particularly in cases where states perceive existential threats and, at the same time, lack a mechanism to secure their existence, such as a nuclear umbrella.<sup>4</sup>

However, state use of biological weapons entails some serious difficulties. First of all, international moral and legal norms strongly condemn the use of bioweapons, which means that the non-complying state may be subjected to international ostracism that is politically costly. Second, a released pathogen may blow back towards a state's own population or troops. Third, there is the risk that the state under attack will retaliate. The nuclear doctrine of the United States, for instance, envisions a nuclear retaliatory strike in case of an attack with biological weapons. This response, however, would require that a biological attack and the attacking state be identified as such. In case of an undiscovered attack by a state, or a real or successfully feigned terrorist attack, retaliation is of little use.<sup>5</sup>

## NON-STATE ACTORS

Due to a lack of historical data, the threat of bioterrorism is discussed controversially among experts and politicians, and again, is hard to assess. Uncertainty is a key characteristic of the bioterror threat.<sup>6</sup> Nightmare scenarios with the potential for the extinction of entire civilizations,

4 Åke Sellström and Anders Norqvist (2004): Comparison of States vs. Non-State Actors in the Development of a BTW Capability. WMDC Study No. 16. <http://www.wmdcommission.org/files/no16.pdf> [January 2007].

5 The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction (2005): Report to the President of the United States. March 31, 2005. [http://www.wmd.gov/report/wmd\\_report.pdf](http://www.wmd.gov/report/wmd_report.pdf) [January 2007].

6 Cf. Andreas Wenger and Reto Wollenmann (eds., 2007): *Bioterrorism: Confronting a Complex Threat*. Boulder: Lynne Rienner.



which are theoretically possible but highly unlikely, must be contrasted against the considerable difficulties a terrorist group faces when trying to produce a biological weapon and carrying out an attack. The manufacturing of a biological weapon of mass destruction with a high level of destructiveness is virtually impossible without state support, because preparing and carrying out an attack that inflicts thousands of casualties involves a series of major hurdles.

Among these obstacles are the need for skilled technical personnel with relevant expertise, the procurement of virulent microbial strains and of equipment suitable for the mass-production and weaponization of biological agents, as well as the development of an effective wide-area delivery system, which, to make things even more difficult, is dependent on meteorological conditions.<sup>7</sup> Added to this are the dangers of handling biological agents. All these obstacles as well as the historical record suggest that it is easier and more effective for terrorist groups to adopt conventional methods in order to kill large numbers of people.

However, the potential for a high number of victims is not necessarily what makes bioweapons attractive to extremists. Tactical small-scale attacks are also a possibility – and in some ways, even a more frightening one, as they are more likely to occur. A terrorist group may consider the use of pathogenic weapons because of their potential to cause huge psychological, societal, and economic disruptions. As the anthrax letters following 9/11 have shown, biological attacks gain a tremendous amount of public attention. In conjunction with the invisible, odorless, and tasteless nature of biological agents, this bears the potential to create mass panic, the effects of which may turn out to be worse than those of the biological weapon itself.

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7 Jonathan B. Tucker (2000): Chemical and Biological Terrorism: How Real a Threat? In: Current History, April 2000; pp. 147–53.

## NATURAL DEVELOPMENTS

Worldwide, naturally occurring infectious diseases are the main causes of death and disability in humans and are likely to become even more important over the next decade. Each year, over 14 million people die from often preventable infectious diseases.<sup>8</sup> Among the deadliest are AIDS, tuberculosis, and malaria, but the annual wave of influenza also kills an estimated 1 to 1.5 million people worldwide, including related complications.<sup>9</sup> Furthermore, the world is now facing the looming threat of an influenza pandemic.

Influenza pandemics are caused by the spread of new subtypes of the influenza A virus, which originate from a genetic recombination of an avian influenza virus with an influenza virus adapted to humans. Considering the historical record of the last four centuries, influenza pandemics may be expected to occur every 25 to 30 years. In the last 100 years, there have been three cases: the Spanish flu of 1918–9, the Asian flu of 1957–8, and the Hong Kong flu of 1968–9. According to the World Health Organization (WHO), the world has now moved closer to a pandemic than at any time since 1968, and all the prerequisites for the start of a pandemic have been met with the emergence of the H<sub>5</sub>N<sub>1</sub> subtype, except for the establishment of an efficient human-to-human transmission.<sup>10</sup>

An outbreak could have disastrous implications. Based on the experience of past pandemics, the WHO estimates that even under optimistic assumptions, between 2 and 7 million people would die worldwide as a result of a H<sub>5</sub>N<sub>1</sub> influenza pandemic, and tens of millions would require medical attention. In the worst case, the human death toll may rise to

8 World Health Organization (2002): Preparedness for the deliberate use of biological agents – A rational approach to the unthinkable. Geneva, May 2002. <http://www.who.int/csr/resources/publications/deliberate/whacdscreph200216.pdf> [January 2007].

9 Michael T. Osterholm (2005): Preparing for the Next Pandemic. In: *Foreign Affairs*, July / August 2005.

10 World Health Organization (2005): Responding to the avian influenza pandemic threat – Recommended strategic actions. [http://www.who.int/csr/resources/publications/influenza/WHO\\_CDS\\_CSR\\_GIP\\_05\\_8-EN.pdf](http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_05_8-EN.pdf) [January 2007].

more than 50 million.<sup>11</sup> Besides the fact that there is hardly a national public health system that would be capable of handling the grave medical consequences of a catastrophic influenza pandemic, the impact on society in general would be devastating. Even in unaffected countries, fear, panic, and chaos would spread. Large parts of the workforce might be absent from work for months, while domestic and foreign trade, travel, and transportation would be reduced or halted, and a wide range of essential commodities, such as food, fuels, and medicines would be in short supply. In other words, an outbreak would cause huge economic losses. The World Bank estimates the costs of an influenza pandemic for the global economy at US\$800 billion a year.<sup>12</sup>

Since an influenza pandemic cannot be avoided altogether, all that remains is to lessen its impact through preparatory measures. The most important of these are the development and stockpiling of strain-specific vaccines, and, as a second line of defense, the storage of antiviral drugs.

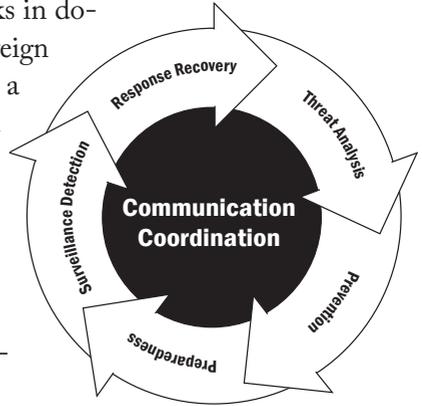
The great level of uncertainty, especially as regards the terrorist dimension of the biological threat, largely accounts for the differing and ambiguous threat perceptions and assessments among policy-makers and experts. The threefold nature of the threat, which affects previously unrelated communities – namely the public health sector and the national security apparatus – may cause competition for the allocation of scarce resources among uneven stakeholders and lead to a potentially problematic integration of health issues into national security considerations.

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11 World Health Organization (2004): Estimating the impact of the next influenza pandemic: enhancing preparedness. 8 December 2004. [http://www.who.int/csr/disease/influenza/preparedness2004\\_12\\_08/en/](http://www.who.int/csr/disease/influenza/preparedness2004_12_08/en/) [January 2007].

12 World Bank (2005): Avian Flu: Economic Losses Could Top US\$800 Billion. November 2005. <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPHEANUT/0,,contentMDK:20715408~menuPK:503054~pagePK:34004173~piPK:34003707~theSitePK:50304800.html> [January 2007].

## BIODEFENSE – A COMPLEX TASK

The menace of diseases caused by naturally or deliberately released viruses, bacteria, or toxins poses a serious challenge to institutions and agencies at the international, national, regional, and local levels. It confronts states with a multitude of complex tasks in domestic and security policy as well as in foreign affairs. Most of these challenges have a multidisciplinary character affecting a wide range of distinct sectors: public health, civil protection and emergency management, national security, military defense and research, civilian research and laboratories, the national economy, animal health, and environmental protection.



As the Handbook primarily focuses on policies and structures, the country surveys are arranged according to these sectors. However, in order to provide a chronological and coherent picture of the risk management process itself, which relies on these structures and in which each sector is important at various stages, the respective activities are introduced in the following by examining the classical risk management cycle<sup>13</sup> with respect to biological incidents:

### THREAT ANALYSIS

Threat or risk analysis involves all activities pertaining to the awareness, assessment, and early detection of potential biological hazards. Depending on the exact nature of the threat, the political leadership solicits input from the national law-enforcement and intelligence services, as well as the medical and scientific communities. Threat analyses help to identify potential scenarios and to assess the likelihood of their

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 13 Cf. <http://www.planat.ch/index.php?userhash=22562290&l=e&navID=5> [January 2007].

occurring, as well as the state of preparedness and the ability of a national system to respond effectively to a biological emergency. They also contribute to the anticipation of future threats, especially in the light of bio-technological advances.

Concerning the deliberate release of biological agents, domestic and foreign law enforcement and intelligence agencies assess and observe the capacities and intentions of states as well as of national or transnational extremist groups.

The public health system is of central importance for the assessment of a natural or accidental release of infectious pathogens. Many countries have established an epidemiological surveillance system in order to assess and monitor possible outbreaks of certain human or animal diseases.<sup>14</sup> Several national institutions collaborate with the WHO's Global Outbreak Alert & Response Network (GOARN), which contributes to an international risk assessment and early warning of a possible outbreak.<sup>15</sup> Furthermore, scientific establishments conduct research on various pathogens in order to assess their impact and the probability of their occurrence.

## PREVENTION

Preventive measures aim at restricting access to biological agents, related technologies, and know-how for certain countries, groups, or individuals. Such efforts are among the most cost-effective approaches to biodefense.

Multilateral arms control and disarmament treaties as well as national export and import control policies are preventive tools. The two most important treaties in the biological weapons field are the 1925

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14 Some animal diseases are also hazardous to humans. Such diseases are known as zoonoses. In addition, animal diseases may endanger the food security.

15 Cf. <http://www.who.int/csr/outbreaknetwork/en/> [January 2007].

Geneva Protocol<sup>16</sup> that prohibits bacteriological methods of warfare, and the 1972 Biological and Toxin Weapons Convention (BTWC).<sup>17</sup> The BTWC stipulates the destruction of existing arsenals and prohibits the development, production, and stockpiling of biological weapons as well as the trade in such products. It is essential for the preventive nature of the BTWC that it be implemented in national legislation outlawing the abovementioned activities. One important way of implementing the convention is by way of national export and import control policies with respect to weapons systems, technologies, and dual-use goods. The latter have both civil and military applications and are of particular concern, because the biotech sector involves many such goods and because potential trade restrictions need to be made dependent on the intended end-use.<sup>18</sup> Several countries have joined in the so-called Australia Group and the Wassenaar Arrangement in order to set up an internationally agreed, but voluntary list of items that are subject to national export controls.

The terms “biosafety” and “biosecurity” are also of importance with respect to prevention.<sup>19</sup> Biosafety refers to provisions that aim at avoiding an unintended release of biological pathogens. This includes the proper labeling of microorganisms, an appropriate work environment, the specification of safe handling requirements, provisions with respect to the safety of workers, laboratories, equipments, storage facilities, and transports, as well as arrangements regarding the contained use or release of organisms. Biosecurity, in contrast, refers to measures taken against a deliberate release of biological microorganisms. This comprises the

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16 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare. Signed at Geneva, June 17, 1925. [http://www.opbw.org/int\\_inst/sec\\_docs/1925GP-TEXT.pdf](http://www.opbw.org/int_inst/sec_docs/1925GP-TEXT.pdf) [January 2007].

17 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Signed at London, Moscow and Washington on 10 April 1972. <http://www.opbw.org/convention/documents/btwctext.pdf> [January 2007].

18 This is the so called “General Purpose Criterion”.

19 Cf. Barletta, Michael (2002): Biosecurity Measures for Preventing Bioterrorism. Center for Nonproliferation Studies (CNS). <http://cns.miis.edu/research/cbw/biosec/pdfs/biosec.pdf> [January 2007].

issuance of permits to handle certain biological agents, the registration of establishments and staff members with access to such substances, and the control of physical access to relevant facilities, but also the restriction of access to potentially dangerous know-how and codes of conduct for scientists. Usually, biological agents are classified according to four risk groups that reflect an agent's rate of mortality, availability, mode of production, and dissemination. These factors form the basis for regulating work and access restrictions.

### PREPAREDNESS

An appropriate reaction to a bio-attack or pandemic requires well-considered planning of procedures and responsibilities, as well as the procurement of vaccines, antiviral drugs, and essential items of equipment, from protective suits and decontamination tools for first responders to specialized installations in laboratories and containment wards in hospitals.

Concrete response plans are elaborated on the basis of specific scenarios (e.g., a smallpox preparedness plan, an influenza pandemic response plan, etc.), which, in turn, shed light on organizational and material necessities. Response plans usually include provisions for issues such as the duties of and cooperation between agencies, relief units, and emergency task forces; concrete containment and protection procedures; laboratory concepts for the identification of biological agents; hospital capacities; vaccination plans; mass-casualties management; public communication directives; and so on. The elaboration of response plans is an interdisciplinary endeavor involving many of the various stakeholders.

Furthermore, specific education and training in biodefense matters for physicians, healthcare workers, police forces, fire brigades, emergency units, and military personnel is an indispensable prerequisite for a successful response to a biological incident. This is not only important because specialized knowledge is needed in order to assess and handle a biological emergency situation adequately and safely, but also because

well-prepared first responders, and especially healthcare workers, are less likely to react with anxiety and fear. Such a reaction could have severe consequences like the disruption of essential healthcare services.<sup>20</sup> In this respect, prophylactic vaccination of first responders against certain diseases may also be considered.

### SURVEILLANCE AND DETECTION

Early warning and detection of biological weapons attacks and emerging infectious diseases is an essential component of a successful response. A timely and adequate response may reduce the consequences of a biological incident considerably.

As mentioned above, in case of an epidemic or pandemic, the monitoring is performed by national epidemiological surveillance networks in close contact with the WHO. In many countries, physicians and hospitals are required to notify the relevant authorities of the occurrence of certain infectious diseases, which allows for a regular assessment of the epidemiological situation and the detection of unusual outbreaks. Similar structures exist with respect to animal diseases.

In contrast, a terrorist or state attack with biological weapons cannot be predicted with the same degree of accuracy and detail as a natural outbreak, which shortens the detection and reaction time. In particular, it would be possible for an attack to remain undiscovered for days or weeks, due to the long incubation period of biological agents or because a victim's symptoms are attributed to a natural cause. Furthermore, any deterrence strategy is based on the assumption that the perpetrator as well as the method of attack can be accurately identified – which means that such a strategy would fail in case of a false attribution. Another unpleasant factor to consider is that of hoaxes, which cannot be easily and immediately distinguished from real biological incidents.

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20 World Health Organization (2004): Public health response to biological and chemical weapons – WHO guidance. <http://www.who.int/csr/delibepidemics/biochemguide/en/index.html> [January 2007].



Apart from timely and precise intelligence warnings, there are generally two types of systems for detecting a deliberate biological attack. The first is a passive system, consisting of the above-mentioned regular surveillance activities of the national health sector, in the course of which deliberately released diseases may also be detected and attributed correctly. Active detection refers to the installation of sensors in public places and buildings in order to trace the presence of biological agents in the air.<sup>21</sup>

Finally, many states appoint so-called reference laboratories that specialize in certain pathogens and ultimately confirm their presence. Some countries also have at their disposal mobile laboratory units, which allow for on-site identification and confirmation. Prompt identification of the agent ensures that the appropriate medical measures are taken. However, none of these activities can be initiated unless an outbreak is detected or at least suspected; but they are essential for the identification of biological agents and provide first evidence on the source of an outbreak.

## RESPONSE AND RECOVERY

The first consequences of a natural or deliberate outbreak are usually experienced at the local level, with public health workers likely to be the first to respond. Their vigilance and fast reaction is a key factor in mitigating the effects of an outbreak. Depending on the scale and nature of the incident, other first responders such as the police, fire brigades, and specialized emergency units, as well as higher state agencies and eventually the military will be involved successively. Most countries have a legal framework for when and how successive actors are activated, including provisions for a civil-military-cooperation.

After the detection of an outbreak, all the available information needs to be analyzed in order to evaluate the situation and identify the

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21 Cf. Congressional Research Service CRS (2003): *The BioWatch Program: Detection of Bio-terrorism*. RL32152, November 19, 2003.

source and nature of the threat. Determining whether or not a deliberate release has taken place is decisive with respect to the activation of the law enforcement and intelligence apparatus as well as for the identification of a release area and a potential device. The identification and characterization (e.g., of the mode of transmission or release) of the agent involved is necessary for taking the appropriate counter-measures as well as for choosing suitable protective equipment, and allows for the evaluation of the potential spread through epidemiological and/or meteorological (computer) modeling.

Based on this information, consideration is given to various means of reducing the consequences and containing the hazard.<sup>22</sup> It may be appropriate to evacuate people in certain areas and to establish security cordons. In case of a release of a transmissible disease, basic infection control measures – such as keeping exposed persons away from public places or isolating suspected cases – need to be taken and communicated to the public in order to limit secondary outbreaks. Depending on the nature of the organism involved, medical treatment will have to be arranged for exposed individuals, which is a major task requiring special provisions, especially in case of mass casualties. The prophylactic treatment of certain segments of the population may also be necessary. Furthermore, areas, buildings, and eventually people need to be decontaminated.

Besides the immediate effects of an outbreak, there are also indirect effects that require attention and therefore pre-planning, such as overwhelming numbers of (unaffected) people seeking care and advice, the delicate matter of distributing scarce vaccines and antibiotic or antiviral drugs, or the repercussions of panic and fear resulting in temporary economic disruptions and shortages in the supply of essential goods.

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22 Cf. World Health Organization (2004): Public health response to biological and chemical weapons – WHO guidance. <http://www.who.int/csr/deliberidemics/biochemguide/en/index.html> [January 2007].

## COMMUNICATION AND COORDINATION

In order to cope with all of these obstacles successfully, structures for accurate risk communication need to be established. On the one hand, this is important for the public dissemination of potentially life-saving information as well as for the prevention of a mass panic. On the other hand, a multidisciplinary response to a biological incident as described here requires considerable coordination efforts and command structures.

The interfaces between early-warning and crisis management structures in the security and health sectors are subject to particularly serious challenges in terms of coordination and communication. Transparency and rapid information exchange, from the local to the regional and even national levels, are preconditions for efficient crisis management, and require that roles and responsibilities be clearly delegated.

On the policy level, states are required to outline the strategic direction of the emergency preparation and response. Based on an integrated conception of biological risks, a strategy for protecting society must be formulated, which requires a continuous process of policy formulation in the context of a comprehensive risk analysis that takes bioterrorism scenarios and challenges arising from natural pandemics into account in equal measure. This forms the basis for distributing responsibilities and resources, with special attention being given to effective exploitation of the potential synergies between protective measures in the various areas and between national and international efforts. A comprehensive protection concept must also be regulated by the state. Besides implementing international obligations on the level of national legislation, such regulation would also favor the development and enforcement of work safety standards in laboratories and research activities and would imply cooperation between state, business, and academia in formulating scientific codes of conduct.

## PURPOSE AND STRUCTURE OF THE HANDBOOK

The overall purpose of the International Biodefense Handbook is to provide an overview of biodefense practices on the national level in a range of countries (Part I). For the first edition of the Handbook, we have chosen France, Germany, Russia, Sweden, Switzerland, the UK, and the US. Additional countries will be added in future versions of the Handbook. Furthermore, the initiatives and structures of selected international and supra-national organizations (WHO, EU, NATO, ICRC, and G8) are examined (Part II) and the activities of two civil-society initiatives (BioWeapons Prevention Project and Sunshine Project) are presented (Part III).

The Handbook is aimed at security policy analysts, researchers, and practitioners. It can be used either as a reference work for a quick overview of biodefense policies, or as a starting point for further, in-depth research. The Handbook does not claim to offer a comprehensive, scientific analysis of the topic; rather, it is an effort to collect existing policies and structures, and to provide an inventory of disposable assets on the national and international level.

### PART I

Part I features seven country surveys. The main focus of the Handbook rests with the organizational overview included therein, which lists roles and responsibilities of public actors on the national level. Public actors at lower state levels, although very important, are omitted. All country surveys in Part I have the same structure in order to facilitate comparisons:

- A Country's Approach to the Biological Threat
  - Political Background and Threat Perception

- Organizational Overview – Roles and Responsibilities<sup>23</sup>
  - Public Health: This sector includes organizations responsible for public health preparedness in general and disease control in particular. Furthermore, agencies active in the field of consumer protection, including food and occupational safety are also subsumed under this category.
  - Civil Protection and Emergency Management: This section encompasses agencies involved in the non-health-related management of biological incidents (i.e., training, coordination, containment, etc.), including preparedness and response planning, as well as public information and alert mechanisms.
  - National Security: This section includes a country’s intelligence services, law-enforcement agencies, and central coordination bodies with respect to security issues of national significance.
  - Military Defense and Research: This section outlines a country’s military structures with a focus on the military defense against chemical, biological, and radio-nuclear (CBRN) weapons attacks, including research, and on civil-military cooperation arrangements.
  - Civilian Research and Laboratories: Civilian establishments mainly devoted to research (e.g., academic) and civilian laboratories are discussed under this section. Organizations that have other main responsibilities, but also conduct research, will be found in the section best reflecting their main duties.<sup>24</sup>
  - National Economy: This sector includes agencies responsible for trade oversight regarding war materials, dual-use

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23 As previously stated, the Handbook does not focus on the risk management processes themselves, but on related structures. Accordingly, the organizational overview is arranged according to the above-mentioned sectors. Like any attempt to categorize a complex issue, the structure of the organizational overview is simplified and to a certain extent artificial.

24 This is especially true in the public health, animal health, and civil protection sectors, where many of the agencies also perform research.

items, and other sensitive equipments. In addition, agencies charged with ensuring the security of supply in times of crisis will be discussed here.

- **Animal Health:** This section lists agencies ensuring animal health and disease control.
- **Environmental Protection:** This section includes organizations tasked with the protection of the environment, including plant health, landscape protection, and the contained use of certain organisms.
  
- **Past and Present Initiatives and Policies**  
This section includes descriptions of specific committees, commissions, task forces, and working groups, and the main findings of key official reports and fundamental studies, as well as important national programs.
  
- **Laws and Legislation**  
This section lists important pieces of national legislation in table form. The structure of the table is based on an idea suggested by the Center for Nonproliferation Studies (CNS)<sup>25</sup> and includes the following categories: Biosecurity, Biosafety, Criminalization, and Import and Export Controls. The tables are intended to provide a rough overview of a country's legislation as regards biosecurity and other relevant issues, but do not claim to be comprehensive. These tables have not been compiled or reviewed by legal experts.

## PART II

Part II describes initiatives and organizational units that are relevant to biodefense in five international or supra-national organizations. These are: the World Health Organization (WHO), the European Union (EU), the North Atlantic Treaty Organization (NATO), the International

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25 Cf. <http://cns.miiis.edu/research/cbw/biosec/pdfs/biolaw.pdf> [January 2007].

Committee of the Red Cross (ICRC), and the G8 Group. This selection will be expanded in future editions of the Handbook.

### PART III

Part III provides an overview of the activities of two civil society initiatives in the biological weapons field, namely the BioWeapons Prevention Project (BWPP) and the Sunshine Project. The latter survey was written by a representative of the project.

The Handbook includes an extensive appendix, which contains a glossary of key terms, a list of links, and a select bibliography for each country, as well as a list of the experts involved.

### METHODOLOGY

The surveys were compiled in a three-step procedure:

First, open-source material was collected from online resources, publicly available government papers, workshops, and conference proceedings. This information was used to write a first draft of the country and international organization surveys. However, the availability of open-source information, and especially the availability of documents on the internet, varies considerably in quantity and quality from country to country. Additionally, much of the relevant information is only available in the original language.

The second and most important step was the collaboration with experts from government and government-related organizations in the field. The experts were asked to correct, complete, and update the draft surveys.<sup>26</sup> Without the invaluable and generous support of these experts, this work would not have been possible. We tried to include all the opinions of the persons contacted. In the final version, however,

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26 Participating experts are mentioned at the beginning of each survey and in the list of experts in the appendix.

the Handbook represents solely the authors' views and interpretations, and the content remains their responsibility.

Finally, all of the experts' input was worked into the final version of the surveys. Since expert input was crucial for all country surveys, it is obvious that the individual perspectives and viewpoints of the consulted experts had a significant impact on the end result.

This publication is freely available in full text on the internet at <http://www.crn.ethz.ch/>. We kindly ask the reader to inform us of any inaccuracies or to submit any comments regarding the content, or the Handbook in general.<sup>27</sup>

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27 Please send an e-mail to: [bonin@sipo.gess.ethz.ch](mailto:bonin@sipo.gess.ethz.ch)







**PART ONE**

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**COUNTRY SURVEYS**



# FRANCE<sup>1</sup>

## FRANCE'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

In 1925, at the Geneva Conference for the Supervision of the International Trade in Arms and Ammunition, France proposed the prohibition of the use of poisonous gases, which has since been extended to apply also to the use of biological weapons, following a request by Poland. Accordingly, France became the depositary state of the protocol, which it ratified in 1926. From 1996 on, France no longer reserved the right to use such weapons in reprisal – a caveat that it had appended to the protocol upon ratifying. In addition, France ratified the Biological and Toxin Weapons Convention (BTWC) in 1984, and is a member of the Australia Group and the Wassenaar Arrangement. Together with its EU partners, France is committed to the adoption of a monitoring mechanism to the BTWC.

France has experienced several terrorist incidents during the past 15 years, carried out by Corsican nationalists and international Muslim extremists. Until now, no biological attack has taken place in France. In October 2001, thousands of suspected anthrax letters circulated in the country, all of which were fake, but their appearance, as well as experiences made with SARS, allowed for the evaluation and improvement of French biodefense capacities.

France considers the fight against terrorism a top priority. Specifically, terrorism involving the use of devastating mass casualty weapons is a major concern for all kinds of public agencies. "Faced with the threat

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1 The country survey on France was reviewed by Christian Sommade, Haut Comité Français pour la Défense Civile (HCFDC).

posed by biological weapons, France's approach is based on recognition of the unique nature of these weapons, and notably the potentially dual nature of research activities in biology. [...] It is [...] necessary to be able to respond to the consequences of a biological attack."<sup>2</sup>

The general framework guiding the French response to a biological incident is outlined in the so-called Biotox plan. It includes operational aspects defining responsibilities and initial responses as well as provisions for dealing with various biological agents and their specific consequences. In general, the management of a bioterrorist attack and its consequences is considered to be similar to that of a major epidemic.<sup>3</sup>

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

France has a strong centralistic approach and a constitution that gives the administration in Paris wide-ranging authorities. However, some of the tasks related to biodefense are handled on the regional level, such as health and civil security. National biodefense activities are coordinated by the General Secretariat of National Defense (SGDN). In the public health sector, the General Directorate of Health (DGS) has the strategic lead.

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2 Déléation à l'Information et à la Communication de la Défense / DICoD (2005): Lutte contre la prolifération, maîtrise des armements et désarmement: L'action de la France. February 2005, p. 34. [http://www.diplomatie.gouv.fr/actual/pdf/maitrise\\_armement.pdf](http://www.diplomatie.gouv.fr/actual/pdf/maitrise_armement.pdf) [January 2007].

3 [http://www.sante.gouv.fr/htm/actu/g7bioterrorisme\\_101204/fiche7.htm](http://www.sante.gouv.fr/htm/actu/g7bioterrorisme_101204/fiche7.htm) [January 2007].

## PUBLIC HEALTH

### GENERAL DIRECTORATE OF HEALTH (DGS)

The General Directorate of Health (DGS)<sup>4</sup> is responsible for the overall coordination and evaluation of French public health policy. It ensures public health preparedness in order to limit the consequences of a deliberate, accidental, or natural outbreak of infectious diseases and is in charge of communicating related information to the public. Within the framework of the Biotox plan, the main governmental arrangement to fight biological risks, the DGS has elaborated response plans against anthrax, plague, tularemia, and smallpox outbreaks. In addition, it decides on the kind, quantity, and storage of vaccines, and organizes their distribution as well as the partial vaccination of first responders.<sup>5</sup> In summer of 2003, the French minister of health appointed a “Biotox coordinator,” located within the DGS, which is responsible for coordination within and between ministries, of the plan.<sup>6</sup>

### NATIONAL INSTITUTE FOR PUBLIC HEALTH SURVEILLANCE (INVS)

The National Institute for Public Health Surveillance (InVS)<sup>7</sup> is a public agency under the supervision of the Ministry of Health. Its duties are to monitor the health of the population and to alert public authorities in case of emerging public health threats. InVS mobilizes, leads, and coordinates a network for public health and disease surveillance made up of government departments, health agencies, and other public and private institutions involved in health surveillance. It is assisted by 46 national reference centers (CNR) and 16 regional epidemiology bureaus

4 <http://www.sante.gouv.fr/>

5 Direction générale de la Santé (2003): Rapport d'activité 2003. <http://www.sante.gouv.fr/ministere/RA-DGS.pdf> [January 2007].

6 Assemblée Nationale (2003): Rapport d'information sur le bioterrorisme, N° 1097. Présenté par M. Pierre Lang. 30 September 2003. <http://www.assemblee-nationale.fr/12/pdf/rap-info/i1097.pdf> [January 2007].

7 <http://www.invs.sante.fr/>

(CIRE). InVS collects and analyses this epidemiological data as a basis for defining public health priorities and developing preventive or emergency guidelines. In addition, InVS monitors the status of vaccination coverage in France and evaluates the national vaccination policy accordingly. Since the new public health law was introduced in 2004, InVS is also mandated to contribute to the management of health emergencies.<sup>8</sup>

Within InVS, the Department of Infectious Disease is responsible for the aforementioned surveillance activities. The Department of Environmental Health contributes to the development, implementation, and evaluation of environmental health policies, especially the identification and characterization of risk factors and situations. The Department of Occupational Health is responsible for the epidemiologic surveillance of occupational risks and promotes the development of disease surveillance activities in companies. The Department of Training and Documentation provides training programs to field epidemiology teams in order to build a common scientific culture and to achieve consistency. Finally, the Alert Coordinating Unit is responsible for the cross-sectional management of the Biotox plan and for responding to vague alerts of undetermined origin. It works in liaison with all of InVS's departments, manages the surveillance system for non-specific events based on emergency room and mortality data, and produces a daily alert bulletin.<sup>9</sup>

#### DIRECTORATE OF HOSPITALIZATION AND ORGANIZATION OF CARE (DHOS)

The Directorate of Hospitalization and Organization of Care (DHOS)<sup>10</sup> is tasked with the management of various kinds of health establishments in France. It organizes and optimizes public and private health services, assures the quality and security of the health system, and is responsible for

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8 National Institute for Public Health Surveillance (2003): Annual Report 2003. [http://www.invs.sante.fr/publications/2005/annual\\_report\\_2003/annual\\_report\\_2003.pdf](http://www.invs.sante.fr/publications/2005/annual_report_2003/annual_report_2003.pdf) [January 2007].

9 National Institute for Public Health Surveillance (2004): Annual Report 2004. [http://www.invs.sante.fr/publications/2005/annual\\_report\\_2004/annual\\_report\\_2004.pdf](http://www.invs.sante.fr/publications/2005/annual_report_2004/annual_report_2004.pdf) [January 2007].

10 <http://www.sante.gouv.fr/>



financial regulations in that sector. Concerning exceptional risks such as a release of chemical, biological, radiological, and nuclear (CBRN) substances, the DHOS evaluates and ensures the preparedness of hospitals and other health institutions by elaborating crisis guidelines. Specifically, DHOS has identified nine “reference” hospitals that are responsible for maintaining public health services and handling mass fatalities within their area of responsibility in the event of a crisis.<sup>11</sup> These hospitals are especially equipped to handle victims of a CBRN incident and have decontamination and other important utilities at their disposal.

### HEALTH PRODUCTS SAFETY AGENCY (AFSSAPS)

The Health Products Safety Agency (AFSSAPS)<sup>12</sup> controls the quality of health products and ensures that therapeutic needs are covered. It evaluates these products, inspects relevant sites, and controls laboratories. Additionally, AFSSAPS monitors restrictions on the use, production, conversion, application, import, export, possession, transfer, acquisition, and transport of certain pathogens. All of these operations must be authorized by the director-general of the AFSSAPS and must be entered into a special register. The holders of such permits are required to provide an annual report summarizing the quantities of biological agents they have acquired, transferred, or stockpiled.<sup>13</sup> In the framework of the Biotox plan, AFSSAPS (together with DHOS) has issued recommendations on the treatment of people exposed to chemical or biological agents.

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 11 Assemblée Nationale (2003): Santé et personnes handicapées, N° 1111. Présenté par M. Michel Heinrich. 9 Octobre 2003. <http://www.assemblee-nationale.fr/12/pdf/budget/plf2004/a1111-11.pdf> [January 2007].

12 <http://afssaps.sante.fr/>

13 [http://www.opbw.org/new\\_process/mx2003/bwc\\_msp.2003\\_mx\\_wp18.pdf](http://www.opbw.org/new_process/mx2003/bwc_msp.2003_mx_wp18.pdf) [January 2007].

### NATIONAL INSTITUTE OF RESEARCH AND SECURITY (INRS)

The National Institute of Research and Security (INRS)<sup>14</sup> is responsible for ensuring health and safety at work and for preventing occupational accidents and diseases. Its activities come under the purview of the National Health Insurance Fund for Salaried Employees (CNAMTS) and the policy of the Ministry of Employment, Social Cohesion, and Housing. Specifically, the ministry's Directorate of Labor Relations (DRT) is in charge of the national policy for preventing accidents at the workplace and issues regulations in this field. The INRS conducts study and research programs to anticipate future prevention needs, provides information to the public in order to raise awareness of biological hazards, and offers technical assistance. The use of dangerous chemical and biological substances must be declared to the INRS, which collects this information, assesses the potential risk, and provides medical assistance upon request. The INRS also conducts epidemiological studies on adverse health effects due to occupational exposures. In 2002, the INRS produced a guide entitled "Biotox", which lists an inventory of laboratories carrying out biological analyses and provides an overview of theoretical and practical aspects of biological exposure monitoring.<sup>15</sup>

### GENERAL DIRECTORATE OF ALIMENTATION (DGAL)

The General Directorate of Alimentation (DGAL; see also Animal Health)<sup>16</sup> is subordinated to the Ministry of Agriculture. It is tasked with day-to-day monitoring of the quality and security of the entire food chain. This includes the elaboration and control of regulations, monitoring of the country's territory and borders, the establishment of alert mechanisms, and the granting of food-related export licenses.

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14 <http://en.inrs.fr/>

15 INRS (2002): Biotox - Guide biotoxologique pour les médecins du travail. [http://en.inrs.fr/inrs-pub/inrs01.nsf/IntranetObject-accesParReference/ED%20791/\\$File/ED791.pdf](http://en.inrs.fr/inrs-pub/inrs01.nsf/IntranetObject-accesParReference/ED%20791/$File/ED791.pdf) [January 2007].

16 [http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation\\_a4572.html](http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation_a4572.html) [January 2007].

## FOOD SAFETY AGENCY (AFSSA)

The Food Safety Agency (AFSSA)<sup>17</sup> assesses health-related and nutritional risks that may arise from food, drinking water, or animal feed and provides the government with expert advice in this field. The agency covers all sectors of the food industry and monitors all sorts of food destined for human or animal use, including genetically modified foodstuff. This applies to all stages of the food chain, from production through to consumption. The research activities carried out by the agency's 12 laboratories are in the areas of animal health, hygiene, food quality and safety, hydrology, and medicine.

AFSSA also assesses the risks to humans stemming from animal diseases. For instance, AFSSA has conducted a risk assessment on the development of animal infections with regard to the prospect of global warming, which might have a direct impact on the transmission of animal diseases.<sup>18</sup> Additionally, the agency's laboratory at Ploufragan is the national reference center for avian influenza. It conducts monitoring and research in this field and develops vaccines.<sup>19</sup>

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### GENERAL SECRETARIAT OF NATIONAL DEFENSE (SGDN)

The General Secretariat of National Defense (SGDN)<sup>20</sup> deals with matters related to national and international security. It is directly subordinated to the prime minister and assists him or her in coordinating the preparation, implementation, and follow-up of the government's decisions regarding defense and security policy, including defensive measures against a release of CBRN substances.

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17 <http://www.afssa.fr/>

18 AFSSA (2005): Annual Report 2004-2005. [http://www.afssa.fr/ra/PDFs\\_uk/ra\\_pdf\\_UK.pdf](http://www.afssa.fr/ra/PDFs_uk/ra_pdf_UK.pdf) [January 2007].

19 [http://www.grippeaviaire.gouv.fr/article.php3?id\\_article=157](http://www.grippeaviaire.gouv.fr/article.php3?id_article=157) [January 2007].

20 [http://www.premier-ministre.gouv.fr/acteurs/premier\\_ministre/services-premier-ministre\\_195/secretariat-general-defense-nationale\\_328/](http://www.premier-ministre.gouv.fr/acteurs/premier_ministre/services-premier-ministre_195/secretariat-general-defense-nationale_328/) [January 2007].

In particular, the SGDN has the lead in coordinating interministerial efforts in the fight against CBRN terrorism. It is tasked with the elaboration of the government's contingency plans for major risks and crises, which includes risk assessments and the planning of preventive and reactive measures. Among the concepts elaborated by the SGDN are plans that form part of the nation's general "Vigipirate" alert and response system, such as the abovementioned Biotox plan (see initiatives section) or the Piratox plan, which addresses chemical hazards, but the SGDN is also involved in plans to fight avian influenza. Furthermore, the SGDN is responsible for the practical implementation of these concepts.

Additionally, the SGDN is tasked with the protection of critical information infrastructures and the coordination of the High Functionaries of Defense (HFD), and heads the Interministerial Commission for the Study of Military Equipment Exports (CIEEMG).

#### DIRECTORATE OF CIVIL DEFENSE AND SECURITY (DDSC)

The Directorate of Civil Defense and Security (DDSC)<sup>21</sup> operates under the responsibility of the Ministry of the Interior. It steers and coordinates the following activities across governmental agencies:

- Preparation, coordination, and implementation of civil defense and emergency preparedness measures in peacetime and during times of crisis;
- Maintenance of civil protection services; i.e., support for local emergency and fire departments and drafting legislation governing these services;
- Provision of information on civil protection; and
- Training of fire-fighters, which form the basis of the French civil protection system.

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21 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/defense\\_et\\_securite\\_civiles/presentation](http://www.interieur.gouv.fr/sections/a_1_interieur/defense_et_securite_civiles/presentation) [October 2006].

Within the DDSC, the Sub-Directorate for the Management of Risks (SDGR) is involved in the prevention, preparedness, and response to major incidents.<sup>22</sup> It prepares, steers, and coordinates emergency actions, and conducts risk assessments and research. The SDGR is in charge of administering the nation's defense districts, coordinates civil and military emergency resources, and acts as an interface with the armed forces and police services. This subdivision also prepares and implements measures to combat nuclear, radiological, biological, and chemical hazards and threats.

In addition, the *Interministerial Operational Crisis Management Center (COGIC)*<sup>23</sup> is attached to this subdivision. COGIC permanently monitors potential threats, ensures (crisis) communication with the cabinet of ministers, proposes intervention measures in case of an emergency, and coordinates the ensemble of measures and resources across government and private stakeholders.

The Sub-Directorate for Fire-Fighters and Security Actors (SDSPAS) is responsible for the departmental fire and emergency service directors, fire brigade officers, members of the health and emergency medical services, and civilian service personnel and volunteers. It conducts studies and provides information required to improve the emergency services. It takes part in drafting legislation pertaining to the status of professional and volunteer fire workers, as well as civilian volunteers. The DDSC also maintains the National School for Fire-Fighter Officers (ENSOSP)<sup>24</sup> in Aix, which is responsible for the education and training of fire-fighters and other first responders.

Finally, the DDSC's Sub-Directorate of Operational Services (SDSO) is responsible for maintaining the territorial services of the civil security system. Equipped with helicopters, water bombers, and de-mining utilities, the SDSO participates in emergency operations

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 22 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/defense\\_et\\_securite\\_civiles/gestion-risques](http://www.interieur.gouv.fr/sections/a_1_interieur/defense_et_securite_civiles/gestion-risques) [November 2006].

23 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/defense\\_et\\_securite\\_civiles/gestion-risques/cogic](http://www.interieur.gouv.fr/sections/a_1_interieur/defense_et_securite_civiles/gestion-risques/cogic) [October 2006].

24 <http://www.ensosp.fr/>

in hazardous situations as well as emergency sanitary evacuations, and coordinates countermeasures against forest fires.<sup>25</sup>

### URGENT MEDICAL SERVICES (SAMU)

The Urgent Medical Services (SAMU)<sup>26</sup> is the organization responsible for emergency medical assistance in France, and ensures an appropriate pre-hospital medical response to major crises involving many victims. In collaboration with hospitals, SAMU provides medical advice, ambulance services, and training of health personnel, and maintains several emergency call centers. Additionally, it participates in the elaboration of response plans dealing with major hazards.

The Hospital Mobile Intensive Care Units (SMUR) are the most potent means of action at the disposal of SAMU. Medically, administratively, and financially, the SMUR are hospital units, which operate in close collaboration with the hospital departments responsible for the reception of emergency patients. The SMUR provide medical life support services for serious casualties of major accidents or disasters.<sup>27</sup>

In June 2003, SAMU conducted an exercise aimed at training the response to a release of CBRN substances. It included the identification of syndromes and agents, the establishment of cordons, and the transport, decontamination, and treatment of patients. A further aim was to test procured equipment, such as personal protection suits, treatment tents, and decontamination showers.

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25 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/defense\\_et\\_securite\\_civiles/services-operationnels](http://www.interieur.gouv.fr/sections/a_1_interieur/defense_et_securite_civiles/services-operationnels) [October 2006].

26 <http://www.samu-de-france.com/>

27 [http://www.samu-de-france.fr/en/System\\_of\\_Emergency\\_in\\_France\\_MG\\_0607](http://www.samu-de-france.fr/en/System_of_Emergency_in_France_MG_0607) [November 2006].

## NATIONAL SECURITY

### NATIONAL POLICE

Generally, the French National Police is responsible for investigating minor crimes and for the maintenance of public order. The following entities are affiliated with the National Police and have responsibilities in the area of biodefense:

The *Directorate of Territorial Surveillance (DST)*<sup>28</sup> is the French domestic intelligence service, subordinated to the Ministry of the Interior. DST is responsible for foreign threats on French soil that endanger the security of the country. Specifically, it has the mission to fight espionage, terrorism, and organized crime, but also to act against the proliferation of weapons of mass destruction, including biological weapons.

The *General Intelligence Directorate (DCRG)*<sup>29</sup> of the National Police is a central repository of information related to prevention and suppression of terrorism and monitors groups that are considered to constitute threats to national security.

The *Central Intervention Detachment (DCI)* was founded in 1995 in order to fight nuclear terrorism. Its responsibilities were later expanded to include related biological and chemical risks. In an emergency, it would be tasked with the localization, examination, and neutralization of hazardous CBRN devices. The DCI is an interministerial operational intervention unit that is headed by the chief of the elite police intervention unit (RAID) and composed of representatives of the Ministry of the Interior, the Ministry of Defense, and the Ministry of Economy, Finance, and Industry.<sup>30</sup>

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28 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/dst](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/dst) [November 2006].

29 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/dcrg](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/dcrg) [November 2006].

30 <http://raid.admin.free.fr/presentation.htm> [November 2006].

Furthermore, the director general of the National Police has the authority over the *Anti-Terrorist Coordination Unit (UCLAT)*. UCLAT ensures the exchange of information in the field of counterterrorism between all relevant actors, namely the DST, the DCPJ, the DCRG, and the DGSE (see below).

Finally, the *Central Criminal Investigation Directorate (DCPJ)*,<sup>31</sup> also known as the Judicial Police, combats organized and specialized crimes, such as economic, technical, or scientific criminal offenses. The DCPJ's National Anti-Terrorist Division (DNAT) has the mission to detect and prevent subversive and terrorist activities within France. Its Central Office for the Repression of Arms Trafficking (OCRTAEMS) is charged with the coordination of the fight against activities related to the production, storage, trade, or use of illegal arms and hazardous materials, such as biological pathogens or poisonous substances.

#### NATIONAL GENDARMERIE

The French National Gendarmerie<sup>32</sup> is a military force under the authority of the Ministry of Defense. The latter exerts control over the gendarmerie's organization, budget, human resources, and military duties. However, the Ministry of the Interior has responsibility for the gendarmerie's activities pertaining to internal security.

As part of the mobile gendarmerie, a specialized CBRN unit ("Cellule NRBC") was created in 2001 that maintains an around-the-clock capability for implementing specific safety measures at short notice.<sup>33</sup> It has the mission to:

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31 [http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/dcpj](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/dcpj) [November 2006].

32 <http://www.defense.gouv.fr/sites/gendarmerie/> [January 2007].

33 Assemblée Nationale (2003): Rapport d'information sur le bioterrorisme, N° 1097. Présenté par M. Pierre Lang, 30 Septembre 2003, pp. 38-40. <http://www.assemblee-nationale.fr/12/pdf/rap-info/i1097.pdf> [January 2007].



- Ensure the safety of major governmental bodies working in contaminated areas, such as other specialized gendarmerie units;
- Control individual or collective violence in contaminated areas; and to
- Control the safety cordons around a contaminated zone.

Another service within the mobile gendarmerie, the Intervention Group of the National Gendarmerie (GIGN), is tasked with handling high-risk security threats, including interventions following a terrorist attack (hostage-taking, airplane hijacking, etc.).

#### GENERAL DIRECTORATE OF EXTERNAL SECURITY (DGSE)

The General Directorate of External Security (DGSE) is France's external intelligence agency, subordinated to the Ministry of Defense. The DGSE collects raw electronic and military intelligence and is responsible for counterterrorism and counterespionage outside of France. In the field of counterterrorism, it has the mission to assess the capabilities of terrorist networks and groups, and to reduce vulnerability by anticipating and meeting the existing threats. The DGSE can mobilize substantial operational means in foreign countries in order to act directly against terrorists.<sup>34</sup> Apart from the DGSE, the Military Intelligence Directorate (DRM), the Directorate of Defense Protection and Security (DPSD), and the General Directorate of the National Gendarmerie (DGGN) are tasked with related responsibilities.

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34 Ministry of Defense (2005): *Defence Against Terrorism – A top priority of the Ministry of Defence*. October 2005. [http://www.defense.gouv.fr/portal\\_repository/1706024234\\_\\_0001/fichier/getData](http://www.defense.gouv.fr/portal_repository/1706024234__0001/fichier/getData) [January 2007].

INTERMINISTERIAL COMMITTEE FOR THE FIGHT  
AGAINST TERRORISM (CILAT)

The Interministerial Committee for the Fight against Terrorism (CILAT) is responsible for the political coordination of French counter-terrorism policy. It coordinates the activities of all relevant ministries involved in the fight against terrorism and meets at least twice a year. CILAT is chaired by the minister of the interior and includes the ministers of defense, justice, and foreign affairs, as well as high-ranking representatives of the prime minister's office and the president.<sup>35</sup>

MILITARY DEFENSE AND RESEARCH

FRENCH ARMED FORCES

Besides the army's contribution to fighting CBRN terrorism through the National Gendarmerie and the DGSE, the French military also maintains several research centers and a specialized CBRN defense unit. CBRN defense is mainly the responsibility of the ground forces. In extreme cases of a release of CBRN substances, the armed forces assist the civilian authorities and rescue departments by providing specific capacities, ranging from screening devices, decontamination, and treatment equipment to personnel assistance.<sup>36</sup>

The *2<sup>nd</sup> Dragoons Regiment*<sup>37</sup> is the land forces' specialized CBRN unit, established in July 2005. It has the mission to prevent and handle military or technical incidents involving nuclear, biological, or chemical substances. In addition, the regiment would ensure the restoration of the operational capacities of other military units exposed to a CBRN attack. The *2<sup>nd</sup> Dragoons Regiment* is equipped with armored recon-

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35 <http://cubitus.senat.fr/rap/199-069/199-0691.pdf> [January 2007].

36 Ibid.

37 [http://www.defense.gouv.fr/sites/terre/decouverte/presentation\\_de\\_l\\_armee\\_de\\_terre/armes\\_et\\_composantes/arme\\_blindee\\_cavalerie/2e\\_regiment\\_de\\_dragons/](http://www.defense.gouv.fr/sites/terre/decouverte/presentation_de_l_armee_de_terre/armes_et_composantes/arme_blindee_cavalerie/2e_regiment_de_dragons/) [January 2007].

naissance and decontamination vehicles, with tools for the detection, identification, and assessment of relevant substances, and with individual protection equipment.

This equipment is evaluated and procured by the *Arms Procurement Agency (DGA)*<sup>38</sup> of the armed forces. The DGA also maintains the Le Bouchet Research Center (CEB) as well as a specialized team that can sample war toxins at short notice in order to ensure that the link is established between civilian and military CBRN resources.

In addition, the *1<sup>st</sup> Medical Regiment* maintains CBRN-protected field units in order to decontaminate casualties and provide them with urgent medical treatment.

French troops are trained in CBRN defense at the *Center for Nuclear, Biological, and Chemical Defense (CDNBC)*.<sup>39</sup> The center instructs active and reservist personnel of the ground forces, as well as members of the Gendarmerie. The CDNBC's mission is to:

- Educate CBRN specialists and to ensure that CBRN-related knowledge is disseminated within the ground forces;
- Participate in the elaboration of a CBRN doctrine;
- Contribute to the evaluation of CBRN defense equipment and to document its proper usage;
- Assure coherence of CBRN doctrine, organization, equipment, and training of the armed forces; and to
- Establish international contacts with relevant actors and institutions.

#### LE BOUCHET RESEARCH CENTER (CEB)

The Le Bouchet Research Center (CEB) is a research facility of the armed forces, subordinated to the Arms Procurement Agency (DGA)

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38 <http://www.defense.gouv.fr/sites/dga/> [January 2007].

39 <http://www.cofat.terre.defense.gouv.fr/Cofat%5F/Decouverte/ODF/Specialisees/CDNBC/> [January 2007].

and entirely financed by the Ministry of Defense. It is the military's center of expertise for matters concerning the protection of the armed forces against nuclear, radiological, biological, and chemical weapons. To some extent, the CEB's activities are also relevant for civilian purposes. The center's defense program against biological agents has the following objectives:<sup>40</sup>

- The evaluation of risks and threats;
- The detection and identification of biological agents;
- Protection against these agents; and
- The decontamination of people and areas following an attack.

The CEB is equipped with a BSL-2 and a BSL-3 facility. Research is limited to bacteria and does not cover viruses, except for the influenza virus. In addition, the CEB advises the Ministry of Defense and the Ministry of Foreign Affairs on technical questions related to disarmament and arms control.

#### RESEARCH CENTER OF THE ARMED FORCES' HEALTH SERVICE (CRSSA)

The Research Center of the Armed Force's Health Service (CRSSA)<sup>41</sup> addresses issues concerning the medical protection against CBRN risks and is the official French reference laboratory for smallpox.<sup>42</sup> It is one of the two laboratories (the other being the CEB) designated to test all biological samples of potential terrorist origin under the Biotox plan. The CRSSA's research deals with the biological effects of certain agents on humans and treatment of the same; with (emerging) infectious diseases; with decontamination issues, and with the detection of biological agents

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40 French Confidence Building Measures (CBMs) under the BTWC, 16 July 2002.

41 [http://www.defense.gouv.fr/sites/sante/enjeux\\_defense/le\\_soutien\\_des\\_forces/la\\_recherche/les\\_etablissements\\_de\\_recherche/le\\_centre\\_de\\_recherche\\_emile\\_parde/](http://www.defense.gouv.fr/sites/sante/enjeux_defense/le_soutien_des_forces/la_recherche/les_etablissements_de_recherche/le_centre_de_recherche_emile_parde/) [January 2007].

42 *Institute de Veille Sanitaire* (2001): *Utilisation du virus de la variole comme arme biologique*. [http://www.invs.sante.fr/publications/variole\\_2001/variole\\_vf.pdf](http://www.invs.sante.fr/publications/variole_2001/variole_vf.pdf) [January 2007].

and toxins in the air and on surface. Additionally, the CRSSA develops training modules for military and civil emergency health personnel, the SAMU, and military schools.

## CIVILIAN RESEARCH AND LABORATORIES

### INSTITUT PASTEUR

The Institut Pasteur<sup>43</sup> is nominally a private, non-profit organization and one of the principal actors in France conducting research on infectious diseases. Generally, it has the following responsibilities and tasks:

- To participate in microbiological surveillance;
- To provide laboratory capacities and personnel in order to identify and monitor specific diseases and agents;
- To provide experts, which contribute to the elaboration of a preventive and therapeutic strategy;
- To offer training and courses on important public health issues; and
- To conduct scientific research aiming at the development of vaccines and other therapeutic means.

Within the framework of the Biotox plan, the Institut Pasteur has established collaboration with relevant military actors and assists the national defense authorities in obtaining an effective bank of microbiological strains. Furthermore, several units of the institute conduct upstream research for the detection and identification of pathogenic agents, and contribute to the development of vaccines against anthrax, plague, botulism, and viral hemorrhagic fevers.<sup>44</sup> Specifically, the Microbial

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43 <http://www.pasteur.fr/>

44 Institute Pasteur (2004): Activities 2003. [http://www.pasteur.fr/recherche/RAR/RAIP2003/en/activites2003\\_en.pdf](http://www.pasteur.fr/recherche/RAR/RAIP2003/en/activites2003_en.pdf) [January 2007].

Pathogenesis Department investigates the mechanisms whereby microbiological substances influence the host physiology. The department develops tools to detect and identify pathogens, and develops therapeutic and prophylactic strategies to fight them.

The institute's Emergency Biological Intervention Unit (CIBU), established in 2002, provides resources for emergency measures in the event of an epidemic or a bioterrorist attack. The unit consists of experts prepared to support specialist laboratories in various epidemiological situations and to ensure quick molecular identification of pathogenic substances.<sup>45</sup> Accordingly, 20 of the 45 reference laboratories in France operate under the auspices of the Institut Pasteur.

The institute also maintains the Center of Biological Resources, which is responsible for maintaining and updating the institute's bacteria collection and for gathering information about distributed strains. It holds over 7,800 strains of more than 2,200 different species. The center also holds bacterial collections from outside laboratories.<sup>46</sup>

#### LABORATOIRE JEAN MÉRIEUX

The Laboratory Jean Mérieux<sup>47</sup> is a BSL-3 and BSL-4 research center pursuing activities in the areas of biosafety and biosecurity. It is administered by the French National Institute of Health and Medical Research (INSERM). The laboratory does not carry out research itself, but supplies and maintains the necessary infrastructure to be used by various research teams, such as specialized research units of universities, the armed forces, or the Institut Pasteur. The latter is also responsible for the scientific direction of the laboratory. The laboratory has the following main objectives:<sup>48</sup>

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45 Ibid.

46 Ibid.

47 <http://www.cervi-lyon.inserm.fr/>

48 <http://www.cervi-lyon.inserm.fr/Presentation/PresentationGB.htm> [January 2007].

- To ensure the maintenance and security of the BSL-4 buildings and to train employees accordingly;
- To monitor and diagnose known and emerging pathogenic agents released naturally or deliberately;
- To accommodate permanent or temporary scientific teams working on research programs for specific pathogens;
- To manage the national bank of class-4 germs; and
- To collaborate with BSL-4 laboratories around the world.

## NATIONAL ECONOMY

### INTERMINISTERIAL COMMISSION FOR THE STUDY OF EXPORTS OF WAR MATERIALS (CIEEMG)

The Interministerial Commission for the Study of Exports of War Materials (CIEEMG) is chaired by the General Secretariat of National Defense (SGDN) and composed of representatives from the Ministry of Foreign Affairs, the Ministry of Defense, and the Ministry of the Economy, Finance, and Industry. The final decision on granting export permits rests with the prime minister, who acts on the advice of the CIEEMG. The control process is twofold: Prior to signing an export contract, exporters are required to obtain authorization from the SGDN acting on behalf of the prime minister. Thereafter, the director-general of the Customs Service must grant an export permit, which in turn requires prior approval by the Ministry of Defense, the Ministry of Foreign Affairs, the Ministry of the Economy, Finance and Industry, and the SGDN. Moreover, the Ministry of Defense may initiate an investigation by the security services.<sup>49</sup>

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49 Délégation à l'Information et à la Communication de la Défense / DICoD (2005): Lutte contre la prolifération, maîtrise des armements et désarmement: L'action de la France. February 2005. [http://www.diplomatie.gouv.fr/actual/pdf/maitrise\\_armement.pdf](http://www.diplomatie.gouv.fr/actual/pdf/maitrise_armement.pdf) [January 2007].

## ANIMAL HEALTH

### GENERAL DIRECTORATE OF ALIMENTATION (DGAL)

The General Directorate of Alimentation (DGAL; see also Public Health),<sup>50</sup> in addition to its duty to monitor the quality and security of food, is charged with the surveillance of animal health and protection. Particularly, the DGAL's Sub-Directorate of Animal Health and Protection (SDSPA) is tasked with monitoring and fighting epidemics of animal diseases. The SDSPA's responsibilities also include monitoring veterinary pharmaceuticals, the safety and quality of animal food, and animal transports.

In its activities in the area of animal health, DGAL is supported by the *Departmental Directorates of Veterinary Services (DDSV)*.<sup>51</sup> The DDSV have the following missions in their respective region:

- The protection of public health by monitoring animal diseases that may be communicated to humans, and by enforcing hygiene regulations in order to prevent the contamination of food;
- Monitoring the health of animals, and controlling their export and import; and
- The protection of the environment with respect to the agricultural food industry.

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50 [http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation\\_a4572.html](http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation_a4572.html) [January 2007].

51 [http://www.agriculture.gouv.fr/spip/leministere.lesorganigrammes.lesservicesdeconcentres.presentationdesmissionsdesservicesdeconcentres\\_a550.html](http://www.agriculture.gouv.fr/spip/leministere.lesorganigrammes.lesservicesdeconcentres.presentationdesmissionsdesservicesdeconcentres_a550.html) [January 2007].



## ENVIRONMENTAL PROTECTION

### DIRECTORATE FOR THE PREVENTION OF POLLUTION AND RISKS (DPPR)

The Directorate for the Prevention of Pollution and Risks (DPPR)<sup>52</sup> is subordinated to the Ministry of Ecology and Sustainable Development (MEDD). It is tasked with the assessment and prevention of industrial and major natural risks involving hazardous substances. The DPPR monitors the categorization of industrial sites and issues measures with regard to environmental protection. In the case of an incident, the DPPR is responsible for the decontamination of polluted sites. In addition, the DPPR constantly monitors the air quality and is responsible for waste management. Furthermore, it has certain responsibilities in the field of genetically-modified organisms.

### NATIONAL INSTITUTE OF THE INDUSTRIAL ENVIRONMENT AND RISKS (INERIS)

The National Institute of the Industrial Environment and Risks (INERIS)<sup>53</sup> is a public research body under the supervision of the Ministry of Ecology and Sustainable Development (MEDD). Its mission is to assess and prevent accidental and chronic risks to people and the environment originating from industrial activities, hazardous substances, and underground work. Specifically, INERIS' aims are:<sup>54</sup>

- Accurate measurement of the concentration of pollutants in the air, soil, and water;
- Measurement and assessment of human exposure to hazardous substances;
- Determination of the long-term biological effects of pollutants;

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52 [http://www.ecologie.gouv.fr/article.php3?id\\_article=1290](http://www.ecologie.gouv.fr/article.php3?id_article=1290) [January 2007].

53 <http://www.ineris.fr/>

54 <http://www.ineris.fr/index.php?module=doc&action=getFile&cid=2053> [January 2007].

- Assessment of the risks associated with contaminated sites and identification of the means of recovery;
- Assessment of the risks associated with the transport of hazardous substances; and
- Training in the field of risk prevention and environment protection.

INERIS acts as technical and scientific advisory body to public authorities, and its activities support decision-making processes of government officials and risk prevention managers.

## PAST AND PRESENT INITIATIVES AND POLICIES

### BIOTOX PLAN

The classified Biotox plan, a first version of which dates back to 2001, is intended to counter acts of biological terrorism. These involve the hostile use or threat of use of infectious biological agents or toxins against human beings, animals, or the environment. The plan takes into account the possibility of deliberate contamination of drinking water supply networks, as well as of the food and pharmaceutical supply chains. It includes operational aspects defining the initial steps to be taken at the governmental level as well as datasheets summarizing the initial reactions to various scenarios. A major exercise of the Biotox plan took place in 2004.<sup>55</sup> Specifically, the plan covers the following issues:<sup>56</sup>

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55 Délégation à l'Information et à la Communication de la Défense / DICoD (2005): *Lutte contre la prolifération, maîtrise des armements et désarmement: L'action de la France*. February 2005. [http://www.diplomatie.gouv.fr/actual/pdf/maitrise\\_armement.pdf](http://www.diplomatie.gouv.fr/actual/pdf/maitrise_armement.pdf) [January 2007].

56 <http://afssaps.sante.fr/hm/10/piratox/indpira.htm> [January 2007].

- The prevention of biological terrorism;
- Principal agents that can potentially be used as biological weapons;
- The strategic stockpiling of vaccines, antibiotics, and antidotes;
- Surveillance and alert mechanisms;
- The mandatory communication of infectious diseases;
- The network of microbiological and toxicological laboratories, including the assignment of reference laboratories; and
- The reactions of various actors in case of an emergency.

The plan is the result of an interministerial collaboration involving the Ministries of Health, Defense, and the Interior, the first of which holds the main responsibility. The Biotox plan belongs to a series of intervention plans under the heading “Vigipirate”. Other subsidiary contingency plans of Vigipirate include the Piratox plan (Ministry of the Interior) for chemical incidents and the Piratome plan (Ministry of Industry) for nuclear and radiological incidents.

#### HIGH FUNCTIONARY OF DEFENSE (HFD)

The High Functionary of Defense (HFD)<sup>57</sup> is a position found in every French ministry. The HFDs are nominated by their ministry and are responsible, within their ministry, for all questions concerning national defense. Their duty is to:

- Ensure intra- and interministerial coordination;
- Monitor the elaboration of defense plans and their implementation; and to
- Ensure the protection of secrets and the security of information systems.

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57 Haut Fonctionnaire de Défense.

Accordingly, the HFDs are responsible for the coordination of the fight against bioterrorism. The HFDs themselves are coordinated by and in permanent liaison with the General Secretariat of National Defense (SGDN).

#### COMMISSION ON CULTURAL, FAMILY, AND SOCIAL AFFAIRS

The Commission on Cultural, Family, and Social Affairs<sup>58</sup> of the Assemblée Nationale published a report in October 2003 on a French health budget law.<sup>59</sup> The report argued that since the attacks in the US on 11 September 2001, public health policy had entered the new dimension of civil security. Since no preparations had previously been made for such emergency situations, these new developments require serious efforts in terms of resources and performance. Therefore, the report recommended that parts of the budget should be dedicated to cope with health crises. According to the report, the fight against bioterrorism had become a health priority of the government and various measures had been taken within the framework of the Biotox plan. The report stated that French spending on biodefense was insufficient, compared to the situation in the US, and demanded improvements with respect to surveillance and alert mechanisms, communication, training, research, equipment of the health services, and the coordination of activities.

#### NATIONAL DEFENSE AND ARMED FORCES COMMISSION

In September 2003, the National Defense and Armed Forces Commission<sup>60</sup> of the Assemblée Nationale issued an information report

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58 <http://www.assemblee-nationale.fr/12/cr-cafc/05-06/liste.asp> [January 2007].

59 Assemblée Nationale (2003): Santé et personnes handicapées, N° 1111. Présenté par M. Michel Heinrich. 9 Octobre 2003. <http://www.assemblee-nationale.fr/12/pdf/budget/plf2004/a1111-11.pdf> [January 2007].

60 <http://www.assemblee-nationale.fr/12/cr-cdef/05-06/liste.asp> [January 2007].

on bioterrorism.<sup>61</sup> After outlining the nature of the threat, the report describes French measures to fight bioterrorism and their progress. It states that the interdisciplinary character and the various aspects of biodefense require an organization that is efficient horizontally as well as vertically. The report concluded that France had made progress, but had not yet reached the desired capability to cope with the threat, also in terms of public awareness. Finally, the report called for a further strengthening of international cooperation in this area.

#### RESEARCH PROGRAM “MICROBIOLOGIE FONDAMENTALE”

This interdisciplinary fundamental research program in microbiology<sup>62</sup> is pursued and funded by the National Center of Scientific Research (CNRS)<sup>63</sup> in collaboration with other public bodies and ministries. It addresses several questions in microbiology related to human, animal, and environmental health and aims at bringing together various experts working in these differing sectors. The program is organized around five axes:

- Fundamental microbiology;
- Interaction mechanisms between microorganisms and their host;
- Environment;
- Prevention of and defense against releases of pathogenic agents;
- Bioterrorism: detection, prophylaxis, and treatment with respect to various biological agents.

The program started in 2003 and is expected to end in 2007.

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61 Assemblée Nationale (2003): Rapport d’information sur le bioterrorisme, N° 1097. Présenté par M. Pierre Lang. 30 Septembre 2003. <http://www.assemblee-nationale.fr/12/pdf/rap-info/i1097.pdf> [January 2007].

62 <http://www.cnrs.fr/DEP/prg/microbio.htm> [January 2007].

63 <http://www.cnrs.fr/>

MISSION DIDIER RAOULT

In 2002, the Ministry of Research and the Ministry of Health charged Professor Didier Raoult of the University of Marseille with evaluating the preparedness of public health structures in order to prevent and fight infectious threats, including bioterrorism. The final report, published in June 2003, concluded that France had limited capacities in this area and that political efforts and additional financial means were needed to face these risks. Specifically, the report made the following recommendations:<sup>64</sup>

- Enhancement of public awareness;
- Improvement of research, especially with respect to public health;
- Advancing the country's expertise in order to improve the evaluation and anticipation of threats;
- Development of a national surveillance system;
- Improvement of hospital capacities and preparedness;
- Formation of a vaccination policy preceded by a public debate;
- Organization of territorial structures in order to prevent a disease from spreading in case of an outbreak; and
- Improvement of training.

Many of the report's recommendations have since been implemented or are in the process of being implemented. In particular, the preparedness of various actors has increased and the network of reference laboratories has become more sophisticated. The Raoult report still seems to provide the basis for the implementation of a number of activities in the field of biodefense, since frequent reference is made to it.

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64 Rapport de Mission Didier Raoult, 17 June 2003. <http://www.recherche.gouv.fr/rapport/bioterrorisme03.pdf> [January 2007].

## LAWS AND LEGISLATION<sup>65</sup>

Biosecurity	French Health Code	The Health Code regulates the handling of risks stemming from communicable diseases. This includes preparatory measures, responsibilities, vaccination policy, border controls, etc.
	Order of 22 September 2001 (1)	This order amends the French Health Code. It regulates the implementation, import, export, possession, transfer (commercial or non-commercial), acquisition, and transport of certain agents that generate infectious diseases, pathogenic microorganisms, or toxins. Establishments conducting activities in this area are required to obtain an authorization by AFSSAPS.
	Order of 26 April 2002	This order appoints national reference centers for certain pathogens in order to fight communicable diseases.
	Order of 22 September 2001 (2)	This order lists pathogenic microorganisms and toxins and amends the list of poisonous substances that require an authorization to be handled. The list includes anthrax, plague, smallpox, and other substances.
Biosafety	French Health Code	The Health Code regulates the safety and control of biological laboratories. Control is performed by AFSSAPS
	French Labor Code  Order of 18 July 1994	The French Labor Code includes provisions for the pre-vention of biological risks at work. This includes risk assessments, training and information of workers, and special medical surveillance. This law includes a list of pathogenic biological agents and has been amended several times.

65 This chart may not include all relevant laws. It was compiled from the following sources: The laws themselves at <http://www.legifrance.gouv.fr/>; Interpol's website on "Steps taken by member countries in response to UNSCR 1540" - <http://www.interpol.int/Public/BioTerrorism/UnRes1540Laws/>; the Center for Nonproliferation Studies' (CNS) "Comparative Review of Biosecurity-Related Legislation" - <http://cns.miis.edu/research/cbw/biosec/pdfs/biolaw.pdf>; and the BTWC document "BTWC and Related Legislation" BWC/MSP.2003/MX/WP.62, 4 September 2003 - [http://www.opbw.org/new\\_process/mx2003/bwc\\_msp.2003\\_mx\\_wp62.pdf](http://www.opbw.org/new_process/mx2003/bwc_msp.2003_mx_wp62.pdf).

PART ONE: Country Surveys

	Order of 13 August 1996	This order amends the Labor Code and the Health Code. It lays down technical prevention measures, including confinement measures, to be implemented in industry and in teaching and research laboratories where workers are liable to exposure to pathogenic biological agents.
	Decree 94-352 (1994)	The decree issues provisions for the evaluation and prevention of biological risks for certain establishments. It requires training and information of workers as well as monitoring of their health status. Biological agents are classified according to four risk groups. The decree amends the Health and Labor Codes.
	French Environment Code	The Environment Code regulates the contained use of genetically-modified organisms and the release of chemicals into the environment. It also includes provisions for the handling of natural risks.
Criminalization	French Defense Code	The Defense Code prohibits and penalizes the development, production, acquisition, and possession of biological and toxin agents that are not intended for preventive or protective use, and outlaws any assistance for such activities.
	French Penal Code	The Penal Code outlaws violations of the physical integrity of individuals. In addition, it defines acts of terrorism and related penalties.
	Act 2004-204 (2004)	This act amends the French Penal Code and takes into account new forms of crime. It lays out penalties for the diffusion of nuclear, biological, and chemical substances that may be used for destructive devices.
	Act 72-467 (1972)	This act prohibits the development, production, acquisition, and possession of biological and toxic weapons.
Import / Export Controls	Legislative decree of 18 April 1939	This decree lays down the basic principle whereby all exports of defense-related equipment without authorization are prohibited. It also requires prior governmental authorization for producing, trading, and stockpiling defense-related equipments.
	Decree 2001-1192 (2001)	This decree regulates the control of exports, imports, and transfers of dual-use goods and technologies and related authorization requirements. It implements certain aspects of Council Regulation (EC) 1334/2000.
	Order of 13 December 2001	This order regulates the requirements for exports, imports, and transfers of dual-use goods and technologies with respect to EU members and non-members.







# GERMANY<sup>1</sup>

## GERMANY'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

Like its European partners, Germany firmly believes in international cooperation as the best way of coping with the biological threat. Consequently, the country is committed to establishing effective mechanisms to strengthen and verify compliance with the Biological and Toxin Weapons Convention (BTWC). Both the Federal Republic of Germany and the German Democratic Republic ratified the convention in 1972, and Germany ratified the Geneva Protocol in 1929. In addition, it is a member of the Australia Group and a participating state of the Wassenaar Arrangement.

The appearances of fake anthrax letters in Germany in the aftermath of the 11 September 2001 attacks in the US revealed some shortcomings regarding an effective response to a biological attack. The main obstacles were a lack of preparedness and coordination of the first responders and insufficient laboratory capacities for the identification of biological agents. In addition, responsibilities were not clearly delineated between the federal state and the Länder. Since then, several measures have been undertaken such as the elaboration of contingency plans, comprehensive training of relief units, the acquisition of protective and diagnostic equipment, and improved laboratory capacities.<sup>2</sup>

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1 The country survey on Germany was reviewed by two German experts.

2 Böhm, R. and W. Beyer (2003): Bioterroristische Anschläge mit *Bacillus anthracis*: Erfahrungen und Konsequenzen aus den Ereignissen des Jahres 2001. In: Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz, Vol. 46, Nr. 11, pp. 956-964. Heidelberg: Springer.

In general, the fight against terrorism has become a top priority of the federal government.<sup>3</sup> The latest report by the country's domestic intelligence service, the Federal Office for the Protection of the Constitution (BfV), states that terrorist activities continue to pose various levels of threat to Germany's internal security, although the threat to Germany is considered to be lower than that faced by the countries directly involved in the military invasion and occupation of Iraq.<sup>4</sup> Further emphasis is given to non-proliferation efforts, as Germany is considered to be an attractive venue for procuring certain weapons-relevant goods and technologies.<sup>5</sup>

The German government does acknowledge the serious risks posed by the deliberate release of dangerous pathogens and by emerging infectious diseases. Thereby, the country has adopted a wide-ranging conception of biological risks that includes wars, acts of terror, and natural catastrophes. The probability of state use is considered to be very low. Strong emphasis is placed on natural outbreaks of infectious diseases and on the possibility that the threat could acquire a terrorist dimension, with the potential for massive public disruptions.<sup>6</sup> In its third risk report, the Advisory Board for Civil Protection places the risks posed by chemical and biological hazards – especially via accidental and natural incidents – at the top of its risk ranking, and states that such hazards will become even more dominant up until 2016.<sup>7</sup>

3 Cf. [http://www.bmi.bund.de/nn\\_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Bekaempfung\\_des\\_Terrorismus\\_Id\\_93040\\_de.html](http://www.bmi.bund.de/nn_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Bekaempfung_des_Terrorismus_Id_93040_de.html) [January 2007].

4 Federal Ministry of the Interior (2006): 2005 Annual Report on the Protection of the Constitution. [http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2006/Verfassungsschutzbericht\\_2005\\_en,templateId=raw,property=publicationFile.pdf/Verfassungsschutzbericht\\_2005\\_en.pdf](http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2006/Verfassungsschutzbericht_2005_en,templateId=raw,property=publicationFile.pdf/Verfassungsschutzbericht_2005_en.pdf) [December 2006].

5 Bundesamt für Verfassungsschutz (2004): Proliferation – das geht uns an! [http://www.verfassungsschutz.de/download/SHOW/broschuere\\_0406\\_proliferation.pdf](http://www.verfassungsschutz.de/download/SHOW/broschuere_0406_proliferation.pdf) [January 2007].

6 Bundesministerium des Innern (2001): Zweiter Gefahrenbericht der Schutzkommission. October 2001. [http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2001/Zweiter\\_Gefahrenbericht\\_der\\_Id\\_12312\\_de,templateId=raw,property=publicationFile.pdf/Zweiter\\_Gefahrenbericht\\_der\\_Id\\_12312\\_de.pdf](http://www.bmi.bund.de/Internet/Content/Common/Anlagen/Broschueren/2001/Zweiter_Gefahrenbericht_der_Id_12312_de,templateId=raw,property=publicationFile.pdf/Zweiter_Gefahrenbericht_der_Id_12312_de.pdf) [January 2007].

7 Advisory Board for Civil Protection (2006): Summary of the Third Risk Report. [http://www.bbk.bund.de/cln\\_027/nn\\_529818/Schutzkommission/DE/03\\_Publikationen/01\\_Gefahrenberichte/Summary\\_203\\_20GB\\_20englisch.html](http://www.bbk.bund.de/cln_027/nn_529818/Schutzkommission/DE/03_Publikationen/01_Gefahrenberichte/Summary_203_20GB_20englisch.html) [December 2006].

Since 2001, several structural adjustments have been initiated in order to improve capabilities and preparedness.<sup>8</sup> The establishment of the Federal Office of Civil Protection and Disaster Assistance (BBK) was a structural outcome of the new strategy for protecting the German population (see initiatives section). And at the Robert Koch Institute (RKI), the Centre for Biological Safety (ZBS) has been established in order to ensure expertise in the field of bioterrorism.

## **ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES**

The Länder are responsible for public health issues. Responsibilities in the areas of civil emergency planning and disaster management are shared. According to Germany's constitution, civil protection during wartime is a federal task, whereas disaster relief during peacetimes is the responsibility of the federal states (Länder). The concept of the new strategy for protecting the population (see initiatives section) implies a joint and coordinated approach of the federal and state levels for disaster management with respect to threats of national significance, such as major industrial hazards, large scale outbreaks of diseases, and terrorist attacks.

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8 Deutscher Bundestag (2005): Organisation des Katastrophenschutzes im Grossschadensfall mit biologischen oder chemischen Schadstoffen. Antwort der Bundesregierung, 6. Mai 2005. Drucksache 15/5433.

## PUBLIC HEALTH

### ROBERT KOCH INSTITUTE (RKI)

The Robert Koch Institute (RKI)<sup>9</sup> is the central federal institution responsible for disease control and prevention. It serves the Federal Ministry of Health (BMG) as the central federal reference institution for both applied and response-orientated research, as well as for the public health sector. Its main task is to monitor and analyze the state of public health in Germany. Further executive tasks are defined by special laws, in particular with regard to protection from infection, legislation on stem cell research, and attacks using biological agents. The institute has major responsibilities in the field of scientific investigation, epidemiological and medical monitoring, and analysis, as well as in the evaluation of dangerous or widespread diseases.

In particular, the RKI is charged with tasks concerning the identification and prevention of attacks involving biological agents or natural disease outbreaks. At the request of the Länder and the BMG, and in cooperation with these bodies, the RKI has elaborated national contingency plans for pandemic influenza and smallpox.<sup>10</sup> Furthermore, it maintains an Outbreak Investigation Team that assists and coordinates the work of the Länder at their request, as well as similar teams on the regional level in case of an outbreak of an infectious disease.<sup>11</sup>

Following the 11 September 2001 attacks and the subsequent anthrax hoaxes, the *Centre for Biological Safety (ZBS)* was established at the RKI. Its main tasks involve services required to detect and respond to bioterrorist attacks. The center handles the diagnostics of infectious agents, scenario modeling, and the coordination of national and inter-

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9 <http://www.rki.de/>

10 [http://www.rki.de/cln\\_006/nn\\_231702/EN/Content/Prevention/Bioterrism/Preparedness\\_Plan/preparedness\\_plan\\_node\\_en.html\\_nnn=true](http://www.rki.de/cln_006/nn_231702/EN/Content/Prevention/Bioterrism/Preparedness_Plan/preparedness_plan_node_en.html_nnn=true) [January 2007].

11 Deutscher Bundestag (2005): Ausrüstung und Vorbereitung für einen Grossschadensfall mit biologischen oder chemischen Schadstoffen. Antwort der Bundesregierung, 20. Juni 2005. Drucksache 15/5794.

national programs for biological safety and security. The construction of a BSL-4 laboratory at the RKI is planned. In addition, the ZBS maintains the *Federal Information Centre for Biological Safety (IBBS)*, which cooperates with civil defense sections at other federal ministries, with the Länder and their local authorities, and with European and international institutions. IBBS has informational and coordination duties, and develops strategies for dealing with bioterrorism incidents.<sup>12</sup> Since February 2006, the IBBS offers a training course on the Advanced Medical Management of Bioterrorist Incidents and Threats (AMBIT), which is primarily targeted towards public health officers and physicians in order to raise their awareness and preparedness as first responders.<sup>13</sup> IBBS also coordinates the *Interdisciplinary Expert Network on Biological Dangers* (see initiatives section).

#### PAUL EHRLICH INSTITUTE (PEI)

The Paul Ehrlich Institute (PEI)<sup>14</sup> is the federal agency for sera and vaccines. Its responsibilities include granting marketing licenses for sera and vaccines for human and veterinary use. The PEI also examines such vaccines, monitors them for unwanted side effects, and conducts related research. The PEI evaluates and approves the annual influenza vaccine on the national level and assesses the requirements and options for manufacturing a vaccine against avian influenza, in close cooperation with the RKI and the Friedrich Loeffler Institute (FLI).<sup>15</sup>

12 [http://www.rki.de/cln\\_006/nn\\_231526/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/CenterBioSafety\\_\\_node.html\\_\\_nnn=true](http://www.rki.de/cln_006/nn_231526/EN/Content/Institute/DepartmentsUnits/CenterBioSafety/CenterBioSafety__node.html__nnn=true) [January 2007].

13 [http://www.rki.de/nn\\_226616/DE/Content/Infekt/Biosicherheit/Ausbildungsmaterialien/AMBIT/AMBIT\\_\\_node.html\\_\\_nnn=true](http://www.rki.de/nn_226616/DE/Content/Infekt/Biosicherheit/Ausbildungsmaterialien/AMBIT/AMBIT__node.html__nnn=true) [January 2007].

14 <http://www.pei.de/>

15 [http://www.pei.de/nn\\_157240/DE/infos/fachkreise/impf-fach/influenza-fach/rki-pei-flierklaerung.html](http://www.pei.de/nn_157240/DE/infos/fachkreise/impf-fach/influenza-fach/rki-pei-flierklaerung.html) [January 2007].

PERMANENT WORKING GROUP OF CENTRES OF EXPERTISE AND  
TREATMENT (StAKoB)

The Permanent Working Group of Centres of Expertise and Treatment (StAKoB)<sup>16</sup> is an association of several hospitals with special negative-pressure isolation wards and centers of expertise in the handling of highly contagious and dangerous diseases. Established in March 2003, it aims at improving the cooperation between the wards and centers of expertise, and the management of biological incidents. Specifically, this includes:<sup>17</sup>

- The development of treatment and management standards;
- Mutual support in terms of manpower and equipment;
- Mutual information exchange; and
- The development of training and education concepts.

The StAKoB is also a stakeholder of the Interdisciplinary Expert Network on Biological Dangers (see initiatives section).

FEDERAL OFFICE OF CONSUMER PROTECTION AND FOOD SAFETY  
(BVL)

The Federal Office of Consumer Protection and Food Safety (BVL)<sup>18</sup> was founded in the course of a reorganization of health-related consumer protection in January 2002, following various food safety crises such as the emergence of mad cow disease. The BVL is an autonomous federal authority under the responsibility of the Federal Ministry of Food, Agriculture, and Consumer Protection (BMELV). The responsibilities of BVL are the following:

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16 <http://www.stakob.org/>

17 Deutscher Bundestag (2005): Organisation des Katastrophenschutzes im Grossschadensfall mit biologischen oder chemischen Schadstoffen. Antwort der Bundesregierung, 6. Mai 2005. Drucksache 15/5433.

18 <http://www.bvl.bund.de/>



- Safety of foodstuff;
- Related risk management and communication;
- Safety of animal feed, commodities, and plant protection products;
- Licensing of veterinary drugs (other than sera and vaccines); and
- Safety of genetically modified organisms (GMOs), including issuance of release authorizations and environmental monitoring (in collaboration with other agencies).

In addition, the BVL hosts the *Central Commission for Biological Safety (CCBS)*, which consists of experts in the fields of bacteriology, virology, plant breeding, medicine, and ecology, as well as industrial and environmental safety.<sup>19</sup> The CCBS's mission is to assess the safety of GMOs and respective facilities as well as potential risks stemming from a release. On the basis of these assessments, the commission issues statements and recommendations in support of BVL and other agencies.

#### FEDERAL INSTITUTE FOR RISK ASSESSMENT (BfR)

The Federal Institute for Risk Assessment (BfR)<sup>20</sup> is the scientific body of the Federal Ministry of Food, Agriculture, and Consumer Protection (BMELV) charged with preparing expert reports on questions of food safety and consumer health protection. While the BVL is responsible for the management of risks to consumer health, the BfR is tasked with the assessment of such risks and provides scientific advice to federal ministries and the BVL. The BfR monitors and assesses risks in relation to foodstuff, commodities, biocides, pesticides, chemicals, and transports of such goods, etc. Its section on biological safety is responsible for microbiological risk assessments of food and animal feed, but also of commodities used in food production. In addition, the BfR conducts applied research on zoonoses and their epidemiology, and hosts several

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19 [http://www.bvl.bund.de/clin\\_027/nn\\_518624/EN/06\\_\\_Genetic\\_\\_Engineering/genetic\\_engineering\\_\\_node.html\\_\\_nnn=true](http://www.bvl.bund.de/clin_027/nn_518624/EN/06__Genetic__Engineering/genetic_engineering__node.html__nnn=true) [January 2007].

20 <http://www.bfr.bund.de/>

reference laboratories for various animal pathogens (e.g., salmonellae, *E. coli*, etc.).<sup>21</sup>

FEDERAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH  
(BAuA)

The Federal Institute for Occupational Safety and Health (BAuA)<sup>22</sup> works under the auspices of the Federal Ministry of Labour and Social Affairs (BMAS) and advises the government and companies in matters of safety and health at work. The institute performs the following central tasks:

- Provision of support in all questions of occupational safety and health, including medical aspects;
- Monitoring and analysis of the occupational safety and health situation; and
- Prevention and management of work-related health disorders, including occupational diseases.

The BAuA's department for chemical and biological substances is responsible for assessing potential health risks stemming from working with such substances and for regulating their handling accordingly.<sup>23</sup> In addition, the *Board for Biological Substances (ABAS)* elaborates rules and best practices for activities involving hazardous biological substances and advises the BMAS in questions concerning biological safety at work.<sup>24</sup>

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21 <http://www.bfr.bund.de/cd/1846> [January 2007].

22 <http://www.baua.de/>

23 [http://www.baua.de/de/Ueber-die-BAuA/Aufgaben-und-Organisation/Organisation\\_\\_der\\_\\_BAuA.html\\_\\_nnn=true](http://www.baua.de/de/Ueber-die-BAuA/Aufgaben-und-Organisation/Organisation__der__BAuA.html__nnn=true) [January 2007].

24 [http://www.baua.de/de/Themen-von-A-Z/Biologische-Arbeitsstoffe/ABAS/ueber-den-ABAS/Arbeitsweise.html\\_\\_nnn=true](http://www.baua.de/de/Themen-von-A-Z/Biologische-Arbeitsstoffe/ABAS/ueber-den-ABAS/Arbeitsweise.html__nnn=true) [January 2007].

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### FEDERAL OFFICE OF CIVIL PROTECTION AND DISASTER ASSISTANCE (BBK)

In response to the new threats, such as the attacks in the US on 11 September 2001 and the 2002 Elbe flood, the Federal Office of Civil Protection and Disaster Assistance (BBK)<sup>25</sup> was set up in May 2004 within the remit of the Federal Ministry of the Interior (BMI) as a structural outcome of the new strategy for protecting the German population (see initiatives section). One of the office's missions is to provide support for the federal states (Länder) through coordination and information. With the new federal office, Germany has gained a central organizational element and a federal platform for providing information, knowledge, and services to the civil protection sector. The responsibilities of the BBK include:<sup>26</sup>

- Fulfilling the federal government's tasks in the field of civil protection – in particular, by providing equipment and training to augment the disaster management units and institutions at the regional level;
- Drawing up strategies and preparing measures in the field of emergency preparedness and planning;
- Planning and preparing cooperation between the federal and regional levels in special risk situations (coordination of crisis management);
- Preparedness in terms of plans and concepts for critical infrastructure protection;
- Basic and advanced training and practical exercises in the field of civil protection and disaster response;
- Disaster medicine;

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25 <http://www.bbk.bund.de/>

26 [http://www.bmi.bund.de/clin\\_028/nn\\_148122/Internet/Content/Behoerden/bbk\\_einzel\\_eng.html](http://www.bmi.bund.de/clin_028/nn_148122/Internet/Content/Behoerden/bbk_einzel_eng.html) [December 2006].

- Alerting and informing the population in the event of an emergency;
- Intensifying research in the area of disaster management, in particular in the field of chemical, biological, radiological, and nuclear (CBRN) incidents;
- Strengthening self-help among citizens; and
- Conceptual and planning tasks in the field of international cooperation, involving all national bodies responsible for civil protection.

The BBK operates the German *Joint Information and Situation Centre* (GMLZ)<sup>27</sup> and the German Emergency Preparedness Information System (deNIS).<sup>28</sup> They provide new coordination instruments improving and facilitating information, communication, and resource management between the federal and state levels in case of large-scale events. The GMLZ is also involved in the context of international cooperation. In addition, the BBK operates the Satellite-Based Warning System (SatWaS),<sup>29</sup> which was established by the federal government in October 2001. It provides not only an alert system, but also hazard information and crisis communication to the population via the media. In 2004, the coordination center for follow-up care and help (NOAH)<sup>30</sup> was set up in order to provide assistance to German victims and their families after serious accidents and terrorist attacks abroad.

Regarding CBRN protection and prevention, the BBK has a variety of tasks. The *Center for Civil Protection Research/CBRN Protection and Prevention* is responsible for the development and evaluation of ap-

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 27 [http://www.bbk.bund.de/cIn\\_027/nn\\_401154/DE/02\\_\\_Themen/05\\_\\_Krisenmanagement/03\\_\\_GMLZ/GMLZ\\_\\_node.html\\_\\_nnn=true](http://www.bbk.bund.de/cIn_027/nn_401154/DE/02__Themen/05__Krisenmanagement/03__GMLZ/GMLZ__node.html__nnn=true) [December 2006].

28 <http://www.denis.bund.de/>

29 [http://www.bbk.bund.de/cIn\\_027/nn\\_399436/DE/02\\_\\_Themen/11\\_\\_Zivilschutztechnik/04\\_\\_Warnsyst/01\\_\\_SatWas/SatWas\\_\\_node.html\\_\\_nnn=true](http://www.bbk.bund.de/cIn_027/nn_399436/DE/02__Themen/11__Zivilschutztechnik/04__Warnsyst/01__SatWas/SatWas__node.html__nnn=true) [December 2006].

30 [http://www.bbk.bund.de/cIn\\_027/nn\\_402322/DE/02\\_\\_Themen/05\\_\\_Krisenmanagement/02\\_\\_PsychosozialeNotfallvorsorge/01\\_\\_NOAH/NOAH\\_\\_node.html\\_\\_nnn=true](http://www.bbk.bund.de/cIn_027/nn_402322/DE/02__Themen/05__Krisenmanagement/02__PsychosozialeNotfallvorsorge/01__NOAH/NOAH__node.html__nnn=true) [December 2006].

propriate methods, procedures, and technologies in CBRN protection.<sup>31</sup> This includes CBRN reconnaissance vehicles, decontamination vehicles, and personal CBRN protection equipment. This technical equipment is provided by the government to the federal states in order to supplement the local stocks of disaster control equipment.<sup>32</sup>

In addition, the BBK oversees requirements for research and funds research projects on a broad variety of civil defense issues, with an emphasis on applied and response-orientated research. As part of a research project, the BBK is developing scientific, technical, and logistic principles for the establishment of biological task forces, with an emphasis on field detection and investigation.<sup>33</sup>

The BBK's *Center for Disaster Medicine* is responsible for the provision of medical support to the population in exceptional emergency situations and is involved in the development of adequate emergency plans and concepts, including medical concepts for CBRN incidents.<sup>34</sup>

Training in civil protection and disaster assistance, including CBRN-related topics, is provided to high-level administrative and operational leaders at the BBK's central training center, the *Academy for Crisis Management, Emergency Planning, and Civil Protection (AKNZ)*.<sup>35</sup> AKNZ offers various courses on the management of CBRN incidents, including biological risks and ways of handling them.<sup>36</sup>

31 [http://www.bbk.bund.de/cln\\_007/nn\\_400532/DE/02\\_\\_Themen/08\\_\\_ABCSchutz/ABC-Schutz\\_\\_node.html\\_\\_nnn=true](http://www.bbk.bund.de/cln_007/nn_400532/DE/02__Themen/08__ABCSchutz/ABC-Schutz__node.html__nnn=true) [December 2006].

32 Deutscher Bundestag (2005): *Organisation des Katastrophenschutzes im Grossschadensfall mit biologischen oder chemischen Schadstoffen*. Antwort der Bundesregierung, 6. Mai 2005. Drucksache 15/5433.

33 [http://www.bbk.bund.de/cln\\_007/nn\\_400296/DE/02\\_\\_Themen/07\\_\\_Forschung/02\\_\\_Forschungsvorhaben/02\\_\\_lfdFV/01\\_\\_BeschreibungFV/Beschreibung\\_20Lang\\_20167.html](http://www.bbk.bund.de/cln_007/nn_400296/DE/02__Themen/07__Forschung/02__Forschungsvorhaben/02__lfdFV/01__BeschreibungFV/Beschreibung_20Lang_20167.html) [December 2006].

34 [http://www.bbk.bund.de/cln\\_027/nn\\_401934/DE/02\\_\\_Themen/09\\_\\_MedBevSchutz/Med.BevSchutz\\_\\_node.html](http://www.bbk.bund.de/cln_027/nn_401934/DE/02__Themen/09__MedBevSchutz/Med.BevSchutz__node.html) [December 2006].

35 [http://www.bbk.bund.de/cln\\_007/nn\\_398004/DE/02\\_\\_Themen/13\\_\\_Aus\\_\\_undWeiterbildung/Aus\\_\\_undWeiterbildung\\_\\_node.html\\_\\_nnn=true](http://www.bbk.bund.de/cln_007/nn_398004/DE/02__Themen/13__Aus__undWeiterbildung/Aus__undWeiterbildung__node.html__nnn=true) [December 2006].

36 Cf. BBK (2006): *AKNZ – Jahresprogramm 2007*. [http://www.bbk.bund.de/cln\\_027/nn\\_398896/SharedDocs/Publikationen/AKNZ\\_\\_Jahresprogramm2007,templateId=raw,property=publicationFile.pdf/AKNZ\\_Jahresprogramm2007.pdf](http://www.bbk.bund.de/cln_027/nn_398896/SharedDocs/Publikationen/AKNZ__Jahresprogramm2007,templateId=raw,property=publicationFile.pdf/AKNZ_Jahresprogramm2007.pdf) [December 2006].

Since the appropriate response to a large-scale biological incident requires an interdisciplinary approach, the BBK funds the project “Interdisciplinary Expert Network on Biological Dangers”, with the aim of bundling expertise and facilitating communication between experts (see initiatives section).

#### FEDERAL AGENCY FOR TECHNICAL RELIEF (THW)

The Federal Agency for Technical Relief (THW)<sup>37</sup> is a volunteer organization subordinated to the Ministry of the Interior (BMI) and tasked with technical-humanitarian aid both at home and abroad. It has a legal mandate to provide technical aid and assistance in the field of civil protection, particularly in the event of major incidents and catastrophes.

Since 2003, the THW has been establishing local NBC Rescue Units (SEB-ABC), whose task is to ensure that THW is able to carry out its duties, such as rescuing victims or evacuation of large areas, in a contaminated environment. The THW plans to build up 16 such units in total.<sup>38</sup>

### NATIONAL SECURITY

#### FEDERAL OFFICE FOR THE PROTECTION OF THE CONSTITUTION (BfV)

The Federal Office for the Protection of the Constitution (BfV)<sup>39</sup> is the domestic intelligence service of Germany and carries out preventive national security tasks, together with the State Offices for the Protection of the Constitution (LfV). Its duties include combating all forms of extremism in Germany and preventing the proliferation of weapons of mass destruction, as well as counterintelligence and counter-sabotage

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37 <http://www.thw.bund.de/>

38 [http://www.thw.bund.de/clin\\_036/nn\\_245244/DE/content/meldungen/thw\\_\\_im\\_\\_inland/trends/2005/10/meldung\\_\\_001.html\\_\\_nnn=true](http://www.thw.bund.de/clin_036/nn_245244/DE/content/meldungen/thw__im__inland/trends/2005/10/meldung__001.html__nnn=true) [January 2007].

39 <http://www.verfassungsschutz.de/>

activities. The first two of these are particularly relevant for the prevention of biological weapons attacks.

In the realm of proliferation, the BfV sensitizes companies and research institutes and collaborates with them in order to prevent countries of concern or extremist groups from acquiring dual-use goods, technologies, and know-how.<sup>40</sup> In general, Germany is considered to be an attractive procurement place for some weapons-relevant goods and technologies.<sup>41</sup> The BfV pursues its non-proliferation efforts in close cooperation with the Federal Office of Economics and Export Control (BAFA), the Customs Criminal Investigation Office (ZKA), the Federal Criminal Police Office (BKA), and the Federal Intelligence Service (BND).

#### FEDERAL INTELLIGENCE SERVICE (BND)

The Federal Intelligence Service (BND)<sup>42</sup> is the foreign intelligence agency of the Federal Republic of Germany. The BND assesses the motivations, intentions, and capabilities of non-state actors and foreign countries. It analyzes potential threats, particularly in the field of terrorism, weapons of mass destruction, organized crime, and information warfare, and composes reports for the attention of the federal government and other security authorities.

As far as the proliferation of CBRN weapons is concerned, the BND monitors relevant developments and research activities as well as suspicious procurement attempts and transfers of know-how. Since 1996, the BND has had a legal mandate – under certain circumstances – to eavesdrop on the international telecommunications of German companies.<sup>43</sup>

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40 Bundesministerium des Innern (2006): Verfassungsschutzbericht 2005. . [http://www.verfassungsschutz.de/download/SHOW/vsbericht\\_2005.pdf](http://www.verfassungsschutz.de/download/SHOW/vsbericht_2005.pdf) [January 2007].

41 Bundesamt für Verfassungsschutz (2004): Proliferation – das geht uns an! [http://www.verfassungsschutz.de/download/SHOW/broschuere\\_0406\\_proliferation.pdf](http://www.verfassungsschutz.de/download/SHOW/broschuere_0406_proliferation.pdf) [January 2007].

42 <http://www.bnd.bund.de/>

43 [http://www.bnd.bund.de/cln\\_027/nn\\_355380/SharedDocs/Publikationen/DE/Downloads/Dateten/proliferation,templateId=raw,property=publicationFile.pdf/proliferation.pdf](http://www.bnd.bund.de/cln_027/nn_355380/SharedDocs/Publikationen/DE/Downloads/Dateten/proliferation,templateId=raw,property=publicationFile.pdf/proliferation.pdf) [January 2007].

### FEDERAL CRIMINAL POLICE OFFICE (BKA)

The Federal Criminal Police Office (BKA)<sup>44</sup> is responsible for maintaining internal security in Germany, together with other national and regional police forces of the federation and in cooperation with foreign security agencies. The BKA was established as the central police office for information and communications and as the federal criminal investigation body. It supports other police forces with regard to the prevention and prosecution of crimes that involve more than one German state or that are otherwise of considerable significance.<sup>45</sup>

In 2003, a Research Institute on Terrorism/Extremism (FTE) was established at the BKA. Its aims include:<sup>46</sup>

- Advancing relevant knowledge and scientific research on terrorism and extremism in a police context;
- Providing scientific consulting and assistance to the competent police entities; and
- Transferring knowledge from the scientific community to the police.

### JOINT TERRORISM DEFENSE CENTRE (GTAZ)

The Joint Terrorism Defense Centre (GTAZ)<sup>47</sup> was established in December 2004 in order to bring together analysts from the Federal Criminal Police Office (BKA) and the Federal Office for the Protection of the Constitution (BfV). It aims at fostering daily information exchange and common analyses and threat assessments, as well as the coordination of concrete counter-terrorism activities between the two bodies. Other actors, such as the Federal Intelligence Service (BND),

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44 <http://www.bka.de/>

45 [http://www.bka.de/profil/broschueren/bka\\_das\\_profil\\_engl.pdf](http://www.bka.de/profil/broschueren/bka_das_profil_engl.pdf) [January 2007].

46 [http://www.bka.de/kriminalwissenschaften/kw\\_fte.html](http://www.bka.de/kriminalwissenschaften/kw_fte.html) [January 2007].

47 [http://www.bmi.bund.de/clin\\_012/nn\\_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Gemeinsames\\_\\_Terrorismusabwehrzentrum\\_\\_de.html](http://www.bmi.bund.de/clin_012/nn_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Gemeinsames__Terrorismusabwehrzentrum__de.html) [January 2007].



the Federal Police, the Customs Criminal Office (ZKA), the Federal Office for Migration and Refugees (BAMF), the attorney-general, and actors from the armed forces and the federal states are also involved in the work of GTAZ.<sup>48</sup>

## MILITARY DEFENSE AND RESEARCH

### BUNDESWEHR

The *NBC Defense Units* of the German armed forces (Bundeswehr) are trained and equipped to detect and cope with an attack involving nuclear, biological, or chemical weapons. The units have both reconnaissance and decontamination tasks. Accordingly, the units are equipped with armored personnel carriers that are capable of detecting various battlefield agents, and are also used in the context of industrial and natural hazards, as well as with personal protection suits and miscellaneous decontamination utilities, including tools for the treatment of water.<sup>49</sup> In the context of operation “Enduring Freedom”, more than 300 members of the German NBC Defense Units were committed to Kuwait in order to support US troops. In early 2006, parts of the units participated in the “Golden Mask 2006” exercise on the occasion of the establishment of the multinational CBRN Defense Battalion within NATO.<sup>50</sup>

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48 [http://www.bmi.bund.de/cIn\\_012/nn\\_122688/Internet/Content/Common/Lexikon/G/GTAZ\\_de.html](http://www.bmi.bund.de/cIn_012/nn_122688/Internet/Content/Common/Lexikon/G/GTAZ_de.html) [January 2007].

49 [http://www.deutschesheer.de/portal/a/heer/kcxml/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_Qjz-KLd48PDTEFSYGYZu7m-pEwsaCUVH1fj\\_zcVH1v\\_QD9gtyIckdHRUUAWwEuCQ!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUMvNEIVRS82X0dfVVQx](http://www.deutschesheer.de/portal/a/heer/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_Qjz-KLd48PDTEFSYGYZu7m-pEwsaCUVH1fj_zcVH1v_QD9gtyIckdHRUUAWwEuCQ!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUMvNEIVRS82X0dfVVQx) [January 2007].

50 [http://www.deutschesheer.de/portal/a/heer/kcxml/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_Qjz-KLd4838zAESYGGZ7iH6kRhi5gixIH1vfV-P\\_NxU\\_QD9gtzQiHJHR0UAHCg80Q!!/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfR19UU0Y!?:yw\\_contentURL=/C1256F870054206E/W26NDHDK804INFODE/content.jsp](http://www.deutschesheer.de/portal/a/heer/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_Qjz-KLd4838zAESYGGZ7iH6kRhi5gixIH1vfV-P_NxU_QD9gtzQiHJHR0UAHCg80Q!!/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfR19UU0Y!?:yw_contentURL=/C1256F870054206E/W26NDHDK804INFODE/content.jsp) [January 2007].

The *NBC- and Self-Protection School (ABC/SeS)* in Sonthofen, Bavaria, provides special training in the field of CBRN defense to military leaders and certain troops.<sup>51</sup>

The *Medical Service* of the Bundeswehr has expertise in the field of medical CBRN protection and maintains several education, laboratory, and research facilities.<sup>52</sup> The *Medical Agency* in Munich maintains the Medical Academy, the newly created Division IX for medical NBC defense, including a medical CBRN task force, and three independent research institutes.<sup>53</sup> One of them is the *Institute for Microbiology*, which is entirely devoted to biodefense issues and tasked with the development of methods for the prevention, detection, treatment, and alleviation of the consequences of a release of biological agents.<sup>54</sup> The institute has laboratory capacities of containment levels 2 and 3 at its disposal.<sup>55</sup>

Furthermore, the *Central Institutes of the Medical Service* in Koblenz and Munich, with an outpost in Munster, conduct biodefense-related research. In Munster, research focuses mainly on the development and evaluation of diagnostic systems for various infectious diseases (in a BSL-2 environment).<sup>56</sup> The institute in Koblenz is tasked with preparatory measures in the field of medical B-protection for military contingencies and assesses the possible consequences of a release of CBRN substances.

51 Federal Office of Civil Protection and Disaster Assistance (2006): *Biologische Gefahren*. 2. Auflage. Bonn: BBK, S. 118.

52 <http://www.sanitaetsdienst-bundeswehr.de/>

53 [http://www.sanitaetsdienst-bundeswehr.de/portal/a/sanitaetsdienst/kcxml/04\\_Sj9S-Pykssy0xPLMnMz0vM0Y\\_QjzKLd433NfAASYGYpiaO-pEwsaCUVH1fj\\_zcVH1v\\_QD9gtyIckdHRUUA\\_RxsVw!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0VfTFZD](http://www.sanitaetsdienst-bundeswehr.de/portal/a/sanitaetsdienst/kcxml/04_Sj9S-Pykssy0xPLMnMz0vM0Y_QjzKLd433NfAASYGYpiaO-pEwsaCUVH1fj_zcVH1v_QD9gtyIckdHRUUA_RxsVw!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0VfTFZD) [January 2007].

54 [http://www.sanitaetsdienst-bundeswehr.de/portal/a/sanitaetsdienst/kcxml/04\\_Sj9S-Pykssy0xPLMnMz0vM0Y\\_QjzKLd433CTUCSYGYpgYW-pEQhjNczMQRIgZS5-uRn5uqH5SSqu-tH6BfkBsaUe7oqAgA4Pm6\\_Q!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0VfTFRH](http://www.sanitaetsdienst-bundeswehr.de/portal/a/sanitaetsdienst/kcxml/04_Sj9S-Pykssy0xPLMnMz0vM0Y_QjzKLd433CTUCSYGYpgYW-pEQhjNczMQRIgZS5-uRn5uqH5SSqu-tH6BfkBsaUe7oqAgA4Pm6_Q!!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0VfTFRH) [January 2007].

55 Excerpts of the 2003 German Confidence Building Measure under the BTWC. 15 April 2003, p. 197.

56 Excerpts of the 2003 German Confidence Building Measure under the BTWC. 15 April 2003, p. 205.

The *Armed Forces Scientific Institute for Protection Technologies and NBC Protection (WIS)*, which is located in Munster and subordinated to the Federal Agency for Defense Technology and Procurement (BWB), is active in the area of chemical, biological, and nuclear protection. In particular, this includes:<sup>57</sup>

- The development of CBRN detection and early-warning systems;
- The development of procedures for disinfection and decontamination, including water treatment;
- The development and assessment of personal CBRN protection suits and other gear;
- The development of protective measures against fires and against the effects of electromagnetic radiation; and
- Training the NBC Defense Units in disinfection and decontamination procedures.

In addition, the institute is able to perform laboratory analyses on suspected anthrax and toxin samples in a BSL-2 and BSL-3 environment.<sup>58</sup>

Finally, the *Center for Verification Tasks* of the Bundeswehr is charged with the national implementation of Germany's international arms control and disarmament commitments. This includes the issuance and verification of confidence-building measures as well as the assessment of the status of various treaties.<sup>59</sup>

As far as civil-military cooperation (CMC) is concerned, the Bundeswehr has a mandate to assist the Länder at their request in case of

57 <http://www.bwb.org/01DB022000000001/CurrentBaseLink/W26CJJLD253INFODE> [January 2007]. See also Excerpts of the 2003 German Confidence Building Measure under the BTWC. 15 April 2003, p. 203.

58 Excerpts of the 2003 German Confidence Building Measure under the BTWC. 15 April 2003, p. 203.

59 [http://www.bmvg.de/portal/a/bmvg/kcxml/04\\_Sj9SPykyssy0xPLMnMz0vM0Y\\_QjzKLT-4w3DvMFsYGYpj6O-pEQhitMzMjUHCIGUufrkZ-bqh-UkqrvrR-gX5AbG1Hu6K-gIANCVO6sl/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfOV8zVtk0!?:yw\\_contentURL=%2FC1256F1200608B1B%2FW26J2DWG177INFODE%2Fcontent.jsp](http://www.bmvg.de/portal/a/bmvg/kcxml/04_Sj9SPykyssy0xPLMnMz0vM0Y_QjzKLT-4w3DvMFsYGYpj6O-pEQhitMzMjUHCIGUufrkZ-bqh-UkqrvrR-gX5AbG1Hu6K-gIANCVO6sl/delta/base64xml/L2dJQSEvUUt3QS80SVVFLzZfOV8zVtk0!?:yw_contentURL=%2FC1256F1200608B1B%2FW26J2DWG177INFODE%2Fcontent.jsp) [January 2007].

major incidents and catastrophes. Under a recent reorganization, liaison offices were established in every state to serve as points of contact for the civil authorities and to process their requests. Moreover, the government plans to set up 16 CMC bases for storing disaster assistance gear. Two of these are designated to contain CBRN defense equipment.<sup>60</sup>

## CIVILIAN RESEARCH AND LABORATORIES

### BERNHARD NOCHT INSTITUTE (BNI)

The Bernhard Nocht Institute (BNI)<sup>61</sup> is tasked with the treatment and diagnosis of tropical diseases and serves as a reference laboratory for various hemorrhagic fevers and other tropical infections. Special emphasis is given to research on parasitology, medical microbiology, and tropical medicine.<sup>62</sup> In particular, the BNI's Department of Virology conducts research on molecular aspects of the life cycle, the virus-host cell interaction, and the pathogenesis of tropical viruses. Applied research is conducted in the areas of genetic modification of viruses, cell biology, and animal experiments. In order to be able to conduct such research and provide rapid diagnostic results, the institute has at its disposal a BSL-3 and a BSL-4 laboratory facility, the latter of which is currently being extended.<sup>63</sup>

Moreover, the BNI has been charged by the Ministry of Health (BMG) with developing detection procedures for various biological

60 [http://www.bundeswehr.de/portal/a/bwde/kcxml/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_QjzKLd4x38fMDSYGYpp6m-pEQhiVMzNDNDyIGUufrkZ-bqh-UkqrvrR-gX-5AbG1Hu6KgIAHU97VM!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0fFRE5O](http://www.bundeswehr.de/portal/a/bwde/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4x38fMDSYGYpp6m-pEQhiVMzNDNDyIGUufrkZ-bqh-UkqrvrR-gX-5AbG1Hu6KgIAHU97VM!/delta/base64xml/L3dJdyEvd0ZNQUFzQUM-vNEIVRS82X0fFRE5O) [January 2007].

61 <http://www.bni.uni-hamburg.de/>

62 [http://www15.bni-hamburg.de/bni/bni2/neu2/getfile.acgi?area\\_engl=researchgroups&cpid=210](http://www15.bni-hamburg.de/bni/bni2/neu2/getfile.acgi?area_engl=researchgroups&cpid=210) [January 2007].

63 [http://www15.bni-hamburg.de/bni/bni2/neu2/getfile.acgi?area\\_engl=researchgroups&cpid=2123](http://www15.bni-hamburg.de/bni/bni2/neu2/getfile.acgi?area_engl=researchgroups&cpid=2123) [January 2007].

warfare agents<sup>64</sup> as well as with creating a biological task force to handle mobile detection.<sup>65</sup>

#### INSTITUTE FOR VIROLOGY, UNIVERSITY OF MARBURG

The Institute for Virology<sup>66</sup> at the University of Marburg conducts research on viral infections, with a special focus on hemorrhagic fevers, influenza viruses, zoonotic pathogens, and emerging viruses. In order to diagnose and conduct research on highly contagious pathogens, the institute features a BSL-4 laboratory, one of two in Germany. The laboratory is tasked with testing samples for the presence of various infectious viruses.<sup>67</sup> As a member of a WHO task force, the Institute for Virology was involved in the identification of the SARS virus.<sup>68</sup>

#### NATIONAL REFERENCE CENTERS (NRZ) AND CONSULTANT LABORATORIES

The field of epidemiology and infectious diseases in Germany has been undergoing a restructuring since 1995. In the course of this realignment, the Federal Ministry of Health (BMG) has appointed several National Reference Centers (NRZ) to survey important infectious pathogens. Which reference centers are appointed depends on the epidemiological relevance of the pathogens, on diagnostics requirements, and on matters of resistance as well as of protection from infections.

In order to provide scientific consultation on the greatest possible spectrum of pathogens, scientific societies make available additional consultant laboratory capacities, which are appointed by the head of

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64 <http://www15.bni-hamburg.de/BNI/BNI2/neu2/inc/news/aktuellepresse/1000038.htm> [January 2007].

65 Deutscher Bundestag (2005): Ausrüstung und Vorbereitung für einen Grossschadensfall mit biologischen oder chemischen Schadstoffen. Antwort der Bundesregierung, 20. Juni 2005. Drucksache 15/5794.

66 <http://www.med.uni-marburg.de/stpg/ukm/lt/hygiene/eviro.htm> [January 2007].

67 Cf. <http://www.med.uni-marburg.de/stpg/ukm/lt/hygiene/diagnostik/erreger.htm> [January 2007].

68 <http://www.med.uni-marburg.de/d-einrichtungen/virologie> [January 2007].

the Robert Koch Institute (RKI) in accordance with the Commission of Infection Epidemiology, to cover additional pathogens. The emphasis is on providing advice, particularly in situations that exceed the routine level. In addition, diagnostic services can be offered.<sup>69</sup>

### FRAUNHOFER GESELLSCHAFT (FhG)

The Fraunhofer Gesellschaft (FhG)<sup>70</sup> promotes and undertakes applied research that is of direct utility to private and public enterprises and of benefit to society as a whole. Contractual partners and customers include the industry, the service sector, as well as public institutions. The FhG maintains around 58 research institutes throughout Germany and employs some 12,500 staff members. It has an annual research budget of over €1 billion, roughly a third of which is supplied directly by the taxpayer.<sup>71</sup>

A number of FhG institutes have contributed to the development of products that are relevant to biodefense:

- The Fraunhofer Institute for Silicon Technology (ISIT)<sup>72</sup> is active in the field of biotechnical micro-systems. The institute participated in the development of a portable mini-lab, which enables fully automated on-site detection of selected biological agents.<sup>73</sup>
- The Fraunhofer Center for Molecular Biotechnology (FhCMB)<sup>74</sup> in Newark, Delaware (US), founded by the German Fraunhofer Institute for Molecular Biology and Applied Ecology (IME),<sup>75</sup> is developing and using biotechnological techniques (transient gene

69 [http://www.rki.de/cln\\_011/nn\\_231536/EN/Content/Institute/DepartmentsUnits/NRC/nrc\\_\\_node\\_\\_en.html\\_\\_nnn=true](http://www.rki.de/cln_011/nn_231536/EN/Content/Institute/DepartmentsUnits/NRC/nrc__node__en.html__nnn=true) [October 2006].

70 <http://www.fraunhofer.de/>

71 <http://www.fraunhofer.de/fhg/EN/company/index.jsp> [January 2007].

72 <http://www.isit.fraunhofer.de/>

73 Fraunhofer Institute for Silicon Technology (2005): *Achievements and Results – Annual Report 2005*; p. 56. <http://www.isit.fraunhofer.de/german/download/JB2005A4.pdf> [January 2007].

74 <http://www.fraunhofer-cmb.org/>

75 <http://www.ime.fraunhofer.de/>

expression) for the production of vaccines in plants.<sup>76</sup> In particular, antibodies and vaccines against anthrax, plague, and botulism as well as against smallpox are being developed.<sup>77</sup>

- Together with other Fraunhofer Institutes and by order of the Federal Ministry of Defense (BMVg), the Fraunhofer Institute for Applied Information Technology (FIT)<sup>78</sup> has successfully conducted a pilot project investigating the feasibility of fitting miniaturized sensors into smart phones for the on-site identification of hazardous nuclear, biological, and chemical substances.<sup>79</sup>

#### FEDERAL RESEARCH CENTRE FOR NUTRITION AND FOOD (BfEL)

The Federal Research Centre for Nutrition and Food (BfEL)<sup>80</sup> is affiliated with the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) and was established in January 2004 after a merger of several research institutes in the field of food safety. Research activities at the BfEL focus on health and hygiene concerning foodstuffs and nutrition, and aim to improve food safety. Once the aforementioned reorganization has been concluded, the center will consist of 8 subordinated research institutes. One of these is the Institute for Microbiology and Biotechnology in Kiel, which examines the impact of microorganisms on the safety, hygiene, and quality of foodstuffs, including genetically or biotechnologically modified food.<sup>81</sup>

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76 [http://www.fraunhofer-cmb.org/index.cfm?act=tech\\_VaccineDevelopment](http://www.fraunhofer-cmb.org/index.cfm?act=tech_VaccineDevelopment) [December 2006].

77 <http://www.fraunhofer-cmb.org/index.cfm?act=news&archived=1> [January 2007].

78 <http://www.fit.fraunhofer.de/>

79 Fraunhofer Institute for Applied Information Technology (2005): Annual Report 2005. [http://www.fit.fraunhofer.de/aktuelles/FIT\\_Jahresbericht\\_2005.pdf](http://www.fit.fraunhofer.de/aktuelles/FIT_Jahresbericht_2005.pdf) [January 2007].

80 <http://www.bfel.de/>

81 [http://www.bfel.de/cIn\\_044/nn\\_784936/DE/ueberuns/aufgaben/aufgaben\\_\\_node.html\\_nnn=true](http://www.bfel.de/cIn_044/nn_784936/DE/ueberuns/aufgaben/aufgaben__node.html_nnn=true) [January 2007].

## NATIONAL ECONOMY

### FEDERAL OFFICE OF ECONOMICS AND EXPORT CONTROL (BAFA)

The Federal Office of Economics and Export Control (BAFA)<sup>82</sup> is a federal authority subordinated to the Federal Ministry of Economics and Technology (BMW*i*). As a central licensing authority, BAFA is responsible for the administrative implementation of the government's policy concerning export controls and embargos, in collaboration with the different customs offices. One of its main tasks is to check whether the export of a commodity is subject to licensing and whether a license should be granted.

This oversight applies to the foreign trade in commodities of strategic importance – mainly weapons, armaments, and dual-use items. Within the framework of its legal commitments, German export control policy is oriented towards Germany's security needs and foreign political interests. Furthermore, as a rule, German exports should neither intensify conflicts nor contribute to internal repression or other severe human rights violations in crisis areas.<sup>83</sup> As far as CBRN substances are concerned, the BAFA issues information brochures and warnings in order to sensitize and assist affected companies.<sup>84</sup>

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82 <http://www.bafa.de/>

83 [http://www.bafa.de/1/en/tasks/01\\_control.htm](http://www.bafa.de/1/en/tasks/01_control.htm) [January 2007].

84 Cf. Bundesamt für Wirtschaft und Ausfuhrkontrolle BAFA (2004): Warnhinweise zu Beschaffungsversuchen im Chemie- und Biologiebereich. 1 October 2004. [http://www.ausfuhrkontrolle.info/publikationen/pdf/warnhinweis\\_de.pdf](http://www.ausfuhrkontrolle.info/publikationen/pdf/warnhinweis_de.pdf) [January 2007].



## ANIMAL HEALTH

### FEDERAL MINISTRY OF FOOD, AGRICULTURE AND CONSUMER PROTECTION (BMELV)

The Federal Ministry of Food, Agriculture and Consumer Protection (BMELV),<sup>85</sup> and particularly its department for animal health and food safety, has overall responsibility for veterinary activities within Germany. It is tasked with enacting laws and coordinating the activities of the federation and the Länder. In particular, the BMELV maintains the national crisis center for infectious animal diseases, which monitors and assesses the situation of animal diseases in Germany and abroad, and coordinates defensive measures in case of an outbreak. Furthermore, a task force to counteract animal diseases has been established at the BMELV, which issues recommendations on how to combat highly-contagious animal diseases and on nation-wide coordination and information issues. The task force also maintains a list of experts and institutions that may be employed in case of a severe crisis.<sup>86</sup>

### FRIEDRICH LOEFFLER INSTITUTE (FLI)

The Friedrich Loeffler Institute (FLI),<sup>87</sup> also known as the Federal Research Institute for Animal Health, is an independent federal authority affiliated with the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). The FLI mainly conducts research in the field of infectious animal diseases and assists veterinary authorities in the epidemiological investigation of a possible outbreak. The FLI features eight specialized sub-institutes, more than 40 national reference laboratories for notifiable animal diseases, and a WHO Collaborating Center for rabies. In addition, the FLI is tasked with certifying sera and

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85 <http://www.bmelv.de/>

86 [http://www.bmelv.de/clin\\_045/nn\\_753006/DE/07-SchutzderTiere/Veterinaerdienst/VeterinaerwesenAufbau\\_28Bund\\_29.html\\_\\_nnn=true](http://www.bmelv.de/clin_045/nn_753006/DE/07-SchutzderTiere/Veterinaerdienst/VeterinaerwesenAufbau_28Bund_29.html__nnn=true) [January 2007].

87 <http://www.fli.bund.de/>

vaccines against pathogenic zoonoses, in collaboration with the Paul Ehrlich Institute (PEI). Furthermore, the institute investigates the safety of animals and of animal products for import and export purposes.<sup>88</sup>

## ENVIRONMENTAL PROTECTION

### FEDERAL ENVIRONMENT AGENCY (UBA)

The Federal Environment Agency (UBA)<sup>89</sup> is a scientific environmental authority under the responsibility of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). The UBA is responsible for the protection of the environment and of humans against adverse environmental factors, and proposes measures to this effect for the attention of the BMU and other federal ministries. Particularly, the UBA has the following duties:<sup>90</sup>

- Informing and educating the public about environmental issues;
- Conducting, coordinating, and providing assistance for environmental research;
- Gathering environmental data;
- Assessing the potential risk stemming from industrial sites and hazardous substances in general, and proposing measures for risk minimization;
- Participating in the implementation of the soil protection strategy and the remediation of contaminated sites as well as of former industrial sites with pollutant-contaminated soil; and
- Participating in the enforcement of legislation.

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88 Friedrich Loeffler Institute (2005): Annual Report 2005. [http://www.fli.bund.de/fileadmin/user\\_upload/Dokumente/Jahresberichte/2005/en/Overview\\_2005.pdf](http://www.fli.bund.de/fileadmin/user_upload/Dokumente/Jahresberichte/2005/en/Overview_2005.pdf) [January 2007].

89 <http://www.umweltbundesamt.de/>

90 [http://www.bmu.de/english/the\\_ministry/tasks/federal\\_environmental\\_agency/doc/3097.php](http://www.bmu.de/english/the_ministry/tasks/federal_environmental_agency/doc/3097.php) [January 2007]. See also Federal Environment Agency (2004): Jahresbericht 2004. <http://www.umweltdaten.de/publikationen/fpdf-l/2958.pdf> [January 2007].

## FEDERAL AGENCY FOR NATURE CONSERVATION (BfN)

The Federal Agency for Nature Conservation (BfN)<sup>91</sup> is an independent federal authority operating under the responsibility of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It is tasked with national and international environmental conservation and landscape management. The BfN is the authorizing agency for imports and exports of protected animal and plant species, as well as for the contained use and release of genetically modified organisms, and assesses the concomitant risks for humans and the environment.<sup>92</sup>

## PAST AND PRESENT INITIATIVES AND POLICIES

### NEW STRATEGY FOR PROTECTING THE PEOPLE OF GERMANY

According to the German constitution, responsibilities for civil emergency planning are shared between the federal and the state levels. In general, the federal level is responsible for civil protection in wartime, whereas the 16 federal German states are in charge of disaster preparedness and relief during peacetime. A reconsideration of new threats and risks, such as the 11 September 2001 attacks in the US and the 2002 Elbe flood in Germany, has given rise to new strategic thinking regarding civil protection and disaster response in Germany. In view of the new threats, the federal minister of the interior and his counterparts in the federal states agreed at the Permanent Conference of Interior Ministers and Senators of the Federal States (IMK) in June 2002 on a new framework concept for civil protection and disaster management, called the “New Strategy for Protecting the People of Germany”.

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91 <http://www.bfn.de/>

92 Federal Agency for Nature Conservation (2004): Leitbild des Bundesamtes für Naturschutz. [http://www.bfn.de/fileadmin/MDB/documents/leitbild\\_bfn.pdf](http://www.bfn.de/fileadmin/MDB/documents/leitbild_bfn.pdf) [January 2007].

The central idea of the new strategy is shared responsibility and stronger cooperation between federal and state officials with respect to large-scale hazards, such as natural or industrial hazards, epidemics, and international terrorism.<sup>93</sup> The new concept includes a four-tier system for hazard control, ranging from ordinary daily protection to special protection against large-scale disasters and exceptional damage situations. At the highest threat level, closer cooperation between the federal and state level is required.<sup>94</sup>

The implementation of the new strategy concept is under way, and some important milestones have been achieved. The main organizational consequence of the new strategy has been the establishment of the Federal Office of Civil Protection and Disaster Assistance (BBK). Additional elements of the new strategy include the German Emergency Preparedness Information System (deNIS), the German Joint Information and Situation Centre (GMLZ), and the Satellite-based Warning System (SatWas). These have been established at the BBK and provide new coordination and information instruments.<sup>95</sup>

#### INTERDISCIPLINARY EXPERT NETWORK ON BIOLOGICAL DANGERS

The project “Interdisciplinary Expert Network on Biological Dangers”,<sup>96</sup> coordinated by the Robert Koch Institute (RKI) and supported by the Federal Office of Civil Protection and Disaster Assistance (BBK), aims to elaborate and establish a comprehensive, nation-wide framework for the emergency management of large-scale biological incidents. The goal is to define responsibilities, operational principles, and best practices that

93 Deutscher Bundestag (2003): Entwicklung eines Gesamtkonzepts zur Abwehr bioterroristischer Gefahren. Antwort der Bundesregierung, 16. Oktober 2003. Drucksache 15/1748.

94 Bundesverwaltungsamt (2003): Neue Strategie zum Schutz der Bevölkerung in Deutschland. In: AKNZ, Schriftenreihe WissenschaftsForum, Band 4. [http://www.bbk.bund.de/cln\\_007/nn\\_400556/SharedDocs/Publikationen/Wissenschaftsforum/Band\\_204\\_20Neue\\_20Strategie,tempLateId=raw,property=publicationFile.pdf/Band%204%20Neue%20Strategie.pdf](http://www.bbk.bund.de/cln_007/nn_400556/SharedDocs/Publikationen/Wissenschaftsforum/Band_204_20Neue_20Strategie,tempLateId=raw,property=publicationFile.pdf/Band%204%20Neue%20Strategie.pdf) [January 2007].

95 [http://www.bmi.bund.de/cln\\_012/nn\\_165060/Internet/Content/Themen/BevoelkerungsschutzUndKatastrophenhilfe/PolitischeZiele/Grundzuege\\_der\\_Neuen\\_Strategie\\_zum\\_Id\\_92533\\_de.html](http://www.bmi.bund.de/cln_012/nn_165060/Internet/Content/Themen/BevoelkerungsschutzUndKatastrophenhilfe/PolitischeZiele/Grundzuege_der_Neuen_Strategie_zum_Id_92533_de.html) [January 2007].

96 <http://www.bevoelkerungsschutz.de/>

contribute to improved and streamlined cooperation between involved actors on all administrative levels. The project covers various aspects of biological risk management such as detection, diagnostics, clinical capacities, risk communication, decontamination, and personal protective equipment, which are addressed in specialized working groups. The project has established a secure internet platform that bundles the professional expertise and facilitates an exchange between first responders, public health officers, researchers, and other involved parties. The website also contains data on relevant research projects, the legal framework, and on resources such as laboratory capacities.<sup>97</sup>

### NATIONAL VACCINE INITIATIVE

The National Vaccine Initiative<sup>98</sup> was initiated by the Federal Ministry of Education and Research (BMBF)<sup>99</sup> in 1999 with a total budget of €25.6 million. It aims at reducing time cycles between research, development, and market application of vaccines, and its goal is to establish a German network with special expertise and an international reputation in vaccine research and development. The German Research Center for Biotechnology (GBF), now called the *Helmholtz Center*,<sup>100</sup> has been tasked with assessing the potential for vaccine development in Germany and with the establishment of a management unit that will bring together relevant partners in order to facilitate vaccine development projects that are medically and economically feasible. The initiative officially started in 2002, and its duration was extended in 2005 up until the year 2010.<sup>101</sup>

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97 [http://www.bbk.bund.de/cIn\\_007/nn\\_400296/DE/02\\_\\_Themen/07\\_\\_Forschung/02\\_\\_Forschungsvorhaben/02\\_\\_lfdFV/01\\_\\_BeschreibungFV/Beschreibung\\_20Lang\\_20166.html](http://www.bbk.bund.de/cIn_007/nn_400296/DE/02__Themen/07__Forschung/02__Forschungsvorhaben/02__lfdFV/01__BeschreibungFV/Beschreibung_20Lang_20166.html) [December 2006]. The initial results of the expert network's efforts have been published in: Bundesamt für Bevölkerungsschutz und Katastrophenhilfe (2005): *Biologische Gefahren – Beiträge zum Bevölkerungsschutz*. 2. Auflage. Bonn: BBK. [http://www.bbk.bund.de/cIn\\_007/nn\\_398738/SharedDocs/Publikationen/Publikationen\\_20Forschung/biologische\\_20Gefahren,templateId=raw,property=publicationFile.pdf/biologische%20Gefahren.pdf](http://www.bbk.bund.de/cIn_007/nn_398738/SharedDocs/Publikationen/Publikationen_20Forschung/biologische_20Gefahren,templateId=raw,property=publicationFile.pdf/biologische%20Gefahren.pdf) [December 2006].

98 <http://www.gesundheitsforschung-bmbf.de/de/376.php> [December 2006].

99 <http://www.bmbf.de/>

100 <http://www.helmholtz-hzi.de/>

101 <http://www.gesundheitsforschung-bmbf.de/de/376.php> [December 2006].

LAWS AND LEGISLATION<sup>102</sup>

Biosecurity	Protection against Infections Act 2001	This act defines infectious diseases and laboratory-confirmed agents that are notifiable, and provides a statutory basis for monitoring occurrences of such pathogens, which must be reported to the Robert Koch Institute (RKI). It also obliges the responsible authorities to take measures to prevent or fight infectious diseases. Furthermore, the act regulates the handling of contagious pathogens, including permit requirements and precautions for laboratories and workers.
	Animal Infectious Diseases Act 1980	The Animal Infectious Diseases Act stipulates similar obligations with respect to animal diseases and zoonoses (see above).
Biosafety	Work Protection Act 1996	This act obliges employers and employees to ensure health and safety at work. Depending on the nature of the work, this requires risk assessments, preventive and protective measures, and providing information to workers.
	Ordinance on Safety and Health Protection related to Work involving Biological Substances 1999	This ordinance regulates the handling of biological substances. It classifies biological agents according to four risk groups. Depending on the level of risk, the ordinance stipulates risk assessments, protective measures and appropriate equipment, provision of information to workers and public authorities, and precautionary health examinations of workers.
	Genetic Engineering Act 1990	This act regulates the handling of genetically-modified organisms. It imposes restrictions in terms of authorization procedures and safety measures, and regulates the contained use or release of such organisms as well as liability issues.
	Ordinance on the Transport of Dangerous Goods via Road and Rail 2001	The ordinance regulates the transport of dangerous goods. It requires safety measures and authorizations to be observed for some goods.

102 This chart may not include all relevant laws. It was compiled from the following sources: The laws themselves at <http://bundesrecht.juris.de/>; Interpol's website on "National Laws and Measures: Counter-Terrorism Regulation of Biology" - <http://www.interpol.int/Public/Bio-Terrorism/NationalLaws/>; the Center for Nonproliferation Studies' (CNS) "Comparative Review of Biosecurity-Related Legislation" - <http://cns.miis.edu/research/cbw/biosec/pdfs/bio-law.pdf>; and the BTWC document "Legislation in the Federal Republic of Germany on the Prohibition of Biological Weapons" BWC/CONF.V/5, submitted by Germany on 2 October 2001 - [http://www.opbw.org/rev\\_cons/5rc/docs/rev\\_con\\_docs/i\\_docs/V-05.pdf](http://www.opbw.org/rev_cons/5rc/docs/rev_con_docs/i_docs/V-05.pdf).

Criminalization	War Weapons Control Act 1961	According to this act, it is prohibited to develop, produce, acquire, transfer, import, export, transport, or trade in biological weapons through the territory of the Federal Republic of Germany, or to exercise actual control over these weapons. Furthermore, it is also prohibited to willfully encourage another person to develop, produce, etc. biological weapons. The War Weapons List includes genetically modified microorganisms and a list of representative pathogens and toxins that are considered to be potential biological warfare agents.
	War Weapons Control List	
	German Criminal Code	The Criminal Code outlaws terrorist acts, participation in a terrorist organization, recruitment for terrorist organizations, supplying weapons to terrorist organizations, and financing of terrorist activities and organizations.
	Terrorism Combat Act 2002	This act amends various other pieces of legislation related to security, travel, and immigration, such as the act on the protection of the constitution (BfV), on intelligence (BND), on the police (BKA), on foreigners, on refugees, on passports, on air traffic, and others. It expands the jurisdictions of the security agencies and allows for improved data exchange among them. Furthermore, it allows for tighter border controls, armed police flight attendants, outlawing of extremists and extremist groups, and for improved security checks of certain employees and travelers.
Import / Export Controls	Foreign Trade and Payments Act 1961	This act regulates exports of certain biological materials and dual-use equipments. It implements the provisions of Council Regulation (EC) 1334/2000, which established a Community regime for the control of exports of dual-use goods and technologies. An export list, which is part of the ordinance, identifies the microorganisms, viruses, and toxins as well as the systems and basic system components that require export licenses from the Federal Office of Economics and Export Control (BAFA).
	Foreign Trade and Payments Ordinance 1986	
	Ordinance on the Import of Animal Pathogens 1982	The ordinance places restrictions on the import of certain animal pathogens requiring prior authorization that is only granted to scientific establishments.





# RUSSIAN FEDERATION<sup>1</sup>

## RUSSIA'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

Russia's compliance with the Biological and Toxin Weapons Convention (BTWC) remains in question, according to recent allegations by the US Department of State. However, the USSR ratified the convention in 1975, and Russia is one of the three depositary states.<sup>2</sup> Russia is also a state party to the Geneva Protocol, which the Soviet Union ratified in 1928, and a participating state of the Wassenaar Arrangement. Russia also has export control legislation in line with the Australia Group.<sup>3</sup>

Russian President Vladimir Putin has stated that the goal of terrorists is to get access to weapons of mass destruction (WMD), and has claimed that "bioterrorism has become a reality", requiring adjustments to national defense policies.<sup>4</sup> Cooperation between Russia and the US in the fight against terrorism plays an important role in achieving the long-term non-proliferation goals. In 2001, the presidents of the two countries agreed to combat bio-terrorism and issued a joint statement saying that Russia and the US would work together on means for countering the threat of bioterrorism, and on related health measures, including prevention, treatment, and management of possible consequences. The security

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1 The country survey on Russia was written by Aleksandr Rabodzey, Science, Technology and Global Security Working Group, Massachusetts Institute of Technology (MIT; until 2006); with contributions by Susanne Schmid, Center for Security Studies (CSS); and Sergio Bonin.

2 The two others are the US and the United Kingdom.

3 Federal Law of the Russian Federation No. 183 of 18 July 1999 and the Federal Law On Export Control laid a legal basis for export controls. See Roger Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, Background paper 4, Stockholm International Peace Research Institute, p. 27. <http://www.pugwash.se/SIPRIEU-PilotBioCTRROffeyBP4.pdf> [December 2006].

4 Ibid., p. 28.

of materials, facilities, expertise, and technologies that can be exploited by bio-terrorists should be enhanced, and the presidents confirmed a strong commitment to the BTWC.<sup>5</sup> However, at the practical level, cooperation between the two countries has remained low.<sup>6</sup>

Although the Russian government has reaffirmed that it regards threat reduction and disarmament support as important elements of its security policy, Russia has not supported initiatives aimed at reducing biological threats. Its official position remains that Russia has not inherited any BW capacity from the Soviet Union. Russia maintains that it does not have any facilities for the production of biological and toxin weapons and strictly observes its international obligations.<sup>7</sup>

The Soviet Union experienced the effects of bioweapons in 1979 during the accidental release of anthrax spores in Sverdlovsk (now Ekaterinburg), which killed 64 people.<sup>8</sup> Soviet officials tried to hide the accident for a long time, claiming that the deaths had been due to meat poisoning.<sup>9</sup> The fact that this accident was the only recorded release of a pathogen from the extensive Soviet bioweapons program suggests that the authorities were well aware of the biological weapons threat and handled pathogens properly. At the same time, there is only very limited publicly available information on the threat from biological agents and on corresponding defensive measures.<sup>10</sup>

The general perception of the BW threat changed with the 2001 anthrax attacks in the US. A number of governmental initiatives have been undertaken since. Among these are the “G-8 Action Plan on

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5 Joint Statement by President George W. Bush and President Vladimir V. Putin on Cooperation against Bioterrorism, 13 November 2001. See Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, p. 29.

6 Ibid.

7 Ibid.

8 Jeanne Guillemin (2001): *Anthrax: The Investigation of a Deadly Outbreak*. University of California Press.

9 E. Marshall (1988): Sverdlovsk: anthrax capital?. In: *Science*, 22 April 1988, 240: pp. 383–5.

10 The situation has started to change recently as President Putin has increasingly paid specific attention to the BW threat. The number of independent organizations interested in biosecurity is also increasing.

Nonproliferation”<sup>11</sup> and warnings about the biological weapons threat by the Russian Ministry of Public Health.<sup>12</sup> However, the threat of bioweapons does not receive large attention today, partly because Russian society faces a number of more imminent problems, and partly because of a lack of official sources of information. However, Russia will likely continue to give high priority to infectious disease prevention as it did during its G8 presidency.<sup>13</sup>

The general public perception of the threat is shaped by information translated by independent press agencies from foreign sources.<sup>14</sup> Thus, in the absence of official information, the public does not have an adequate perception of the threat. A similar view has been expressed in a 2005 National Academies Press book on Russian biotechnology, noting that the appreciation of the threat on the part of governmental agencies has deepened in recent years.<sup>15</sup>

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

A number of different agencies and ministries are responsible for biosecurity and bioterrorism prevention in Russia. Major structural and organizational changes were carried out in the spring of 2004 throughout the Russian government ministries and agencies. One government resolution that was recently signed into law by Russian Prime Minister Mikhail Fradkov lists the responsibilities of governmental agencies and

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- 11 [http://www.ln.mid.ru/Brp\\_4.nsf/arh465C1E536666BB9EC3256EC80049A8B7?OpenDocument](http://www.ln.mid.ru/Brp_4.nsf/arh465C1E536666BB9EC3256EC80049A8B7?OpenDocument) [October 2006].
  - 12 Russian Health Ministry on the BW threat in Russia. <http://www.newsru.com/russia/15oct2004/chuma.html> [October 2006].
  - 13 “Fighting against infectious diseases: From initiatives to actions.” G8 Working Meeting, Moscow, 25–26 April 2006. [http://en.g8russia.ru/page\\_work/9.html](http://en.g8russia.ru/page_work/9.html) [October 2006].
  - 14 Cf. Alexander Rabodzey (2005): *The Threat of Biological Terrorism and the Role of the Mass Media*. In: *Nuclear Control Journal*, 2005-1,2: pp. 66–72.
  - 15 *Biological Science and Biotechnology in Russia: Controlling Diseases and Enhancing Security - Development, Security, and Cooperation* (2005), p. 16. <http://darwin.nap.edu/books/0309097045/html/21.html> [October 2006].

includes 27 entities.<sup>16</sup> Federal agencies and services are generally part of the respective ministries, with the exception of those under direct control of the government or the president.<sup>17</sup> Biological facilities are subordinated to different ministries: the Ministry of Health monitors the activity of institutes and enterprises dealing with pathogens that are dangerous to human beings, and the Ministry of Agriculture those dealing with pathogens dangerous for plants and animals. Genetic engineering is under supervision of the Ministry of Industry, Science and Technology.<sup>18</sup> Bioterrorism is handled as part of terrorism in general and agencies responsible for managing the bioterrorism threat are generally subsidiaries of larger anti-terrorism agencies.

## PUBLIC HEALTH

### MINISTRY OF PUBLIC HEALTH AND SOCIAL DEVELOPMENT (MZSRRF)

The Ministry of Public Health and Social Development (MZSRRF, the former Ministry of Health)<sup>19</sup> is responsible for public health issues and biological security in Russia. The ministry ensures biological and chemical security of the Russian population and coordinates the interaction of federal agencies in this area. It coordinates work on state policy formulation in the sphere of biological and chemical security, and measures to combat infectious disease. It also participates in drafting federal laws, presidential edicts, and government decrees concerning the establishment of biological and chemical security standards for industrial facili-

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16 Government Resolution No. 303: On the Division of Authority among Federal Agencies in the Sphere of Biological and Chemical Security of the RF, 16 May 2005. Press release of the government of the Russian Federation, 19 May 2005 (in Russian only). [http://www.government.ru/data/news\\_text.html?he\\_id=103&news\\_id=17471](http://www.government.ru/data/news_text.html?he_id=103&news_id=17471) [August 2006].

17 A schematic overview of governmental agencies and their subsidiaries is available on the website of the Russian government: <http://www.government.ru/government/executivepowerservices/> [October 2006].

18 Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, p. 27.

19 <http://www.mzsrrf.ru/>

ties. Further, the ministry regulates the creation, maintenance, storage, and security of dangerous biological agent cultures, and interacts with foreign states and international organizations in the area of biological and chemical security, including issues related to the adherence to the BTWC.<sup>20</sup> Starting in 2001, the ministry published a number of initiatives on infectious disease prevention.<sup>21</sup> In addition to its direct role in the public health sector, the ministry also conducts research activities in a number of institutions, including those of the former Biopreparat network and the State Research Center of Virology and Biotechnology VECTOR (SRC VB VECTOR) in Koltsovo near Novosibirsk.

The following agencies are under the responsibility of the Ministry of Public Health and Social Development with distinct roles in the Russian biosecurity program:

*The Federal Medical-Biological Agency*<sup>22</sup> is responsible for the monitoring of sanitary-epidemiological conditions of industry workers exposed to high health risks.<sup>23</sup> It is involved in the development of federal, organizational, scientific, and innovative programs in the area of biological security. It also contributes to the development of methods and equipments for the identification, detection, prophylaxis, and treatment of pathogens and infectious disease. Furthermore, the agency is active in the area of sanitary-medical control and is responsible for timely responses to emergencies involving biological agents.

*The Sanitary Epidemiological Service (SES)* is a system of sanitary control services belonging to the Federal Medical-Biological Agency with responsibility for the monitoring and prevention of infectious diseases in Russia. The actions of the SES are governed by Federal Law No. 52-F3 "On the Sanitary-Epidemiological Well-being of the Population".<sup>24</sup> In case of an outbreak of infectious diseases, the municipal SES is

20 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3f. [http://cns.miis.edu/pubs/nissexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nissexcon/pdfs/ob_0508e.pdf) [December 2006].

21 G. Onischenko (2005): Main Goals and Objectives in Combating Infectious Diseases in the Russian Federation, p. 93. <http://darwin.nap.edu/books/0309097045/html/21.html> [October 2006].

22 <http://www.fmbaros.ru/news/index.php> [October 2006].

23 <http://www.fmbaros.ru/targprogr/progr.php> [October 2006].

24 [http://www.mzsrrf.ru/prav\\_zak/10.html](http://www.mzsrrf.ru/prav_zak/10.html) [October 2006].

responsible for managing the case. If necessary, the information is sent to the regional SES, which decides on further actions. In case of a large outbreak, the SES and the Ministry of Health and Social Development will be informed and supported by the Ministry of Emergencies and the Ministry of Defense in managing the outbreak. Any outbreak in Moscow itself would be reported directly to the Ministry of Public Health and Social Development.

The *Federal Agency of Healthcare and Social Development*<sup>25</sup> is responsible for the defense against pathogenic organisms and chemicals. Particularly, it is responsible for the development as well as the industrial production and distribution of medical testing systems, pathogen identification, and detection systems and treatments. Furthermore, the agency is responsible for keeping a national stockpile of vaccines and antimicrobial drugs, and provides information on infectious diseases and pathogens to the public.

The *Federal Monitoring Service for Consumer Rights Protection and Human Welfare*<sup>26</sup> oversees the implementation of governmental policies in the area of biological and chemical security in order to ensure the sanitary-epidemiological control and well-being of the population. The agency participates in the development of standards and requirements in the field of biological safety and their implementation. It is also responsible for prophylaxis and monitoring of infectious disease. Recently, the threat and prevention of biological terrorism has been added to the list of major problems the agency should address.<sup>27</sup>

#### MINISTRY OF INTERNAL AFFAIRS (MVD)

The Ministry of Internal Affairs (MVD)<sup>28</sup> is responsible for the physical security of critical infrastructures and for the security of non-military objects, including transportation and storage of biological agents. The

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25 <http://www.roszdravnadzor.ru/>

26 <http://www.rospotrebnadzor.ru/>

27 Plan of Interagency Meeting on the Problem of Sanitary Security on the Territory of the RF (in Russian only). <http://www.rospotrebnadzor.ru/docs/order/?id=260> [October 2006].

28 <http://www.mvd.ru/>

ministry organizes and conducts special scientific research and experimental design activities aimed at improving the efficiency of internal affairs units and forces in emergency situations involving biological or chemical threats.<sup>29</sup> In particular, the Department for Ensuring Order at Restricted Facilities is responsible for the physical security of institutions and production facilities handling pathogens and vaccines. The Department of Ensuring Order at Transport Facilities is responsible for the security of hazardous materials during their transportation.<sup>30</sup> In addition, the Department for Organized Crime and Terrorism is tasked with developing the main thrust of the governmental policy with respect to terrorism prevention and with the coordination of anti-terrorist activities within the MVD.

Together with the Ministry of Internal Affairs (MVD), the Ministry of Transportation<sup>31</sup> is responsible for the administration, delivery, and handling of dangerous materials. While the MVD provides personnel to physically secure the transport, the Ministry of Transportation coordinates logistical issues.

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### MINISTRY OF THE RUSSIAN FEDERATION FOR CIVIL DEFENSE, EMERGENCIES, AND THE ELIMINATION OF THE CONSEQUENCES OF NATURAL DISASTERS (EMERCOM)

The Russian Ministry of Emergencies (EMERCOM)<sup>32</sup> is the primary responder to emergencies in the Russian Federation. It is responsible

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29 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3-4. [http://cns.miis.edu/pubs/nisexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nisexcon/pdfs/ob_0508e.pdf) [December 2006].

30 <http://www.mvd.ru/struct/>

31 <http://www.mintrans.ru/>

32 <http://www.mchs.gov.ru/>

for the development and implementation of state policy in the field of civil defense, and the protection of the population and territories from extraordinary situations. Urgent reactions to radiation, medical-biological, or ecological threats are also part of EMERCOM's responsibilities.<sup>33</sup> Furthermore, it maintains six regional centers. Together with the Federal Agency of Industry and the Federal Service on Ecological, Technological, and Nuclear Control, EMERCOM participates in the development of a database on the safety of critical infrastructures throughout the RF.

Primary funding is provided under the federal program "Decrease of risks and mitigation of the consequences of natural and man-made emergencies caused character in the RF up to 2010", totaling approximately 5bn rubles for 2006-2010 (approx. US\$180 million).<sup>34</sup> This program has the following objectives:

- The improvement of coordination in crisis management;
- The protection of the population and of critical infrastructure from natural or man-made hazards;
- The development of a nationwide notification system;
- The development of a scientific and methodological basis to determine the appropriate response to disasters; and
- The establishment of a national center for emergency management.

Furthermore, Russia has a so-called civil defense system, which is a relic of the former Soviet Union, when everyone had to go through training programs to respond to nuclear, chemical, or biological threats. Such measures are still taught in many schools and universities, even today.

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33 Federal law No. 129-F3: On the protection of people and territory from natural and man-caused emergencies (in Russian only). <http://www.mchs.gov.ru/article.html?id=81> [October 2006].

34 <http://www.mchs.gov.ru/article.html?id=7529> [October 2006].



## NATIONAL SECURITY

### FEDERAL SECURITY SERVICE (FSB)

The Federal Security Service (FSB)<sup>35</sup> is under direct presidential control. The major aim of the FSB is to gather intelligence required to prevent threats of (biological) terrorism in the RF. According to the Federal Law on Terrorism Prevention,<sup>36</sup> it is responsible for the prevention of all forms of terrorism. Furthermore, the FSB cooperates with other relevant federal agencies in developing measures aimed at identifying and thwarting the illegal trafficking of dangerous pathogens and poisonous chemical substances and their illegal use. In collaboration with the Ministry of Civil Defense, Emergencies, and Natural Disasters and the Ministry of Internal Affairs, the FSB therefore maintains a classified, automated database containing information on biological and chemical security of the RF, including information on transnational terrorist threats.<sup>37</sup> In particular, the FSB issues recommendations on the improvement of biological security and the prevention of biological terrorism and monitors international developments. In collaboration with the Ministry of Foreign Affairs, it is also involved in the development of documents for international treaties and in the elaboration of the official Russian position in the field of biosecurity.

### EXTERNAL RECONNAISSANCE SERVICE (ERS)

The External Reconnaissance Service (ERS)<sup>38</sup> is the foreign intelligence service of the Russian Federation and is under direct presidential control. It is responsible for intelligence on international threats, including threats

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35 <http://www.fsb.ru/>

36 <http://www.fsb.ru/under/terror.html> [October 2006].

37 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3-4. [http://cns.miis.edu/pubs/nisexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nisexcon/pdfs/ob_0508e.pdf) [December 2006].

38 <http://www.svr.gov.ru/>

from biological agents and terrorism. The ERS assesses the motivations, intentions, and capabilities of non-state actors and foreign countries and analyzes potential threats, particularly in the field of terrorism and weapons of mass destruction.

### MINISTRY OF FOREIGN AFFAIRS

The Ministry of Foreign Affairs ensures the biological and chemical security of the RF at the international level. In coordination with the relevant federal executive bodies, it drafts documents concerning issues related to the implementation of the BTWC by the RF, and participates in drafting proposals for counteracting the development, acquisition, and production of biological and chemical weapons by other states.<sup>39</sup> In particular, a number of initiatives have been prepared by the ministry concerning BTWC strengthening and implementation. The ministry has two departments responsible for nonproliferation and biosecurity at the international level: the Department on the Problems of Security and Disarmament, and the Department on the Problems of New Challenges and Threats.<sup>40</sup>

### MILITARY DEFENSE AND RESEARCH

#### MINISTRY OF DEFENSE

Historically, the Soviet program on biological weapons was under the aegis of the Ministry of Defense<sup>41</sup> and later supervised by the Biopreparat agency. However, the ministry and its agencies still conduct a significant part of Russian biodefense and biosecurity activities. The ministry

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39 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3f. [http://cns.miis.edu/pubs/nissexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nissexcon/pdfs/ob_0508e.pdf) [December 2006].

40 <http://www.mid.ru/nsite-sv.nsf/mnsdoc/03.04> [October 2006].

41 <http://www.mil.ru/>

maintains a number of research institutions where it conducts scientific research and experimental design tests aimed at creating protection against dangerous pathogens. It also regulates the creation, maintenance, storage, and security of its critical culture collections. Apart from research on biological agents, biodetection, and decontamination, the ministry also plays an important role in formulating state policy on biosecurity and in the establishment of requirements for developing means of protection against dangerous biological agents and chemical substances. The ministry protects the RF's armed forces and military infrastructure from dangerous biological agents and chemical substances as well as other pathogens of both natural and artificial origin. It also conducts assessments of external and internal sources of biological and chemical threats and makes recommendations for preventing other states from developing, acquiring, and producing biological and chemical weapons.<sup>42</sup> At the request of federal agencies or the government, the Ministry of Defense organizes and supports sanitary and anti-epidemic activities in the case of an emergency. Furthermore, the ministry is responsible for ensuring that the Russian armed forces comply with the norms of the BTWC.

In addition, the Ministry of Defense develops and supplies detection and decontamination systems for the armed forces and is the major contractor for detection equipment. The military maintains specialist units trained to defend against biological and chemical weapons. These forces are qualified for early detection of a biological agent release and the decontamination of affected areas. The CBRN defense forces are also responsible for the timely supply of personal protection equipments against biological weapons to other army units. In addition, the armed forces maintain a stockpile of vaccines and other prophylactic measures against infectious diseases.

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42 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3f. [http://cns.miis.edu/pubs/nissexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nissexcon/pdfs/ob_0508e.pdf) [December 2006].

*The Federal Service of Technical and Export Control (FSTEC)*<sup>43</sup> is part of the Ministry of Defense and is responsible for protecting state secrets and classified information on activities related to the biological and chemical security of the Russian Federation. It also controls the implementation of measures aimed at preventing leaks of state secrets and classified information on these activities.<sup>44</sup> Furthermore, it is in charge of technical equipment used for the destruction of biological weapons and participates in international cooperative efforts in the field of biological security. Another major function of FSTEC is the development and enforcement of export controls on equipments and technologies that may be used for bioweapons-related purposes and the implementation of state policy on nonproliferation of biological and chemical weapons.<sup>45</sup>

## CIVILIAN RESEARCH AND LABORATORIES

### BIOPREPARAT

Biopreparat was the largest facility conducting research on pathogenic agents in the former Soviet Union. It developed vaccines, pesticides, and equipment, and conducted research for military purposes. Biopreparat included a network of 20 to 30 research laboratories and scientific institutions, notably the Institute of Molecular Biology in Koltsovo (Vector) and the Institute of Ultra-Pure Biopreparations (in St. Petersburg, formerly Leningrad). Estimates as to the total number of personnel employed by

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43 <http://www.fstec.ru/>

44 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3f. [http://cns.miis.edu/pubs/nissexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nissexcon/pdfs/ob_0508e.pdf) [December 2006].

45 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3f. [http://cns.miis.edu/pubs/nissexcon/pdfs/ob\\_0508e.pdf](http://cns.miis.edu/pubs/nissexcon/pdfs/ob_0508e.pdf) [December 2006].

Biopreparat vary between a maximum of 65,000<sup>46</sup> and a lower estimate of 20-25,000.<sup>47</sup>

Biopreparat was reorganized as a joint-stock company in 1994. The new Biopreparat controls 20 medical industrial plants. The state controls 51 per cent of the company stocks. The board of directors consists of representatives from the Ministry of Property, the Ministry of Public Health and Social Development, the Ministry of Economic Development, and the Ministry of Defense. Currently, Biopreparat produces antibiotics, infusions, and means of prophylaxis and diagnostics for the state. Biopreparat is also responsible for the development and trials of new means of prophylaxis, pharmaceuticals, biological detection systems, and other systems to ensure the sanitary-epidemiological well-being of the population in cases of emergency or war.

STATE RESEARCH CENTER OF VIROLOGY AND BIOTECHNOLOGY  
VECTOR (SRC VB VECTOR)

The State Research Center of Virology and Biotechnology VECTOR (SRC VB VECTOR)<sup>48</sup> is one of the largest Russian research and production complexes in the field of biotechnology and comes under the responsibility of the Ministry of Public Health and Social Development. VECTOR's scientific focus is on the study of infectious pathogens in order to fight diseases and maintain biological security. Basic research is focused on molecular biology, virology, genetic engineering, biotechnology, epidemiology, and ecology. VECTOR comprises six research institutes, three production units, a WHO Collaborating Center for diagnostics of orthopoxvirus infections, and maintains a repository of smallpox virus strains and DNA.

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46 The Center for Strategic and International Studies and the Congressional Research Service place the number at 60,000, and the Henry L. Stimson Center, citing an anonymous government official, puts the number at 65,000. [http://www.armscontrol.org/act/2004\\_07-08/Lu-ongo.asp](http://www.armscontrol.org/act/2004_07-08/Lu-ongo.asp) [October 2006].

47 Federation of American Scientists (FAS).

48 <http://www.vector.nsc.ru/>

RUSSIAN ACADEMY OF SCIENCES (RAS), RUSSIAN ACADEMY OF  
MEDICAL SCIENCES (RAMS), RUSSIAN ACADEMY OF  
AGRICULTURE (RAA)

The Russian Academy of Sciences (RAS)<sup>49</sup> corresponds to the US National Institutes of Health and is responsible for academic research in Russia. The RAS is funded by the Ministry of Education and Science (MON), but is a separate entity and not directly controlled by the Ministry. RAS distributes state funding to its institutes. It consists of nine sections distinguished by their scientific areas of expertise, including a Biological Sciences Section. RAS institutions generally handle scientific research, while the Russian Academy of Medical Sciences (RAMS) and the Ministry of Public Health and Social Development handle applications and implementations of inventions. There is no specific institution devoted to infectious diseases or pathogens like the US National Institute of Allergy and Infectious Diseases (NIAID); instead, research of this type is conducted in some of the laboratories within the institutes. A number of scientific institutions have laboratories working on pathogenic microorganisms, including the Engelhardt Institute of Molecular Biology (IMB),<sup>50</sup> the Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry (IBCH)<sup>51</sup> in Moscow, and others.

The Russian Academy of Medical Sciences (RAMS)<sup>52</sup> is focused on the medical side of biotechnology and on implementation issues. It is involved in infectious diseases research and vaccine development. Among the member institutes of the RAMS are the D. I. Ivanovsky Virology Institute, the Sechenov Medical Academy, the Institute of Vaccines, and others. Finally, the Russian Academy of Agriculture (RAA)<sup>53</sup> consists of scientific institutions working on animal and plant pathogens and protection against their effects.

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49 <http://www.ras.ru/>

50 <http://www.eimb.relarn.ru/>

51 <http://www.ibch.ru/>

52 <http://www.m-vesti.ru/ramn.htm> [October 2006].

53 <http://www.rashn.ru/>

## MINISTRY OF EDUCATION AND SCIENCE (MON)

Apart from funding the RAS, the Ministry of Education and Science (MON)<sup>54</sup> directly supports science and innovations through its Federal Agency of Science and Innovations (FASI). The ministry participates in the development of government policies in the field of biological and chemical security, and is also responsible for the management of scientific activities, innovations, and technology in the areas of biotechnology and biosecurity. Furthermore, it is responsible for the development of educational programs in biosciences, biotechnology and biological security norms, and coordinates the activities of federal agencies and ministries involved in research and development.

The *Federal Agency of Science and Innovations (FASI)*<sup>55</sup> is responsible for forecasting developments in science and technology as well as market analysis for high-tech products, and conducts expert analyses of federal programs related to biosecurity and biosafety. The agency selects and funds innovative projects. In particular, special attention is given to “Security and Counterterrorism”, which includes the development of countermeasures to potential future instances of bioterrorism.<sup>56</sup> In 2005, a US\$4 million grant was awarded for the development of technologies, methods, and means of ensuring biological security and counteracting terrorism.

## NATIONAL ECONOMY

### MINISTRY OF ECONOMIC DEVELOPMENT AND TRADE

The Ministry of Economic Development and Trade<sup>57</sup> is responsible for reviewing propositions and concepts of federal organizations on biologi-

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54 <http://www.mon.gov.ru/>

55 <http://www.fasi.gov.ru/>

56 <http://www.fasi.gov.ru/fcp/technika/konkurs/bt/275/> [October 2006].

57 <http://www.economy.gov.ru/>

cal and chemical security. It also handles financial aspects of funding and the distribution of resources to the appropriate agencies. In particular, the Department of Economics of Defense Programs and Security is responsible for biological and chemical security, and the Department of External Economical Relations is responsible for international activities.

The ministry's Department of Export Control is Russia's main export control agency. It issues licenses for the export of dual-use and other critical materials. The president approves the lists of controlled goods and technologies. The Export Control Commission coordinates policies, implements legislation, and resolves interagency disputes. However, there have only been very few, if any, cases of individuals being prosecuted for export control violations in Russia.<sup>58</sup>

#### MINISTRY OF INDUSTRY AND ENERGY (MTE)

The Ministry of Industry and Energy (MTE)<sup>59</sup> participates in the development of national policies and technical requirements for biological and chemical security. It develops organizational and scientific regulations in the area of industrial and defense-industrial complexes. The MTE is responsible for the implementation of innovative scientific and technical projects aimed at the development of high-tech products and technologies in the biotech industry. Since April 2004, the MTE has been responsible for questions concerning bio-safety, including genetically modified organisms and their registration. Regulations have been adopted concerning work with dangerous pathogens, for which a license is required.<sup>60</sup>

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58 D. Hoffman: Where have Russian arms scientists gone? Salt Lake Tribune, 24 January 1999. Cited in Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, p. 29.

59 <http://www.mte.gov.ru/>

60 Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, pp. 26f.



The MTE's *Federal Agency of Industry*<sup>61</sup> took over the functions of the former Munitions Agency, which had previously been responsible for the implementation of the BTWC in the RF. Specifically, the latter task is now the responsibility of the Center for Conventional Problems and Programs of Disarmament. The Federal Agency of Industry participates in the development of federal programs on innovations, biotechnology, and the improvement of the material-technical base. Furthermore, the agency elaborates national standards and technical requirements for biological safety and security. It also develops technical diagnostics systems and is responsible for the maintenance of current facilities, together with the Federal Service on Ecological, Technological, and Nuclear Control. In addition, the agency funds research projects and supports the Chemical Disarmament Project,<sup>62</sup> which also covers some issues related to biological disarmament and terrorism prevention.

## ANIMAL HEALTH

### MINISTRY OF AGRICULTURE (MoA)

The Ministry of Agriculture (MoA)<sup>63</sup> interacts closely with federal agencies in the field of biological security and participates in the formulation of state policy on chemical and biological security. It provides legal and regulatory oversight of veterinary control aimed at reducing the harmful impact of dangerous biological agents and chemical substances on farm animals, plants, and their environment, as well as on agricultural production and the food industry. Furthermore, the ministry regulates the creation, maintenance, storage, and security of culture collections consisting of dangerous biological agents at the facilities that are critical

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61 <http://www.rosprom.gov.ru/>

62 <http://www.chemicaldisarmament.ru/>

63 <http://www.mcx.ru/>

elements of the agricultural industry.<sup>64</sup> The MoA also runs a number of research facilities working on animal and plant pathogens, which are part of the Russian Academy of Agriculture (RAA). These facilities conduct research on vaccines and prophylaxis against infectious diseases in animals. In addition, the following services are under the responsibility of the MoA:

The *Federal Service on Veterinary and Phyto-Sanitary Control*<sup>65</sup> is responsible for oversight of the agricultural sector and deals primarily with ecological monitoring. It is also tasked with the development of national technical standards on biological and chemical safety in the agricultural sector.

The *Federal Agriculture Agency* is responsible for the protection of livestock and agriculture in general from dangerous pathogens. It maintains stockpiles of protective substances for treating animals and crops.

## ENVIRONMENTAL PROTECTION

### MINISTRY OF NATURAL RESOURCES (MNR)

The Ministry of Natural Resources (MNR)<sup>66</sup> participates in the development and formation of governmental policy with respect to biological and chemical security. Furthermore, it develops sanitary guidelines and rules for the handling of natural resources. Both the *Federal Service of Natural Resources Control*,<sup>67</sup> which controls and monitors the levels of pathogens in the environment, and the *Federal Agency of Water Resources*,<sup>68</sup> which

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64 Russian Government Distributes Responsibilities in the Area of Chemical and Biological Security. In: NIS Export Control Observer, August 2005: pp. 3-4. [http://cns.mii.su/pubs/nisexcon/pdfs/ob\\_0508e.pdf](http://cns.mii.su/pubs/nisexcon/pdfs/ob_0508e.pdf) [December 2006].

65 [http://www.mcx.ru/index.html?he\\_id=888](http://www.mcx.ru/index.html?he_id=888) [October 2006].

66 <http://www.mnr.gov.ru/>

67 <http://control.mnr.gov.ru/>

68 <http://voda.mnr.gov.ru/>

is responsible for the biological safety of Russia's water resources, are under the responsibility of the MNR.

#### FEDERAL SERVICE ON ECOLOGICAL, TECHNOLOGICAL, AND NUCLEAR CONTROL

The Federal Service on Ecological, Technological, and Nuclear Control<sup>69</sup> is under direct governmental supervision. It participates in the development of laws and policies on biological and chemical security and the safety of installations. The service also monitors the ecological aspects of legal acts, international agreements, and technical installations. Furthermore, it assesses the safety of facilities and procedures for handling pathogens and conducting research. In addition, the service provides education in biological safety for specialists and participates in the implementation of the BTWC.

#### FEDERAL SERVICE ON HYDROMETEOROLOGY AND CONTROL OF THE ENVIRONMENT (MECOM)

The Federal Service on Hydrometeorology and Control of the Environment (MECOM)<sup>70</sup> is under direct governmental control. It is responsible for the early notification of biological threats and for providing related information to governmental agencies. MECOM monitors the integrity of the atmosphere, water resources, and the environment in general.

#### FEDERAL AGENCY ON REGULATION AND METROLOGY

The Federal Agency on Regulation and Metrology is part of the Ministry of Industry and Energy (MTE) and responsible for providing expertise and programs in the area of possible harmful effects to the environment.

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69 <http://www.gosnadzor.ru/>

70 <http://www.mecom.ru/>

It provides expert advice on the development of national standards with respect to possible biological safety threats.

## PAST AND PRESENT INITIATIVES AND POLICIES

### GOVERNMENT BIOSECURITY INITIATIVES

In general, the Russian authorities do not have an extensive biodefense and biosecurity program such as the US does. Biological terrorism was perceived as part of conventional terrorism up until recently, and thus most of the activities are conducted as part of the general terrorism prevention policy.

However, a number of initiatives concerning the bioweapons threat and biological security have been taken in recent years. In particular, the 2004 Act on “Foundations of State Policy in the Area of Chemical and Biological Security in the RF for the Period until 2010 and Future Perspective”<sup>71</sup> defines major goals and principles of Russia’s biological security policy and states that “to ensure chemical and biological security is one of the most important ways of strengthening the national security of the RF”.

Government Resolution No. 303 on the Division of Authority among Federal Agencies in the Sphere of Biological and Chemical Security of the RF of 2005 provides a complete list of agencies and their particular responsibilities.<sup>72</sup>

Furthermore, the government published a decree in 2005 on the establishment of the Governmental Commission on Questions of Biological and Chemical Security in the RF.<sup>73</sup> The establishment of

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71 <http://www.rg.ru/2004/04/07/ximbezopasost-dok.html> [October 2006].

72 Government Resolution No. 303: On the Division of Authority among Federal Agencies in the Sphere of Biological and Chemical Security of the RF, 16 May 2005. Press release of the government of the Russian Federation, 19 May 2005 (in Russian only). [http://www.government.ru/data/news\\_text.html?he\\_id=103&news\\_id=17471](http://www.government.ru/data/news_text.html?he_id=103&news_id=17471) [August 2006].

73 [http://www.bio.su/press\\_2005feb\\_025r.htm](http://www.bio.su/press_2005feb_025r.htm) [October 2006].

the commission signaled the direct involvement of the government in biosecurity policy. Thus, all in all, there is a clear increase in attention given by the government to biological security in the RF.

#### GOVERNMENTAL COMMISSION ON QUESTIONS OF BIOLOGICAL AND CHEMICAL SECURITY IN THE RF

The Governmental Commission on Questions of Biological and Chemical Security in the RF was established in 2005 by a decree of the government.<sup>74</sup> The role of the commission is to coordinate the actions of the federal agencies in the area of biological security. The major goals of the commission are to:

- Develop proposals for organizational improvements of state structures and policy in the area of biological and chemical security;
- Shape and implement governmental policy on biosecurity;
- Develop proposals on the physical security of critical facilities;
- Coordinate interaction among agencies involved in biodefense;
- Improve legislation in the area of chemical and biological security; and to
- Improve international cooperation in the area of biosecurity.

#### FEDERAL ANTITERRORISM COMMISSION

The Federal Antiterrorism Commission was created by an order of the president of the RF and is headed by the prime minister. The major functions of the commission are to collect and analyze information on the trends in terrorism, to develop recommendations on governmental anti-terrorism policies, to coordinate and organize counterterrorism actions and operations at the federal level, and to provide training modules on responses to the consequences of terrorist attacks.

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74 Ibid.

The commission consists of members of the Federal Assembly and the Duma, but also includes members of the following agencies responsible for terrorism prevention: the Federal Security Service (FSB), the Ministry of Internal Affairs (MVD), the External Reconnaissance Service (ERS), the Ministry of Defense, and the Federal Protective Service (FSO).<sup>75</sup> In addition, Regional Antiterrorism Commissions have been created in order to address counterterrorism issues at the regional level.

#### INTERNATIONAL SCIENCE AND TECHNOLOGY CENTER (ISTC)

The International Science and Technology Center (ISTC)<sup>76</sup> was established in 1992 as a cooperative effort by the governments of the EU, the US, Canada, Japan, South Korea, Norway, and Russia as well as private companies in order to prevent the proliferation of weapons of mass destruction and of related development and production technologies from former Soviet assets. Nonproliferation of biological weapons is one of the ISTC's major areas of interest. In 2005, 27 per cent of ISTC's funds were devoted to biotechnology and the life sciences.<sup>77</sup>

The center provides funding for the physical security of scientific centers and plants working on dangerous pathogens, and implements initiatives on the conversion of military assets to peaceful applications. ISTC has spent nearly US\$190 million on research grants of US\$300 to US\$500 a month in order to persuade Russian weapons scientists not to pass on their knowledge and to remain engaged in peaceful applications of their expertise.<sup>78</sup>

The ISTC receives funding from two major sources – the governments and partner programs. Partner programs involve direct cooperation between private and governmental organizations in the areas of vaccine development, prophylaxis, pathogen detection, and others. According

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75 For a list of the agencies, see <http://antiterror.ru/>

76 <http://www.istc.ru/>

77 ISTC (2005): Annual Report 2005. <http://istc.ru/ISTC/sc.nsf/AR-2005-en.pdf> [October 2006].

78 <http://www.ceip.org/programs/npp/tucker.htm> [October 2006].

to the ISTC website, “These Programs offer technology matchmaking, project management and pre-commercialization of technologies support to former weapons scientists, to enable private companies, investors and governmental research organizations to partner and capitalize on the high-tech scientific skills and technologies available today in Russia and the CIS.”<sup>79</sup>

## LAWS AND LEGISLATION<sup>80</sup>

<p>Biosecurity</p>	<p>Act on the Ratification of the Biological Weapons Convention 1975</p> <p>Decree No. 390 on Ensuring the Implementation of International Obligations in the Field of Biological Weapons 1992</p>	<p>With these two acts, the propositions of the BTWC were implemented into Russian legislation. Russia ratified the convention in 1975 and is one of the three depositary states. In that capacity, the Russian Federation remains committed to the objectives and provisions of the Convention and each year submits exhaustive information on programs and sites related to obligations under the Convention <sup>81</sup>.</p>
	<p>Article 260 (2005) on the Foundations of Governmental Policy of the Russian Federation in the Nonproliferation of WMD and Means of Delivery</p>	<p>This article defines the principles of Russian policy towards the nonproliferation of the WMD and of biological weapons in particular. Russia claims that its goal is to strengthen the nonproliferation regime and its legal base, to improve existing control mechanisms including export controls, and to encourage other countries to comply with international laws. At the domestic level, Russia emphasizes the need to develop measures to defend its citizens from WMD, and to improve the legal system and physical security, as well as the government’s control over existing facilities.</p>

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 79 ISTC (2005): Annual Report 2005. <http://istc.ru/ISTC/sc.nsf/AR-2005-en.pdf> [October 2006].

80 This chart may not include all relevant laws.

81 Interpol, “Steps taken by member countries in response to UNSCR 1540 – Russia”, <http://www.interpol.int/Public/BioTerrorism/UnRes1540Laws/Russia.pdf> [October 2006].

PART ONE: Country Surveys

	Government Resolution No. 303 (2005) on the Division of Authority among Federal Agencies in the Sphere of Biological and Chemical Security of the RF	This resolution defines the responsibilities of governmental agencies in the area of biological security and nonproliferation. It covers the roles of a total of 27 institutions.
	Government Resolution No. 64 (2005) on the Establishment of the Governmental Commission on Biological and Chemical Security in the RF	In light of the increased significance of biosecurity problems, Prime Minister Mikhail Fradkov in February 2005 signed Resolution No. 64, establishing the Governmental Commission on Russia's Biological and Chemical Security. It is set up under the leadership of the Minister for Health and Social Development. This commission is to include representatives from all of the security ministries, as well as the ministries of science and education and agriculture, at no lower than deputy minister level. <sup>82</sup>
Biosafety	Resolution No. 869 (1992) on the State Registration of Potentially Hazardous Chemical and Biological Substances	This resolution requires the development of a governmental registration system for potentially dangerous chemical and biological substances. <sup>83</sup>
	Federal Act No. 52-FZ of 30 March 1992	This act regulates provisions on the health and epidemiological wellbeing of the population.
	Decision No. 501 of 4 July 2002	This decision regulates the licensing of activities connected with the handling of infectious pathogenic agents.
	Decision No. 120 of 16 February 2001	This decision regulates the state registration of genetically modified organisms.
	Sanitary and Epidemiological Regulations	SP 3.1.1381-03 regulates the physical biosafety of workers handling pathogens. The regulations SP 1.2.1318-03, SP 1.3.1285-03, and SP 1.2.036-95 set out requirements concerning the handling, storing, and transporting of microorganisms in pathogenic hazard groups I-II; premises and laboratory equipment; work in the laboratories of production departments; action to be taken in dealing with accidents when working with biological materials; genetic engineering; departure procedures for employees of establishments working with biological materials; and requirements for the conduct of sanitary and epidemiological inspections. <sup>84</sup>

82 Roffey (2005): From bio threat reduction to cooperation in biological proliferation prevention, p. 28.  
83 <http://www.crc.ru/docs/files/869-92.html> [October 2006].

84 Interpol, "Steps taken by member countries in response to UNSCR 1540 – Russia", <http://www.interpol.int/Public/BioTerrorism/UnRes1540Laws/Russia.pdf> [October 2006].



<p>Criminalization</p>	<p>Russian Criminal Code</p>	<p>In the Russian Federation it is illegal to provide any form of support to actors that are reliably believed to be involved in activities connected with the development, acquisition, manufacture, possession, transport, transfer, or use of nuclear, chemical, or biological weapons and their means of delivery.<sup>85</sup></p> <p>Article 188, which deals with smuggling, prohibits the movement of narcotic drugs, psychotropic, virulent, poisonous, toxic, explosive, or radioactive substances, as well as radiation sources, nuclear materials, firearms, explosive devices, munitions, weapons of mass destruction, or materials and equipment which may be used in the production of weapons of mass destruction, their means of delivery, other armaments, other military technology, across the border of the Russian Federation.</p> <p>Under Article 189, it is forbidden for Russian citizens to engage in or conclude foreign trade transactions involving goods, information, work, or services, or to participate therein by any other means, if they have good reason to believe that said goods, information, work, or services will be used by aliens for the purposes of producing weapons of mass destruction or the means for their delivery.</p> <p>Under Article 355, the development, production, stockpiling, acquisition, or sale of chemical, biological, toxic, or other types of weapons of mass destruction prohibited by international treaties in the Russian Federation shall be punishable by imprisonment for a term of between five and ten years.</p> <p>Article 356 prohibits the use of weapons of mass destruction.<sup>86</sup></p>
<p>Import/Export Controls</p>	<p>Federal Law No.183-FZ on Export Control of 18 July 1999</p> <p>Decree No. 1004 of 8 August 2001</p>	<p>The control focuses on pathogenic organisms, genetically modified organisms, and equipment that may be used for the development of biological weapons.</p> <p>This decree approves a list of human, animal, and plant disease-inducing agents (pathogens), genetically modified microorganisms, toxins, equipment, and technology subject to export controls.</p> <p>The Russian list contains 20 viruses, four rickettsia, 16 bacteria, 14 toxins, and other genetically altered micro-organisms.</p>

85 Ibid.

86 For details on the Russian Criminal Code, see the website of the Russian Munitions Agency: Convention Problems of Prohibition of Biological and Toxin Weapons. <http://www.munition.gov.ru/eng/b5.html> [October 2006].

PART ONE: Country Surveys

Decision No. 57 of 22 January 1998	This decision regulates the strengthening of controls over the export of dual-use goods and services associated with weapons of mass destruction and their delivery systems.
Decision No. 634 of 29 August 2001	This decision approves the regulations for monitoring of foreign economic activity in relation to pathogens affecting humans, animals, and plants, genetically modified microorganisms, toxins, equipment, and technologies.





# SWEDEN<sup>1</sup>

## SWEDEN'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

Sweden has a long tradition of strong engagement in disarmament and non-proliferation and is committed to multilateral approaches to meet the threat of WMD proliferation. Sweden works towards universality, adherence, and compliance with the international treaties in this field. The Swedish government initiated the EU process that resulted in the EU Strategy against proliferation of WMD in 2003. Sweden has also played an important role for UNSCOM (Rolf Ekeus), UNMOVIC (Hans Blix), and in the Weapons of Mass Destruction Commission (Blix). Sweden ratified the Geneva Protocol in 1930 and the Biological and Toxin Weapons Convention (BTWC) in 1976. In the review conferences and negotiations on the BTWC during the 1980s and 1990s, Sweden's government was particularly active in trying to set up a control and verification regime to the treaty. Furthermore, Sweden is a member of the Australia Group and a participating state of the Wassenaar Arrangement.

Following the terrorist attacks in New York in 2001, the Swedish authorities intercepted and analyzed more than 400 letters suspected of containing anthrax, but none of them did. Nevertheless, these incidents have shown that Sweden is fairly well prepared to handle a potential bioterrorism situation by relying primarily on its system of infectious disease control, complemented with other measures of preparedness. The Swedish government had already regarded chemical, biological, and radio-nuclear (CBRN) defense as a high priority for many years

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1 The country survey on Sweden was reviewed by Roger Roffey, Swedish Defence Research Agency (FOI); and Anders Tegnell, National Board of Health and Welfare (SoS).

beforehand. To improve coordination between the many agencies involved, an inter-ministerial and inter-agency working group was established at the Ministry of Defense and later transferred to the Swedish Emergency Management Agency (SEMA), where issues related to biodefense and respective planning efforts are discussed. In general, the country's preparedness against a biological attack is based on the same principles as those applicable in cases of natural occurring infectious diseases outbreaks.<sup>2</sup>

Swedish government officials and experts do not consider Sweden to be a primary target for any particular nuclear, biological, or chemical (NBC) threat at present. Therefore, the Swedish Defence Commission has proposed that NBC-related threat evaluation and defense planning should primarily be based on those threats related to Sweden's participation in peace-support operations.<sup>3</sup> There are, however, concerns that Sweden could be used as a base by terrorist groups to threaten foreign interests using biological agents. But as far is known, no group in Sweden has shown interest in acquiring such agents until now, except for attempts by individual perpetrators. The Swedish Defence Commission also points to the risk that rapid developments in science and technology could result in new biological or chemical weapons or agents. The Defence Commission's report of January 2006 stated that the capacity for handling CBRN incidents had to be improved, and that new possibilities must be sought and tried.<sup>4</sup>

Policy-makers are also well aware that a bioterrorism incident elsewhere in Europe could profoundly affect Sweden. As a result, the government has prioritized developing and maintaining the necessary expertise and capabilities to assist in case of such an event.

- .....
- 2 Roffey et al. (2002): Biological Weapons and bioterrorism preparedness. In: *Clinical Microbiology and Infection* 8 / 2002, 522-528.
  - 3 Swedish Defence Commission (2001): Summary of "A New Structure for Enhanced Security – Network Defence and Crisis Management". [http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn\\_eng.pdf](http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn_eng.pdf) [January 2007].
  - 4 Försvarsberedningen (in Swedish). <http://www.regeringen.se/content/1/c6/05/62/26/20c508f2.pdf> [November 2006].

In its latest report, the Swedish Security Service (SÄPO) places further emphasis on proliferation issues, since many dual-use items and other related material can be acquired in Sweden. It states that Sweden is an attractive venue for procuring technology and technical know-how, and that Sweden may be used as a transit country for the transportation of such products.<sup>5</sup> Furthermore, the SÄPO ascribes the country's vulnerability to the WMD threat to the following weak points:<sup>6</sup>

- A well-functioning technical infrastructure (offers anonymity and technical solutions for information retrieval, ordering, transfers, etc.);
- Insufficient awareness in certain companies of the complex issues surrounding NBC weapons;
- The profitability of the illicit trade;
- Availability of and lack of control over deleterious NBC substances.

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

The Swedish public administration is notable for its relatively small ministries and autonomous government bodies and agencies. Administrative decisions are often made not by the ministries, but by the agencies subordinated to the respective ministry. The agencies are normally given extensive mandates to implement the decisions of the Riksdag and the government.

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5 Swedish Security Service (2006): Swedish Security Service 2005. [http://www.securityservice.se/Publikationer/swedish\\_security\\_service\\_2005.pdf](http://www.securityservice.se/Publikationer/swedish_security_service_2005.pdf) [January 2007].

6 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].

## PUBLIC HEALTH

### NATIONAL BOARD OF HEALTH AND WELFARE (SoS)

The National Board of Health and Welfare (SoS)<sup>7</sup> is the Swedish national expert and supervisory authority for various social and health services, public health issues, and prevention of infectious diseases. Subordinated to the Ministry of Health and Social Affairs, the SoS has the responsibility, in collaboration with county councils and municipalities, to coordinate measures in civilian health care and social services preparation for incidents involving CBRN substances, including disease prevention and health protection. The operational responsibility remains with the counties and municipalities. The SoS is also in charge of national and international coordination and supervision, and provides guidelines and national response plans. Accordingly, the SoS communicates with the EU and the WHO in order to obtain information about potential international outbreaks that might affect Sweden.

Furthermore, the SoS has medical expertise in different fields. In the area of infectious diseases, the SoS performs continuous surveillance of the epidemiological situation in Sweden and the neighboring regions. The organization has elaborated practices for handling incidents in the field of biological weapons.<sup>8</sup>

The SoS' Department of Supervision of Health Services has the main task of supervising the health care services and to monitor actions taken in the areas of infectious diseases prevention and health-related emergency preparedness. Specifically, its Unit for Communicable Disease Prevention and Control supervises the prevention of infectious diseases in Sweden. It is empowered to issue provisions under the Communicable Diseases Act. The unit is also responsible for establishing norms in infec-

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7 <http://www.socialstyrelsen.se/>

8 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].



tious disease prevention, as well as for issues such as hospital hygiene, antibiotics resistance, and vaccination.<sup>9</sup>

The Unit for Emergency Preparedness is responsible for health-related emergency planning and maintains *KAMEDO*, a Swedish disaster medicine study organization that has existed since 1964. *KAMEDO*'s main task is to send observers to disaster areas all over the world in order to study recent disasters, collect useful information, and familiarize themselves with the problems of disaster medicine. Areas of interest include medical, psychological, organizational, and social aspects of disasters.<sup>10</sup> The results are published regularly, including a report on the Aum Shinrikyo attack with sarin in Tokyo in 1995.<sup>11</sup>

The SoS is also, by government decree, responsible for the *Central Field Epidemiology Team (CFG)*, which is a joint project of the Swedish Armed Forces, the Swedish Rescue Services Agency (SRSA), the Swedish Institute for Infectious Disease Control (SMI), and the SoS. The CFG is able to deploy two to four persons for national or international infectious disease control efforts within 24-48 hours. The group is composed of medical personnel, veterinarians, and environmental health specialists, all of whom are trained for rapid reaction. It has the following responsibilities:<sup>12</sup>

- Management of major national and international outbreaks (surveillance; early recognition; quick diagnostics); and
- Environmental health recovery.

9 <http://www.sos.se/sose/sos/omsos/enheter/supervis.htm> [August 2006].

10 <http://www.sos.se/sose/kamedo.htm> [November 2006].

11 Cf. <http://www.socialstyrelsen.se/Publicerat/2000/3246/2000-0-40.htm> [November 2006].

12 Swedish Defence Research Agency (2003): Swedish EAPC Seminar on Non-proliferation and WMD. <http://www2.foi.se/rapp/foir0981.pdf> [August 2006].

## NATIONAL FOOD ADMINISTRATION (NFA)

The National Food Administration (NFA)<sup>13</sup> is the central supervisory authority for matters relating to the safety of food and drinking water, reporting to the Ministry of Agriculture. Together with local municipalities, the NFA is responsible for the supervision of slaughterhouses, processing plants, fish plants, and establishments that handle egg products and food of non-animal origin. The municipalities report the results of microbiological investigations of foodstuff to the NFA. A new reporting system was introduced in 2002.<sup>14</sup> The NFA's central activities and research areas within the field of microbiology include:<sup>15</sup>

- Microbiological risk assessments;
- Surveys of food-borne pathogens; and
- Development of analytical methods.

NFA also processes market-release applications for food that consists of or contains genetically modified organisms and enforces labeling regulations.<sup>16</sup>

## SWEDISH WORK ENVIRONMENT AUTHORITY (SWEA)

The Swedish Work Environment Authority (SWEA)<sup>17</sup> is charged with reducing the risks of ill health and accidents in the workplace and improving the work environment. It supervises the protection measures taken by employers to protect their workers from communicable diseases and other hazardous substances as well as from genetically modified organisms. The SWEA is also responsible for the safety of laboratories as

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13 <http://www.slv.se/>

14 [http://www.sva.se/pdf/zoosis/eng\\_zoonosrapp\\_2003.pdf](http://www.sva.se/pdf/zoosis/eng_zoonosrapp_2003.pdf) [January 2007].

15 [http://www.slv.se/templates/SLV\\_Page.aspx?id=5074](http://www.slv.se/templates/SLV_Page.aspx?id=5074) [August 2006].

16 Ministry of Agriculture, Food and Consumer Affairs (2005): What are the rules governing genetically modified organisms? <http://www.sweden.gov.se/content/1/c6/04/81/89/782e1823.pdf> [August 2006].

17 <http://www.av.se/>

well as the safety of biotechnological activities in general, and develops guidelines for workers' health.<sup>18</sup>

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### SWEDISH EMERGENCY MANAGEMENT AGENCY (SEMA)

The Swedish Emergency Management Agency (SEMA)<sup>19</sup> coordinates activities promoting social preparedness for serious crises, and acts under the responsibility of the Ministry of Defence. It aims at reducing the vulnerability of society at large and improving capacities for handling emergencies. SEMA presents proposals to the government on the allocation of resources, and then distributes funds to the emergency management authorities. This includes directing, coordinating, and evaluating measures taken. The main tasks of SEMA within the CBRN area are to:<sup>20</sup>

- Coordinate and direct the activities for protection against nuclear, biological, and chemical warfare agents;
- Initiate and support cooperation between involved actors;
- Contribute to a comprehensive view of the CBRN threat; and to
- Support other agencies in the event of a crisis.

### SWEDISH RESCUE SERVICES AGENCY (SRSA)

The Swedish Rescue Services Agency (SRSA)<sup>21</sup> is a central administrative authority under the Ministry of Defence that is responsible for the

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18 Cf. Swedish Work Environment Authority (2005): Microbiological Work Environment Risks – Infection, Toxigenic Effect, Hypersensitivity. <http://www.av.se/dokument/inenglish/legislations/eng0501.pdf> [August 2006].

19 <http://www.krisberedskapsmyndigheten.se/>

20 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].

21 <http://www.srv.se/>

improvement of emergency prevention and response measures. This includes the maintenance of rescue services, the construction of shelters, the supervision of land and rail transports of dangerous goods, and on-site decontamination following a release of hazardous substances. The agency coordinates emergency planning for nuclear and other serious accidents and is mandated to assist the government in the aftermath of such an accident by obtaining expert opinions and supporting material from other authorities and organizations. Furthermore, the SRSA conducts risk assessments and develops alarm procedures to warn the population in case of peacetime crises and accidents.<sup>22</sup>

By providing information and training courses and exercises, as well as through supervision, the SRSA promotes practices that improve emergency prevention and response, and precautions that limit injury and damage in the event of an incident. Additionally, the SRSA is responsible for translating the findings of CBRN-related training and exercises into measures dedicated to enhancing disaster preparedness.<sup>23</sup>

In addition, the SRSA maintains a special Chemical Support Team, which would support the Organisation for the Prohibition of Chemical Weapons (OPCW) in incidents involving chemical weapons.

## NATIONAL SECURITY

### NATIONAL POLICE BOARD (RPS)

The National Police Board (RPS)<sup>24</sup> is the central administrative and supervising authority of the Swedish police service, and is subordinated to the Ministry of Justice. The RPS administers the National

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22 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].

23 Swedish Defence Commission (2001): Summary of "A New Structure for Enhanced Security – Network Defence and Crisis Management". [http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn\\_eng.pdf](http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn_eng.pdf) [January 2007].

24 <http://www.polisen.se/>

Criminal Investigation Department and the Swedish Security Service (SÄPO).<sup>25</sup>

The biodefense-related tasks of the RPS include drawing up police emergency plans and the maintenance of a national counter-terrorist unit to combat possible terror attacks in Sweden. Within the RPS, the Policing Management Division (POL) coordinates the work of the police as well as cooperation with other agencies. Its surveillance section is responsible for the CBRN area when it comes to police involvement.<sup>26</sup>

### SWEDISH SECURITY SERVICE (SÄPO)

The duty of the Swedish Security Service (SÄPO)<sup>27</sup> is to prevent and detect crimes against the security of the realm. It operates under the responsibility of the Ministry of Justice and is engaged in four main fields: protective security, counter-espionage, counter-terrorism, and protection of the constitution. It also assesses threats directed against individuals and institutions.

In the CBRN field, SÄPO has the indirect responsibility to prevent the groups and individuals that it monitors as part of its regular activities from actions involving the use of hazardous CBRN substances, such as the planning of murder, sabotage, public hazards, destruction of property, etc. Furthermore, SÄPO has the responsibility to:

- Prevent and investigate the trade in products that may be intended for use in the production of weapons of mass destruction; and to
- Inform potential suppliers of products that may be used for WMD production about export control legislation, dual-use items, and questionable attempts to purchase such items.<sup>28</sup>

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25 <http://www.polisen.se/inter/nodeid=102328&pageversion=1.html> [August 2006].

26 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].

27 <http://www.sakerhetspolisen.se/>

28 <http://www.securityservice.se/VBtext/engelsk.htm> [August 2006].

## NATIONAL DEFENSE RADIO CENTRE (FRA)

The National Defense Radio Centre (FRA)<sup>29</sup> monitors communications signals to meet intelligence requirements in different areas. The FRA supports efforts to prevent and detect proliferation of CBRN weapons. The FRA is a civilian organization subordinated to the Ministry of Defense.

## SWEDISH CUSTOMS SERVICE

The Swedish Customs Service<sup>30</sup> is responsible for the monitoring imports and exports of commodities such as narcotic drugs, arms, alcohol, etc. The Customs Service plans to reinforce its CBRN monitoring capability by establishing specially trained control groups to detect CBRN agents during a control of goods, and to handle them accordingly.

## MILITARY DEFENSE AND RESEARCH

### SWEDISH ARMED FORCES (FM)

The Swedish Armed Forces (FM)<sup>31</sup> have overall responsibility for the country's defense. During peacetime, the military provides various resources to support the population in case of critical situations, such as accidents or natural catastrophes.

The CBRN protection of the armed forces is well developed both for collective and individual protection. In order to improve capabilities in this area, Sweden is developing a specialized military CBRN unit that will be operational for international as well as national services. The unit will be able to carry out risk evaluation and analysis as well as detection, sampling, and identification of CBRN hazards and industrial chemicals.

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29 <http://www.fra.se/>

30 <http://www.tullverket.se/>

31 <http://www.mil.se/>

The unit can also decontaminate or dismantle/destroy CBRN ammunitions and prepare casualties for further transfer and medical treatment. There are three mobile laboratories for the analysis of CBRN agents in national or international missions

Furthermore, the military maintains the *National NBC Defence Centre (SkyddC)*<sup>32</sup> in Umeå in close collaboration with the Swedish Defense Research Agency (FOI) and the University of Umeå. This educational center has the mission to provide society with effective and coordinated protection against nuclear, biological, and chemical threats. SkyddC trains and exercises total defense personnel in CBRN protection and develops materials and methods to improve CBRN protection.<sup>33</sup>

Within the armed forces, the *Joint Military Intelligence and Security (MUST)* handles the intelligence and security aspects of WMD proliferation and their components in the form of chemical, biological, or nuclear substances as well as missile technology. MUST also makes threat assessments. Within MUST, the Transnational section (part of the Intelligence section) is concerned with all issues related to proliferation.<sup>34</sup>

The *Swedish Defence Material Administration (FMV)*<sup>35</sup> provides the armed forces and other security/defense agencies, such as SEMA, with equipment, systems, and methods in the field of CBRN protection. It is an independent civilian authority that has special expertise in advanced technology. Together with FOI and the armed forces, the FMV developed the aforementioned mobile military CBRN laboratories, which were handed over to the Swedish armed forces in July 2006. The system consists of three separate laboratories for chemical, biological, and radiological/nuclear analyses and makes it possible to analyze soil, air, water, vegetation, and swipe samples.<sup>36</sup>

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32 <http://www.skyddc.mil.se/>

33 Swedish Armed Forces (2005): The Facts. [http://www.mil.se/attachments/thefacts\\_2005.pdf](http://www.mil.se/attachments/thefacts_2005.pdf) [August 2006].

34 Swedish Security Service (2003): Proliferation of weapons of mass destruction. <http://www.sakerhetspolisen.se/Publikationer/proliferation%20of.pdf> [January 2007].

35 <http://www.fmv.se/>

36 <http://www.fmv.se/WmTemplates/page.aspx?id=2079> [November 2006].

The *Swedish National Defence College (SNDC)*<sup>37</sup> trains and educates military and civilian leaders, both nationally and internationally, and contributes towards the management of crisis situations and security issues. It has the overall responsibility for the training of senior management personnel within the defense sector. The SNDC carries out research and training in many military disciplines, such as War Studies, Strategy, Military Technology, and Military History.<sup>38</sup>

### SWEDISH DEFENCE RESEARCH AGENCY (FOI)

The Swedish Defence Research Agency (FOI)<sup>39</sup> is an assignment-based authority under the Ministry of Defense. FOI's NBC Defence Division performs research in the field of defense, security, and related technology development, and is a key actor in the Swedish nonproliferation policy.<sup>40</sup> The division covers the whole spectrum of risk studies from threat analysis, participation studies for military and civilian agencies, and research on detection and rapid identification methods to practical medical and physical protection. This division has several specialized departments that pursue the following objectives:<sup>41</sup>

- The Department for NBC Analysis conducts research and development related to analysis methods. The objective is to devise methods which can both indicate the presence of hazardous substances and suggest the source of the substance in question. In collaboration with the SMI and Umeå University, FOI develops measures for BW diagnostics and detection, and evaluates biosensors and other detection systems.

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37 <http://www.fhs.se/>

38 [http://www.fhs.se/templates/Page\\_\\_\\_\\_\\_2169.aspx](http://www.fhs.se/templates/Page_____2169.aspx) [November 2006].

39 <http://www.foi.se/>

40 Swedish Defence Research Agency (2003): Annual Report 2003. <http://www.foi.se/upload/omfoi/infomaterial/foi-annual-report-2003.pdf> [January 2007].

41 [http://www.foi.se/FOI/templates/Page\\_\\_\\_\\_\\_1583.aspx](http://www.foi.se/FOI/templates/Page_____1583.aspx) [August 2006].



- The Department for Medical Countermeasures engages in biomedical research in order to improve medical protection against infectious microorganisms. This includes the preparation of decontamination procedures and the development of vaccines against BW agents.
- The Department for Threat Assessment undertakes overall assessments to protect society against biological, chemical, and nuclear risks as well as potential new threats.
- The Department for Environment and Protection conducts research and develops technologies with a focus on protecting people and the environment against the deliberate or accidental release of hazardous substances.

Additionally, FOI supports the Swedish armed forces in setting up the first military NBC unit.

## CIVILIAN RESEARCH AND LABORATORIES

### SWEDISH INSTITUTE FOR INFECTIOUS DISEASE CONTROL (SMI)

The Swedish Institute for Infectious Disease Control (SMI)<sup>42</sup> is a research institute and the government body in charge of monitoring the epidemiology of infectious diseases in Sweden and promoting control and prevention of these diseases. It is subordinated to the Ministry of Health and Social Affairs. The SMI conducts research programs aiming at the development of diagnostic methods and vaccines, and investigates the transmission mechanisms of infectious diseases. The SMI is also responsible for the collection and analysis of surveillance data, which is gathered via SmiNet<sup>43</sup>, a web-based reporting system for communicable diseases.

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42 <http://www.smittskyddsinstitutet.se/>

43 <http://www.smittskyddsinstitutet.se/upload/Publikationer/smi-rapport-2003-3.pdf> [January 2007].

In collaboration with the Karolinska Institute<sup>44</sup>, a medical university based in Stockholm, the SMI runs a masters program in communicable disease control and hygiene.

Additionally, the SMI participates in several external expert committees and advisory groups, including the science council of the National Food Administration (NFA). Furthermore, the SMI administers the *Basic Surveillance Network (BSN)*,<sup>45</sup> which collects data on communicable diseases in the EU area. The BSN is funded by the European Commission and will be transferred to the European Centre for Disease Prevention and Control (ECDC), which is collaborating with SMI.

In order to increase preparedness against threats posed by microorganisms that cause rare infections and may be used by terrorists, the SoS, the SMI, the Swedish Defence Research Agency (FOI), and the Armed Forces have founded the *Centre for Microbiological Preparedness (KCB)*.<sup>46</sup> Its mission is to build up knowledge and diagnostic capabilities regarding these microorganisms. The KCB includes a BSL-4 laboratory, which was created in 2000 and is jointly run by the SMI, the SoS, and the FOI.<sup>47</sup> It is the only laboratory of its kind in the Nordic countries. In addition, the KCB operates seven BSL-3 laboratories.

CRISMART – NATIONAL CENTRE FOR CRISIS MANAGEMENT,  
RESEARCH, AND TRAINING

Crismart,<sup>48</sup> the National Centre for Crisis Management, Research, and Training at the Swedish National Defence College (SNDC), develops competence and fosters knowledge about national and international crisis management. Research at Crismart focuses on how decisions are made and communicated under extreme pressure in extraordinary situations.

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44 [http://info.ki.se/index\\_en.html](http://info.ki.se/index_en.html) [January 2007].

45 <https://www2.smittskyddsinstitutet.se/BSN/> [August 2006].

46 <http://www.smittskyddsinstitutet.se/in-english/about-smi/departments-and-units/centre-for-microbiological-preparedness/> [January 2007].

47 [http://www.smittskyddsinstitutet.se/upload/Publikationer/SMI\\_presentation\(040315\).pdf](http://www.smittskyddsinstitutet.se/upload/Publikationer/SMI_presentation(040315).pdf) [January 2007].

48 <http://www.crismart.org/>

This is done by identifying both best and less-desirable practices in the management of different types of crises in order to learn from these experiences.<sup>49</sup> Other research areas include defense and security policy, emergency services, and eco-biological contingencies.<sup>50</sup>

## NATIONAL ECONOMY

### NATIONAL INSPECTORATE OF STRATEGIC PRODUCTS (ISP)

The National Inspectorate of Strategic Products (ISP)<sup>51</sup> is active in issues related to export control, subordinated to the Ministry of Foreign Affairs. It controls the export of military equipment and other products that may have dual-use character. The ISP assigns licenses for production, trade, and exports of military equipment and dual-use products, in accordance with internationally agreed lists. Swedish law makes it illegal to provide technical assistance to the development of chemical, biological, or nuclear weapon programs or carriers of such weapons. The ISP maintains close contacts with a large number of Swedish industrial enterprises, many of which have widespread international contacts, and provides them with information on buyer countries, items, etc. The ISP is assisted and supervised by the parliamentary *Export Control Council*, an advisory board consisting of ten representatives from all political parties.<sup>52</sup> The ISP is also the national authority for ensuring compliance with the Chemical Weapons Convention (CWC).

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49 <http://www.crismart.org/activities.htm> [August 2006].

50 [http://www.crismart.org/templates/Page\\_\\_\\_\\_281.aspx](http://www.crismart.org/templates/Page____281.aspx) [November 2006].

51 <http://www.isp.se/>

52 <http://www.isp.se/sa/node.asp?node=530> [August 2006].

## SWEDISH BOARD OF AGRICULTURE (SJV)

The Swedish Board of Agriculture (SJV; see also Animal Health)<sup>53</sup> is responsible for contingency planning and the combating of epizootic and zoonotic diseases. It promotes competitive food production that is compatible with the protection of the environment and animal welfare as well as beneficial to consumers. In addition, the SJV is responsible for food supply during security crises and war, and for preventing or limiting the consequences of severe peacetime crises for the agro-food sector.<sup>54</sup> The SJV also processes applications for trial cultivation, market release, and contained use of genetically modified plants, animals, and feed.<sup>55</sup>

## ANIMAL HEALTH

### NATIONAL VETERINARY INSTITUTE (SVA)

The National Veterinary Institute (SVA)<sup>56</sup> is a government authority with expertise in prevention, diagnosis, and control of infectious diseases in animals. It is subordinated to the Ministry of Agriculture. It provides expert advice, conducts commissioned investigations and programs for controlling contagious diseases, and conducts research in virology, bacteriology, parasitology, chemistry, food safety, vaccinology, and pathology. The SVA supports other authorities, organizations, veterinarians, and the general public in decision-making. It has overall responsibility for the supply of vaccines for animals.<sup>57</sup>

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53 <http://www.sjv.se/>

54 <http://www.sjv.se/home/abouttheswedishboardofagriculture/responsibilitiesandrole.4.7502f61001ea08a0c7fff131016.html> [August 2006].

55 Ministry of Agriculture, Food and Consumer Affairs (2005): What are the rules governing genetically modified organisms? <http://www.sweden.gov.se/content/1/c6/04/81/89/782e1823.pdf> [August 2006].

56 <http://www.sva.se/>

57 <http://www.sva.se/dokument/stdmall.html?id=954> [August 2006].

The SVA is a national and international reference laboratory of some contagious and other serious infectious diseases of animals that may pose a threat to animal or human health. The SVA's most important task is preparedness for dealing with these diseases by rapid and reliable diagnosis in order to establish and limit possible outbreak, to prevent the spread of infection, and to limit economic losses. It also develops diagnostic methods for emergency situations such as natural outbreaks as well as accidental or deliberate releases of BSL-3 agents.<sup>58</sup>

Within the SVA, the Section of Epizootology aims to enhance knowledge about current epizootic disease outbreaks, their spread, the latest scientific updates, and approved diagnostic methods.<sup>59</sup> *The Swedish Zoonosis Centre* aims to isolate and identify zoonoses in animals and humans throughout the food production chain. The center performs epidemiological and other scientific studies, as well as risk assessments to increase the knowledge about zoonoses and the danger they impose. The data that the center analyzes originates from surveillance systems, clinical observations, laboratories, and meat inspections.<sup>60</sup>

#### SWEDISH BOARD OF AGRICULTURE (SJV)

The Swedish Board of Agriculture (SJV; see also National Economy)<sup>61</sup> is responsible for animal welfare legislation and promotes animal health by sharpening animal welfare requirements, and by combating and preventing the spread of contagious animal diseases. It coordinates the activities of about 80 district veterinary stations in the country, and is responsible for managing the district veterinarians, who provide emergency veterinary care services.<sup>62</sup> The SJV is also responsible for issues

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58 Confidence Building Measure to the BTWC submitted by Sweden in 2006. [http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/9AF6DFEA8557EE67C12571B80048E6BC/\\$file/BWC\\_CBM\\_2006\\_Sweden.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/9AF6DFEA8557EE67C12571B80048E6BC/$file/BWC_CBM_2006_Sweden.pdf) [August 2006].

59 <http://www.sva.se/dok/728.html> [August 2006].

60 Ibid.

61 <http://www.sjv.se/>

62 <http://www.sjv.se/home/abouttheswedishboardofagriculture/districtveterinariandepartment.4.7502f61001ea08a0c7fff131101.html> [August 2006].

concerning the import and export of animals and animal products, and monitors the state of animal health in other countries.

## ENVIRONMENTAL PROTECTION

### SWEDISH CHEMICALS INSPECTORATE (KEMI)

The Swedish Chemicals Inspectorate (KemI)<sup>63</sup> is a supervisory authority under the Ministry of Sustainable Development. KemI promotes legislation and rules that contribute to achieving 'A Non-Toxic Environment', one of Sweden's 16 main environmental objectives.<sup>64</sup> KemI tries to achieve this goal through risk assessments and efforts to reduce the risks posed by chemicals, among other approaches. KemI approves pesticides, including biological preparations. It takes part in the cooperative efforts within the EU to evaluate, classify, and label chemical substances and preparations that are hazardous to health and the environment. KemI is also involved in the establishment of REACH, a new system for controlling chemical substances within the EU.<sup>65</sup>

## PAST AND PRESENT INITIATIVES AND POLICIES

### SWEDISH DEFENCE COMMISSION

Two parliamentary resolutions passed in 1999 and 2000, concerning the transition to a modern structure in the military, charged the Swedish Defence Commission with presenting proposals for achieving this goal.

In its 2001 report, the commission proposes several measures aiming at the maintenance of disaster preparedness with regard to NBC-related

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63 <http://www.kemi.se/>

64 [http://www.kemi.se/templates/Page\\_\\_\\_\\_2872.aspx](http://www.kemi.se/templates/Page____2872.aspx) [November 2006].

65 [http://www.kemi.se/templates/Page\\_\\_\\_\\_3025.aspx](http://www.kemi.se/templates/Page____3025.aspx) [November 2006].

threats.<sup>66</sup> These recommendations include closer collaboration among government agencies, civil-military cooperation, continued disarmament and non-proliferation efforts, and the establishment of an internationally accredited laboratory in Sweden. The commission's report of 2003 evaluated the progress of these efforts from 2001 onwards.<sup>67</sup> It stressed concerns about the growing risk that the global non-proliferation regime could be undermined as a result of actions by various states, and about the related threat from non-state actors. Particularly, the commission expressed its concern that no control and verification regime had been established yet in the field of biological weapons.<sup>68</sup>

#### COMMISSION ON VULNERABILITY AND SECURITY

In 1999, the Swedish government authorized the Ministry of Civil Defense to appoint a special investigator to head a commission of inquiry, with a mandate to analyze and submit proposals for a more integrated approach to civil defense and emergency preparedness planning.<sup>69</sup> The findings and proposals of the Commission on Vulnerability and Security, as presented in May 2001, have been a most important step in the implementation of a new structure for defense and emergency preparedness planning in Sweden.

The commission investigated various factors that may have substantial implications for vulnerability over time, including developments in biotechnology. It argues in its final report that two developments in particular, namely natural mutations that occur in viruses and other microorganisms and sophisticated techniques for genetic modification,

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 66 Swedish Defence Commission (2001): Summary of "A New Structure for Enhanced Security – Network Defence and Crisis Management". [http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn\\_eng.pdf](http://www.forsvarsberedningen.gov.se/rapporter/pdf/Sammanfattn_eng.pdf) [January 2007].

67 Swedish Defense Commission (2003): Summary: A More Secure Neighborhood – Insecure World. <http://www.sweden.gov.se/content/1/c6/02/56/70/e756f798.pdf> [January 2007].

68 *Ibid.*, p. 12.

69 The Swedish Commission on Vulnerability and Security (2001): Vulnerability and Security in a New Era – A Summary (SOU 2001:41). <http://www.sweden.gov.se/content/1/c6/02/56/58/672978ff.pdf> [January 2007].

may have an impact on the country's security and increase the risk of serious and large-scale epidemics. Therefore, the commission proposes that these factors should be included both in emergency planning and research, and that Sweden should take an active part in international cooperation in this field.<sup>70</sup>

COUNTRY STRATEGY FOR SWEDISH DEVELOPMENT COOPERATION  
WITH RUSSIA

The Swedish government has decided to adopt an individual country strategy for development cooperation with Russia, as it has done for other priority countries in Central and Eastern Europe. Regarding the non-proliferation of weapons of mass destruction, the strategy report states that Russia should continue to receive support to fulfill its international obligations in this area.<sup>71</sup> This assistance constitutes a Swedish contribution to the G8 Global Partnership against the proliferation of WMDs and is to be given due consideration as a forum for coordination.<sup>72</sup> Particular efforts have been made to destroy chemical weapons, but Sweden has also undertaken minor projects in the biological area to prevent the spread of substances that may be used for the development of biological weapons, and to ensure a proper level of control over the sources of such substances. The Swedish government has supported research cooperation between the Swedish Defense Research Agency (FOI), the Swedish Institute for Infectious Disease Control (SMI), and the Vector research institute in Novosibirsk in the areas of biosafety and diagnostics.

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70 Ibid., pp. 18f.

71 Ministry of Foreign Affairs (2002): Country strategy for development cooperation – Russia. January 1 2002 – December 31 2004. <http://www.sweden.gov.se/content/1/c6/03/96/53/e50bd710.pdf> [January 2007].

72 Ministry of Foreign Affairs (2005): Country strategy for Swedish development cooperation with Russia. January 2005 – December 2008. <http://www.regeringen.se/content/1/c6/06/37/09/774041e9.pdf> [October 2006].



## NORDIC PUBLIC HEALTH PREPAREDNESS AGREEMENT

The Nordic Public Health Preparedness Agreement promotes cooperation among Denmark, Finland, Iceland, Norway, and Sweden with regard to the planning and development of public health preparedness in order to provide more effective responses to emergencies and disasters. This includes preparedness for terrorist activities involving biological agents. The Nordic countries intend to store millions of doses of smallpox vaccinations and to join in developing or purchasing vaccines and anti-toxins against other agents. In addition, a common surveillance system has been set up, and all Nordic countries have signed an agreement with the BSL-4 laboratory at SMI.<sup>73</sup>

## SWEDISH GENE TECHNOLOGY ADVISORY BOARD

The aim of the Swedish Gene Technology Advisory Board, established in 1994, is to monitor developments in the field of genetic technology, to oversee ethical issues, and to give advice on the use of genetic technology. The board promotes an ethically defensible and safe use of gene technology in order to safeguard the health of people and animals. The board rules on applications and provides consultation for supervisory authorities.<sup>74</sup>

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73 [http://www.socialstyrelsen.se/NR/rdonlyres/C3CB6530-016A-40F2-8F45-3E93F8912803/0/nordiskhalsobered\\_eng.pdf](http://www.socialstyrelsen.se/NR/rdonlyres/C3CB6530-016A-40F2-8F45-3E93F8912803/0/nordiskhalsobered_eng.pdf) [January 2007].

74 <http://www.genteknik.se/>

## LAWS AND LEGISLATION<sup>75</sup>

Biosafety	<p>Communicable Diseases Act (SFS 2004:1689)</p> <p>Ordinance on Communicable Diseases (SFS 2004:255)</p>	<p>Under the Communicable Diseases Act, the authorities must be notified in case of serious infectious diseases. Each county council is responsible for ensuring that the necessary measures for the prevention of communicable disease are taken within its area. The act allows for interventions such as isolation, quarantine, etc. under certain predefined critical circumstances.</p>
Biosafety	<p>Act on Transportation of Dangerous Goods (SFS 1981:821)</p>	<p>The act regulates transportation of dangerous goods, including biological agents.</p>
	<p>Provision on Microbiological Risks in the Work Environment – infection, toxigenic effect, hypersensitivity (AFS 2005:01)</p>	<p>This provision regulates activities involving the use of biological agents. It specifies risk assessments, planning of work, protective measures for persons and facilities, hygiene, information needs, and the handling and transfer of contaminated materials. Biological agents are classified according to four risk groups.</p>
	<p>Provision on Contained Use of Genetically Modified Micro-Organisms (AFS 2000:05)</p>	<p>This provision applies to the contained use of genetically modified micro-organisms. The regulations are similar to those described in the Provision on Microbiological Risks in the Work Environment.</p>
Criminalization	<p>Swedish Penal Code</p>	<p>Under the Swedish Penal Code crimes such as the spreading of poison or contagious substances are punishable. Chapter 22 prohibits the use of certain weapons, including chemical weapons and weapons prohibited by international law. Chapter 23 regulates the penalties for attempts and preparations to commit such crimes. There is no explicit reference to biological weapons in the penal code.</p>

75 This chart may not include all relevant laws. It was compiled from the following sources: The laws themselves at <http://www.sweden.gov.se/sb/d/3288>; Interpol's website on "National Laws and Measures: Counter-Terrorism Regulation of Biology" - <http://www.interpol.int/Public/BioTerrorism/NationalLaws/>; the UN legislative database with respect to the implementation of UNSC Resolution 1540 - <http://disarmament2.un.org/Committee1540/legalDB.html>; and the BTWC document "BTWC and Related Legislation" BWC/MSP.2003/MX/WP.62, 4 September 2003 - <http://disarmament.un.org/wmd/bwc/annualmeetings/bwc.mx.wp62.pdf>.

	Act on Criminal Responsibility for Terrorist Offences (SFS 2003:148)	This act contains legal provisions on the implementation of the European Council Framework Decision on combating terrorism (2002/475/JHA). It lays out sanctions for terrorist offences, which include the spreading of poison, contagious substances, biological and chemical weapons, and special parts of such materials.
	Act on Criminal Responsibility for the Financing of Particularly Serious Crime (SFS 2002:444)	This act outlaws financing of serious crimes and terrorist activities, including the spreading of poison or a contagious substance.
	Act on Punishments for the Smuggling of Goods (SFS 2000:1225)	This act prescribes penalties for the unlawful export, manufacture, or supply of military equipment.
Import / Export Controls	Military Equipment Act (SFS 1992:1300)	The Military Equipment Act regulates activities requiring a license, which incorporate production, provision, export, agreements regarding production rights, cooperation agreements, and training in the military sphere. The ordinance obliges companies, any person or entity that produces, prepares, uses, acquires, disposes of, or stores military equipment or critical substances to provide information on the type, quantity, invoice, and final destination of the material in question.
	Military Equipment Ordinance (SFS 1992:1303)	
	Act on the control of dual-use items and technical assistance (SFS 2000:1064)	This act covers dual-use items and related technical assistance, which are subject to export controls. Technical assistance to chemical, biological, or nuclear weapons programs or delivery systems for such weapons are prohibited under this legislation. Its rules cover a vast area, from biological substances to qualified mechanical tools and equipment. The ordinance controls strategic products in accordance with European Council Regulation (EC) 1334/2000, which establishes an EU-wide regime to monitor exports of dual-use goods and technologies.
	Ordinance on the control of dual-use items and technical assistance (SFS 2000:1217)	
	Strategic Products Act (SFS 1998:397)	The Strategic Products Act prohibits the production, export, and import of equipment that can be used for the manufacture of biological or chemical weapons and agents, unless a permit is granted.



# SWITZERLAND<sup>1</sup>

## SWITZERLAND'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

Switzerland is a signatory to all multilateral agreements on arms control. Accordingly, it ratified the Geneva Protocol in 1932 and the Biological and Toxin Weapons Convention (BTWC) in 1976. In particular, the Swiss delegation played an active role in the post-1991 BTWC negotiations calling for a verification instrument. Switzerland is in favor of building an efficient, independent organization and has offered to host such an international organization in Geneva.<sup>2</sup> In addition, Switzerland is a member of the Australia Group and a participating state of the Wassenaar Arrangement.

In 2001, Switzerland was confronted for the first time with the threat of biological terrorism. More than a thousand fake anthrax letters were mailed by unknown perpetrators, inspired by the attacks in the US. Various parts of the public infrastructure, including several hundred post offices and the Zurich Airport came to a temporary standstill. A 2004 report by the Center for Security Studies (CSS) at the Federal Institute of Technology (ETH Zurich) about the Swiss anthrax scares and the subsequent crisis management revealed various inadequacies regarding communication, allocation of responsibilities, and preparedness. The

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1 The country survey on Switzerland was reviewed by Christian Fokas, Federal Commission for NBC Protection (ComNBC); Kurt Mürger, Spiez Laboratory (LS); Pierre-Alain Raeber, Federal Office of Public Health (FOPH); and Martin Schütz, Spiez Laboratory (LS). Reto Wollenmann contributed to this survey.

2 Bericht des Bundesrates über die Rüstungskontroll- und Abrüstungspolitik der Schweiz 2004 vom 8. September 2004. <http://www.admin.ch/ch/d/ff/2004/5153.pdf> [January 2007].

report included several recommendations for a better response to such incidents in the future.<sup>3</sup>

Extremist groups with various backgrounds are active in Switzerland.<sup>4</sup> The intelligence services have no indication of imminent terrorist attacks in the country and state that terrorist activities are mainly limited to logistical, financial, and ideological support. A status report in the aftermath of 11 September 2001 concluded that, in particular due to the limited security policy prominence of the country, there is only a low probability that Switzerland or Swiss citizens will become a primary target of terrorist activities.<sup>5</sup> However, in its latest domestic security report, the Federal Office of Police (fedpol) states that the possibility of terrorist attacks in Switzerland is increasing, and assumes that there are extremist Muslims in Switzerland who aspire to violent acts.<sup>6</sup>

With regard to bioterrorism, the Swiss intelligence community's assessment is that no serious potential bioterrorist actors are active in Switzerland, but that a residual risk cannot be excluded. In 2002, a classified expert report to the Federal Council's Security Steering Group (LGSi), which consists of high-ranking military, intelligence, and law enforcement officials, stated that neither domestic nor foreign extremist groups were using non-conventional weapons. Differentiating between small-scale and more sophisticated attacks, the report declared that a certain risk might stem from a psychopathic personality or a laboratory insider with access to dangerous pathogens.

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3 Guery, Michael (2004): *Biologischer Terrorismus in Bezug auf die Schweiz - Unter besonderer Berücksichtigung rechtlicher Aspekte*. Zürcher Beiträge Nr. 74. Zurich: Center for Security Studies, ETH Zurich. <http://www.isn.ethz.ch/pubs/ph/details.cfm?id=10449> [January 2007].

4 *Extremismusbericht des Bundesrates, 25 August 2004*. [http://www.fedpol.admin.ch/etc/medialib/data/kriminalitaet/extremismus\\_rassismus.Par.0001.File.tmp/041201\\_5011\\_d\\_Korr.pdf](http://www.fedpol.admin.ch/etc/medialib/data/kriminalitaet/extremismus_rassismus.Par.0001.File.tmp/041201_5011_d_Korr.pdf) [January 2007].

5 *Lage- und Gefährdungsanalyse Schweiz nach den Terroranschlägen vom 11. September 2001*. Bericht des Bundesrates an das Parlament vom 26. Juni 2002. <http://www.admin.ch/ch/d/ff/2003/1832.pdf> [January 2007].

6 *Federal Office of Police (2006): Domestic Security Report Switzerland 2005 - Summary*. Bern: BBL. [http://www.fedpol.admin.ch/etc/medialib/data/sicherheit/bericht\\_innere\\_sicherheit.Par.0041.File.tmp/BISS\\_2005\\_e.pdf](http://www.fedpol.admin.ch/etc/medialib/data/sicherheit/bericht_innere_sicherheit.Par.0041.File.tmp/BISS_2005_e.pdf) [January 2007].

The aforementioned CSS/ETH report on the handling of the anthrax crisis suggests that Geneva could become a target of terrorist activity due to the presence of several international organizations. It also states that major political or economic events such as the annual World Economic Forum (WEF) in Davos, or the UEFA European Football Championship in Austria and Switzerland in 2008, could present an opportunity for terrorist attacks.

## **ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES**

The constitutional tradition of Switzerland, a federal republic, is based on a strict separation between federal and cantonal responsibilities. The federal authorities are only in charge of those areas where the Swiss constitution explicitly states a federal competence. In the field of civil protection, the federal authorities can assist the cantons and support civil security with the use of the armed forces if an emergency situation affects several cantons. In three areas of public health, including infectious diseases, the federal authorities of the Swiss Federal Office of Public Health (FOPH) have the lead.

### **PUBLIC HEALTH**

#### **SWISS FEDERAL OFFICE OF PUBLIC HEALTH (FOPH)**

The Swiss Federal Office of Public Health (FOPH)<sup>7</sup> of the Federal Department of Home Affairs (DHA) is the only agency with a clear legal mandate to take the federal lead during a bioterrorist event, based on the federal law on epidemics. Particularly, the FOPH is responsible for:

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7 <http://www.bag.admin.ch/>

- Monitoring/containment of communicable diseases;
- Biological safety and security;
- The assignment of reference laboratories;
- Information and crisis communication vis-à-vis the Federal Council, physicians, and the public; and
- The education of physicians.

The FOPH's Division of Communicable Diseases' has responsibility for monitoring and control of infectious diseases in Switzerland. It issues reports on the epidemiological situation in Switzerland on a regular basis. Specifically, the division has the responsibility to:<sup>8</sup>

- Protect public health from the natural, accidental, or deliberate release of pathogenic substances;
- Assess the risk of a release;
- Reduce the consequences of outbreaks; and to
- Evaluate the effectiveness of counter-measures.

The FOPH's Section of Biological Safety is charged with assessing the risk to humans from activities involving infectious and genetically-modified organisms (GMOs) and regulating the handling of such substances in laboratories and in the environment. It supports various national and international activities that involve biological agents, including research on infectious diseases and their behavior.<sup>9</sup>

The FOPH's Division of Food Safety consists of several units. Its Microbiology and Biotechnology Section addresses questions relating to food and occupational hygiene and the epidemiology of food-borne pathogens. It sets tolerance values and limits for microorganisms in food and drinking water and evaluates the safety of GMOs in the food sector to protect consumers. In the event of a crisis stemming from

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8 <http://www.bag.admin.ch/themen/medizin/00682/index.html?lang=de> [January 2007].

9 <http://www.bag.admin.ch/themen/medizin/00708/index.html?lang=de> [January 2007].



food-borne pathogens, the Division of Food Safety takes a coordinating role in close collaboration with cantonal laboratories.<sup>10</sup>

Since 2001, the FOPH has maintained an internal platform in order to bring together various actors from the FOPH involved in the preparation and response to B-events, including bioterrorism and naturally occurring diseases such as SARS. The platform aims at the coordination of tasks and activities, and is led by the FOPH's Division of Communicable Diseases. In the event of a crisis, it can serve as a task force. The members of this platform meet on a regular basis.

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### FEDERAL OFFICE FOR CIVIL PROTECTION (FOCP)

The Federal Office for Civil Protection (FOCP)<sup>11</sup> is part of the Federal Department of Defense, Civil Protection and Sports (DDPS) and has the mission to protect the population and its vital resources in the event of disasters, emergencies, and armed conflict. The FOCP provides management, protection, and rescue and relief, contributes to limiting and coping with damage, and offers training in the field of emergency management. As described above, civil protection falls within cantonal jurisdiction. However, the FOCP links the partner organizations in civil protection (police, fire services, public health, technical services, and civil protection) on the federal level. The FOCP is responsible for the response to both manmade and natural disasters and ensures cooperation between the federation, the cantons, and the municipalities.

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10 Federal Office of Public Health (2005): Jahresbericht 2004 – Lebensmittelsicherheit. Bern: FOPH. <http://www.bag.admin.ch/themen/ernahrung/01863/index.html?lang=de&download=M3wBPgDB/> [January 2007].

11 <http://www.bevoelkerungsschutz.admin.ch/>

During an event with a nationwide impact, the FOCP would take over the operational responsibility.<sup>12</sup>

Two major institutions, the National Emergency Operations Centre (NEOC) and the Spiez Laboratory (LS), have been under the responsibility of the FOCP since a major reorganization in 2003.

#### FEDERAL COMMISSION FOR NBC PROTECTION (ComNBC)

The Federal Commission for NBC Protection (ComNBC),<sup>13</sup> affiliated with the FOCP, is the central strategic advisory body of the Federal Council and other Swiss institutions regarding the preparation and coordination of CBRN-protection activities. In 2004, the commission was tasked with elaborating a comprehensive concept for national NBC protection (Projekt “Nationaler ABC-Schutz”; see initiatives section). The project aimed at ensuring that federal and state authorities are sufficiently prepared and organized to minimize the effects of CBRN incidents on humans, animals, and the environment. It covers all relevant stages, from education and prevention to response and recovery under inclusion of all organizations involved.

The B-section of ComNBC is the competent national body for biological issues and consists of leading experts from the public and private sector. It proposes measures and assigns responsibilities in order to detect, manage, and recover from emergencies involving the deliberate or accidental release of hazardous microorganisms. The B-section is led by the Federal Office of Public Health (FOPH) and combines various institutions and organizations, including the Veterinary Office (FVO), the Spiez Laboratory (LS); the National Emergency Operations Centre (NEOC), the Medical Services of the Swiss Army, the Swiss

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12 Federal Office for Civil Protection (2005): Für einen umfassenden Schutz der Bevölkerung. Bern: BBL. [http://www.bevoelkerungsschutz.admin.ch/internet/bs/de/home/das\\_babs.ContentPar.0003.DownloadFile.tmp/408-955-flyer-d.pdf](http://www.bevoelkerungsschutz.admin.ch/internet/bs/de/home/das_babs.ContentPar.0003.DownloadFile.tmp/408-955-flyer-d.pdf) [January 2007].

13 <http://www.komabc.ch/>

Army Pharmacy, Komp Zen ABC, several cantonal institutions, Swiss Post, and academic institutions.

As the project was finalized in 2006, the ComNBC will now focus on strategic CBRN issues, and is tasked with the elaboration of an overall CBRN strategy.<sup>14</sup> By early 2007, the operational duties of the ComNBC will be transferred to a newly established NBC Office of the federal state and the cantons. In addition, the NBC Office will take over coordinative duties between the federal state and the cantons.

#### EMERGENCY ORGANISATION RADIOACTIVITY (EOR) / NATIONAL EMERGENCY OPERATIONS CENTRE (NEOC)

The Emergency Organisation Radioactivity (EOR)<sup>15</sup> consists of the National Emergency Operations Centre (NEOC)<sup>16</sup> and the Steering Committee on Radioactivity (LAR). The NEOC is the permanent core group of the EOR and provides the LAR with relevant information. The LAR continuously assesses the radiological situation, coordinates measures, and supervises their implementation. So far, the EOR is primarily tasked with the assessment and management of nuclear and radiological incidents and has no core capacities in the field of incidents involving biological agents. However, the NEOC has several related capabilities, such as robust warning procedures for nationwide crisis control. During an incident involving hazardous biological substances, the NEOC is therefore suited to coordinate leadership, rescue, and help. The NEOC operates an emergency stand-by desk that can be reached 365 days a year, 24 hours a day.

In 2001, when more than 1,000 anthrax scares were reported in Switzerland, the NEOC coordinated about 100 requests within its alert network. The NEOC also published information on its protected

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 14 Cf. ComNBC (2006): Projekt „Nationaler ABC-Schutz“ Schlussbericht – Zusammenfassungen. 30 January 2006. [http://www.komabc.ch/d/publikationen/2006-03-23\\_Zusammenfassungen\\_Nationaler\\_ABC-Schutz\\_IN.pdf](http://www.komabc.ch/d/publikationen/2006-03-23_Zusammenfassungen_Nationaler_ABC-Schutz_IN.pdf) [January 2007].

15 <https://www.naz.ch/en/naz/eor.html> [January 2007].

16 <http://www.naz.ch/>

website, and shared information provided by the Swiss intelligence community with other partners via the protected Electronic Situation Display (ESD).<sup>17</sup>

In November 2006, it was decided to expand the mandate of the NEOC. The Federal Office for Civil Protection (FOCP) is elaborating a concept for the transformation of the NEOC to a nation-wide information, coordination, notification, warning, and alert center for all kinds of disasters and emergency situations. The new mandate establishes a single operational point of contact in support of cantonal emergency units and leadership structures.<sup>18</sup>

In addition, the ComNBC recommended that the Federal Council expand the mandate of the Emergency Organisation Radioactivity (EOR), the umbrella organization of the National Emergency Operations Centre (NEOC), to also cover biological and chemical events. The ComNBC proposed to transform the EOR to an Emergency Organisation NBC and its Steering Committee on Radioactivity (LAR) to a Steering Committee NBC (LAABC). LAABC will be responsible for the systematic preparation and provision of strategic-political leadership support in case of CBRN incidents, as well as for their assessment. It consists of high representatives of the relevant federal offices and the cantons. LAABC is also expected to supervise the aforementioned NBC Office, which will take over the operational responsibilities of the ComNBC. The Federal Office for Civil Protection (FOCP) is responsible for this ongoing transformation, in which many decisions still have to be taken.<sup>19</sup>

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17 <https://www.naz.ch/en/themen/naturgefahren.html> [January 2007].

18 <http://www.news.admin.ch/message/?lang=de&msg-id=8255> [January 2007].

19 Cf. ComNBC (2006): Projekt „Nationaler ABC-Schutz“ Schlussbericht – Zusammenfassungen. 30 January 2006. [http://www.komabc.ch/d/publikationen/2006-03-23\\_Zusammenfassungen\\_Nationaler\\_ABC-Schutz\\_IN.pdf](http://www.komabc.ch/d/publikationen/2006-03-23_Zusammenfassungen_Nationaler_ABC-Schutz_IN.pdf) [January 2007]; see also [http://www.ksr-cpr.admin.ch/ppt/KomABC\\_KSR.ppt](http://www.ksr-cpr.admin.ch/ppt/KomABC_KSR.ppt) [January 2007].

## COORDINATED MEDICAL SERVICES (CMS)

The Coordinated Medical Services (CMS)<sup>20</sup> is a coordination instrument between different partners of the Swiss health services for medical care in emergency situations, located within the armed forces. It enables the extension of the public health sector through military and civil defense partners, and provides emergency assistance and mass casualty care. The CMS is developing an Internet Based Information System (IES) for ensuring effective mission control, data collection, and optimal cooperation between the civilian and military health services in question.<sup>21</sup> The CMS is headed by the Medical Service of the Army.

## NATIONAL SECURITY

### FEDERAL OFFICE OF POLICE (FEDPOL)

The Federal Office of Police (fedpol)<sup>22</sup> of the Federal Department of Justice and Police (FDJP) covers domestic threats and is responsible for criminal prosecutions, the fight against organized crime, and preventive measures in the field of national security. Fedpol's *Service for Analysis and Prevention (SAP)*<sup>23</sup> is the Swiss domestic security and counterintelligence agency and covers the threat posed by biological terrorism. In close collaboration with the Strategic Intelligence Service (SIS), it carries out preventive national security tasks and is responsible for countering terrorism, extremism, organized crime, and proliferation. Charged with analysis and situation-monitoring in the field of internal security, the SAP compiles a series of confidential intelligence reviews and situation reports and distributes them via the protected Electronic Situation

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20 <http://www.vbs-ddps.ch/internet/groupgst/de/home/sanit/koordinierter0.html> [January 2007].

21 <http://www.vbs-ddps.ch/internet/groupgst/de/home/sanit/koordinierter0/iesvisualisiert.html> [January 2007].

22 <http://www.fedpol.admin.ch/>

23 [http://www.fedpol.admin.ch/fedpol/en/home/fedpol/organisation/dienst\\_fuer\\_analyse.html](http://www.fedpol.admin.ch/fedpol/en/home/fedpol/organisation/dienst_fuer_analyse.html) [January 2007].

Display (ESD), operated by the National Emergency Operations Centre (NEOC).

Due to increasing awareness that Switzerland is an attractive marketplace for procuring technology and equipment from the chemical and bio-technological industry, fedpol has started a program called *Prophylax*. Its objective is to systematically improve the control of exports of military and dual-use goods by sensitizing companies that trade in high-risk goods and high-risk countries and raising their awareness.<sup>24</sup> The program is run by fedpol in close collaboration with the State Secretariat for Economic Affairs (SECO) and the cantonal police corps.

### STRATEGIC INTELLIGENCE SERVICE (SIS)

The Strategic Intelligence Service (SIS)<sup>25</sup> is the foreign intelligence agency of the Federal Department of Defense, Civil Protection, and Sports (DDPS). The SIS assesses the motivations, intentions, and capabilities of foreign countries and non-state actors. It analyzes potential threats, particularly in the field of terrorism and weapons of mass destruction, and composes reports for the political and military leadership. Apart from the SIS, both the *Military Intelligence Service (MND)* and the *Air Force Intelligence Service (LWND)* provide the military and the government with information related to biological weapons or biological terrorism.

In June 2005, the Federal Council decided to improve cooperation between the SAP and the SIS in order to reduce duplications in the fields of terrorism, organized crime, and weapons proliferation. Therefore, three common platforms were established in 2006, each composed of experts from both services and covering one of the above-mentioned areas, in order to institutionalize cooperation and cooperate in producing analyses.

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24 Bundesamt für Polizei (2005): Bericht innere Sicherheit der Schweiz 2004. [http://www.fedpol.admin.ch/etc/medialib/data/sicherheit/bericht\\_innere\\_sicherheit.Par.0010.File.tmp/biss\\_2004\\_d.pdf](http://www.fedpol.admin.ch/etc/medialib/data/sicherheit/bericht_innere_sicherheit.Par.0010.File.tmp/biss_2004_d.pdf) [January 2007].

25 <http://www.vbs.admin.ch/internet/vbs/de/home/departement/organisation/snd.html> [January 2007].

The platforms on terrorism and organized crime are chaired by the SAP, while the one on proliferation is under the auspices of the SIS.<sup>26</sup>

#### PERMANENT TASK FORCE OF THE SECURITY BOARD OF THE FEDERAL COUNCIL (STAB SiA)

It was decided in 2005 to transfer the position of the former intelligence coordinator to a newly established Permanent Task Force of the Security Board of the Federal Council (Stab SiA).<sup>27</sup> This permanent task force is the central operational steering body on national security issues in ordinary circumstances as well as in the event of a crisis. In the latter case, the group will be expanded with relevant actors on a modular basis. The Stab SiA assists the Security Board of the Federal Council (SiA), which is the central political body on security issues, and the strategic advisory body to the Federal Council, the Security Steering Group (LGSi).

### MILITARY DEFENSE AND RESEARCH

#### SWISS ARMED FORCES

The *NBC Competence Center (Komp Zen ABC)*,<sup>28</sup> established in 2004 within the Military Operations Directorate (FSTA), is a focal point for all CBRN-related activities within the Swiss armed forces. It is responsible both for the development of the military CBRN doctrine and for the operational readiness of the CBRN defense of the Swiss army. This includes the elaboration of concepts and the evaluation of procured equipment. In particular, the Komp Zen ABC is tasked with

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26 [http://www.admin.ch/cp/d/42b9486e\\_1@fwsrvg.html](http://www.admin.ch/cp/d/42b9486e_1@fwsrvg.html) [January 2007].

27 Kern-/Krisenstab des Sicherheitsausschusses des Bundesrates. [http://www.vbs-ddps.ch/internet/groupgst/de/home/sanit/koordinierter0/ksdgremit0/ksdgremit/konstituierende.Par.0030.DownloadFile.tmp/Fact%20Sheet\\_KKSIA\\_d\\_15SEP05\\_rim.pdf](http://www.vbs-ddps.ch/internet/groupgst/de/home/sanit/koordinierter0/ksdgremit0/ksdgremit/konstituierende.Par.0030.DownloadFile.tmp/Fact%20Sheet_KKSIA_d_15SEP05_rim.pdf) [January 2007].

28 <http://www.vbs-ddps.ch/internet/groupgst/de/home/operationen/kompetenzzentrum.html> [January 2007].

the formation of the NBC Defense Units and has major duties in the field of decontamination. Additionally, the Komp Zen ABC offers its capacities to civil authorities and supports international operations.

The *NBC Defense Units*<sup>29</sup> are specialized in the field of CBRN detection, decontamination, and reconnaissance. The units have at their disposal a laboratory (NBC Defense Lab), which is supported and equipped by the Spiez Laboratory (LS). In addition, the units receive training at the LS. The units are still in the phase of establishment, which should be finalized by 2010.<sup>30</sup> By then, the Swiss army plans to have about 900 specialists available for laboratory analysis and on-site detection of CBRN material.<sup>31</sup>

In cooperation with the Spiez Laboratory (LS), the Komp Zen ABC leads the *Einsatzequipe VBS (EEVBS)*. The EEVBS was established in order to deal with incidents involving chemical substances. However, in case of a small-scale release of biological agents, the EEVBS can be rapidly deployed in order to acquire suspicious objects and to decontaminate small areas.<sup>32</sup>

The surgeon general is the head of the Medical Service of the Swiss Army within the Armed Forces Logistics Organization (AFLO). He is responsible for the elaboration of a medicinal doctrine and an operational conception in the field of military CBRN defense. Additionally, he is in charge of the Coordinated Medical Services (CMS).

*Armasuisse*<sup>33</sup> is the procurement agency of the Swiss armed forces. As such, it is responsible for the acquisition of CBRN protection equipment. Specifically, the Swiss army is equipped with personal CBRN protection suits, detection equipment including mobile vehicles, decontamination tools, and mobile shelters. Armasuisse's Science and Technology Center

29 <http://www.vbs-ddps.ch/internet/groupgst/de/home/operationen/kompetenzzentrum/dieabc.html> [January 2007].

30 [http://www.admin.ch/cp/d/409785b9\\_1@fwsrvh.html](http://www.admin.ch/cp/d/409785b9_1@fwsrvh.html) [January 2007].

31 Guery, Michael (2004): *Biologischer Terrorismus in Bezug auf die Schweiz – Unter besonderer Berücksichtigung rechtlicher Aspekte*. Zürcher Beiträge Nr. 74. Zurich: Center for Security Studies, ETH Zurich. <http://www.isn.ethz.ch/pubs/ph/details.cfm?id=10449> [January 2007].

32 [http://www.labor-spiez.ch/de/die/eo/pdf/eevbs\\_150DPI.pdf](http://www.labor-spiez.ch/de/die/eo/pdf/eevbs_150DPI.pdf) [January 2007].

33 <http://www.ar.admin.ch/internet/armasuisse/en/home.html> [January 2007].



conducts technical surveys and tests of these equipments. Additionally, the center hosts a decontamination project.

The *Pharmacy of the Army*<sup>34</sup> is responsible for the procurement of medicinal products and laboratory equipment, as well as their storage and maintenance. Together with the Federal Office for National Economic Supply (FONES) and cantonal pharmacies, the pharmacy is in charge of acquiring and stocking vaccines against biological agents for military personnel and the civilian population. The pharmacy holds stocks of smallpox vaccines, antibiotics against anthrax and plague, and botulism anti-toxins.<sup>35</sup> Additionally, the pharmacy has to make sure that these counteragents are distributed and rapidly available in the case of an emergency. The respective vaccination plans are elaborated by the Federal Office of Public Health (FOPH).

## CIVILIAN RESEARCH AND LABORATORIES

### SPIEZ LABORATORY (LS)

The Spiez Laboratory (LS)<sup>36</sup>, a division of the Federal Office for Civil Protection (FOCP), is the Swiss institute for protection against nuclear, biological, and chemical threats and hazards. It is recognized as one of the leading institutions worldwide in the main fields of CBRN protection and arms control. The LS conducts research and exchanges information with national and international partners.

In recent years, the LS has improved its skills in the field of biological protection and offers knowledge in the three disciplines of bacteriology, virology, and toxinology. In these branches, the LS has capacities in the

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34 <http://www.lba.vbs.admin.ch/internet/lba/de/home/logistikleistung/armeeapotheke.html> [January 2007].

35 Guery, Michael (2004): *Biologischer Terrorismus in Bezug auf die Schweiz – Unter besonderer Berücksichtigung rechtlicher Aspekte*. Zürcher Beiträge Nr. 74. Zürich: Center for Security Studies, ETH Zurich. <http://www.isn.ethz.ch/pubs/ph/details.cfm?id=10449> [January 2007].

36 <http://www.labor-spiez.ch/>

detection, identification, and characterization of special agents (currently up to the level of risk group 3 agents) and toxins. It offers analytical and diagnostic support and education to the Swiss army's CBRN Defense Units as well as to civilian authorities. LS staff also work on applied research in protection from biological warfare agents.

Since the mid 1990s, the idea of a BSL-4 laboratory has been discussed at the LS. A conceptual study clearly showed the national needs and requirements for such a facility, especially for military, but also for civilian purposes. Therefore, the project of establishing a Biosafety-Level 4 (BSL-4) laboratory capacity in Spiez was launched in 2002. Construction is planned to start in 2007, and the laboratory is expected to be operational in terms of level-4 diagnostics and research in 2010.<sup>37</sup> Besides diagnostics and research, the major task of the new BSL-4 laboratory will be education and training in biosafety.

#### CENTRAL LABORATORY OF VIROLOGY (LCV)

The Central Laboratory of Virology (LCV), located at the University Clinic in Geneva, is the national reference laboratory for influenza and for emerging viral infections. Specifically, the *National Reference Center for Emerging Virus Infections (NAVI)* was established at the LCV in 2006. Appointed by the Federal Office of Public Health (FOPH), the NAVI acts as a reference laboratory and is tasked with the confirmation of emerging and re-emerging viral infections of the risk groups 3 and 4, including the influenza and SARS viruses.<sup>38</sup>

In February 2007, Switzerland's first high-security laboratory was established here, giving the Central Laboratory of Virology the necessary capacities for its work, especially in the area of emerging viral infections,

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37 Press release of the Federal Office for Civil Protection (FOCP), 15 September 2005: Schlüsselprojekt zur Verbesserung des nationalen B-Schutzes. [http://www.bevoelkerungsschutz.admin.ch/internet/bs/de/home/dokumente/comm/b\\_labor.html](http://www.bevoelkerungsschutz.admin.ch/internet/bs/de/home/dokumente/comm/b_labor.html) [January 2007].

38 Federal Office of Public Health (2006): Bulletin 33 – 14 August 2006, pp. 668-672. [http://www.ivv.ch/\\_meta\\_/publications/\\_downloads\\_/Labornetzwerk\\_BAGBulletin\\_14.08.06\\_de.pdf](http://www.ivv.ch/_meta_/publications/_downloads_/Labornetzwerk_BAGBulletin_14.08.06_de.pdf) [January 2007].

where a BSL-4 capacity is often required. The new laboratory is only used for diagnostic purposes, and does not manipulate or stockpile viral agents of level 4.<sup>39</sup>

#### NATIONAL REFERENCE CENTER FOR ANTHRAX (NANT)

The National Reference Center for Anthrax (NANT) was established in November 2001 at the Institute of Veterinary Bacteriology<sup>40</sup> of the University of Berne. The NANT has a BSL-3 laboratory facility at its disposal for diagnosis, reference, and research activities with microorganisms of the risk group 3. It practices and develops methods for the identification of various bacteria strains, and makes them available to regional laboratories.<sup>41</sup>

On behalf of the Federal Office of Public Health (FOPH), the NANT acts as a reference laboratory for biological samples that are believed to have originated from a terrorist source, with a primary focus on anthrax.<sup>42</sup>

#### INSTITUTE OF VIROLOGY AND IMMUNOPROPHYLAXIS (IVI)

The Institute of Virology and Immunoprophylaxis (IVI)<sup>43</sup> is the national reference laboratory for highly contagious animal diseases, and is concerned with the diagnosis, monitoring, and control of diseases such as foot-and-mouth disease or the classical swine fever virus. The institute is able to perform mass examinations of suspect samples. Furthermore, the IVI monitors the appearance of emerging animal diseases and assesses

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39 [http://www.hug-ge.ch/\\_library/pdf/Dossiers\\_presse/DPP4D.pdf](http://www.hug-ge.ch/_library/pdf/Dossiers_presse/DPP4D.pdf) [February 2007].

40 <http://www.vbi.vetsuisse.unibe.ch/>

41 Federal Office of Public Health (2006): Bulletin 33 – 14 August 2006, pp. 668-672. [http://www.ivi.ch/\\_meta\\_/publications/\\_downloads/\\_Labornetzwerk\\_BAGBulletin\\_14.08.06\\_de.pdf](http://www.ivi.ch/_meta_/publications/_downloads/_Labornetzwerk_BAGBulletin_14.08.06_de.pdf) [January 2007].

42 Federal Veterinary Office (2003): FVO Magazine 3/2003 – Swiss Zoonoses Report 2002. [http://www.bvet.admin.ch/news/magazin/00026/index.html?download=00056\\_en.pdf](http://www.bvet.admin.ch/news/magazin/00026/index.html?download=00056_en.pdf) [January 2007].

43 <http://www.ivi.ch/>

their zoonotic potential. It also carries out intensive research in the fields of diagnosis and prophylaxis, including the evaluation of vaccines. The IVI is affiliated with the Swiss Federal Veterinary Office (FVO).

### REGIONAL LABORATORY NETWORK (RLN)

The Regional Laboratory Network (RLN) aims at providing decentralized analysis capacities for the primary diagnosis of pathogenic organisms in risk group 3, especially in extraordinary situations. It was established by the Federal Office of Public Health (FOPH) in close collaboration with the cantons and has been fully functional since 2006. RLN is based on existing structures and consists of six regional laboratories, all of which have BSL-3 laboratories at their disposal and are jointly financed by the federal state and the participating cantons. Apart from the six regional laboratories, the NANT, NAVI, and IVI as well as the Spiez Laboratory are also part of the network and provide some centralized services and support to the regional facilities.<sup>44</sup>

The Coordination Committee of the Regional Laboratory Network (KoKo) supervises and coordinates the activities of the network. KoKo consists of members of the participating laboratories and cantons as well as of representatives from the Federal Office of Public Health (FOPH), the Federal Office for the Environment (FOEN), and the Swiss Expert Committee for Biosafety (SECB).<sup>45</sup>

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44 Federal Office of Public Health (2006): Bulletin 33 – 14 August 2006, pp. 668-672. [http://www.ivi.ch/\\_meta\\_/publications/\\_downloads\\_/Labornetzwerk\\_BAGBulletin\\_14.08.06\\_de.pdf](http://www.ivi.ch/_meta_/publications/_downloads_/Labornetzwerk_BAGBulletin_14.08.06_de.pdf) [January 2007].

45 Ibid.

## NATIONAL ECONOMY

### STATE SECRETARIAT FOR ECONOMIC AFFAIRS (SECO)

The State Secretariat for Economic Affairs (SECO)<sup>46</sup> is the Swiss competence center for economic policy under the responsibility of the Federal Department of Economic Affairs (FDEA). Together with the *Swiss Federal Customs Administration*<sup>47</sup>, SECO is responsible for overseeing exports of military goods, related technologies, and dual-use goods that might be used for WMD development. SECO issues licenses to exporters in consideration of the Control of Goods Act, the War Material Act, and international obligations including sanctions regimes. Switzerland is among the countries that export the most dual-use goods, but exports relatively few war materials.<sup>48</sup>

### FEDERAL OFFICE FOR NATIONAL ECONOMIC SUPPLY (FONES)

The Federal Office for National Economic Supply (FONES)<sup>49</sup> of the Federal Department of Economic Affairs (FDEA) ensures the supply of essential goods and services in the event of massive disruption of the national market economy. In case of a bioterrorist event or a pandemic, FONES would have to ensure the basic supplies of food, energy, and pharmaceuticals. In particular, FONES conducts risk assessments and develops crisis scenarios, which serve as the basis for decisions on the nature and amount of foodstocks and vaccines that must be stocked for emergency situations. Additionally, FONES is responsible for developing distribution plans for these goods.<sup>50</sup>

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46 <http://www.seco.admin.ch/>

47 <http://www.zoll.admin.ch/>

48 <http://www.seco.admin.ch/themen/aussenwirtschaft/exportkontrollen/index.html?lang=en> [January 2007].

49 <http://www.bwl.admin.ch/>

50 Federal Office for National Economic Supply (2004): National Economic Supply Strategy – A Brief Summary. Berne: FONES. <http://www.bwl.admin.ch/dokumentation/00445/index.html?lang=en&download=M3wBPgDB/> [January 2007].

## ANIMAL HEALTH

### FEDERAL VETERINARY OFFICE (FVO)

The Swiss Federal Veterinary Office (FVO)<sup>51</sup> of the Federal Department of Economic Affairs (FDEA) is responsible for animal health in Switzerland. Particularly, it is tasked with preventing the outbreak of animal-borne diseases (zoonoses), which might also endanger humans. Cooperating closely with several domestic laboratories, the FVO monitors, controls, and eradicates diseases such as foot-and-mouth disease, anthrax, or salmonellae. Veterinarians are obliged to report animal diseases to the respective cantonal veterinarian, who then reports to the FVO on a weekly basis. The FVO regularly publishes reports on the presence of animal diseases in Switzerland.

Furthermore, the FVO performs enforcement duties in the area of imports, exports, and transits of products of animal origin. It grants permits, performs inspections, and provides information in order to ensure that the requirements of animal health, consumer protection, and species protection are met.<sup>52</sup>

## ENVIRONMENTAL PROTECTION

### FEDERAL OFFICE FOR THE ENVIRONMENT (FOEN)

The Federal Office for the Environment (FOEN)<sup>53</sup> is the environmental authority of the Swiss government under the responsibility of the Federal Department of Environment, Transport, Energy and Communications (DETEC). It is responsible for ensuring that natural resources are used sustainably, that the public is protected against natural hazards, and

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51 <http://www.bvet.admin.ch/>

52 <http://www.bvet.admin.ch/einfuhr/index.html?lang=en> [January 2007].

53 <http://www.bafu.admin.ch/>

that the environment is protected from unacceptable adverse impacts. Specifically, the FOEN's Biotechnology Division is charged with protecting humans and the environment against potential hazards caused by the use of substances and chemicals, as well as pathogenic and genetically modified organisms. It evaluates the environmental impact of a release of such organisms in terms of biosafety, biodiversity, and ethical considerations.<sup>54</sup>

The FOEN's Federal Coordination Center for Biotechnology, located within the Biotechnology Division, is the entry and exit point for all notifications and license applications under the Ordinance on the Contained Use of Organisms and the Ordinance on Occupational Safety in Biotechnology. Companies and public or private organizations whose activities involve the contained use of genetically modified or pathogenic organisms are legally obliged to register with the center.<sup>55</sup>

## PAST AND PRESENT INITIATIVES AND POLICIES

### PROJECT "NATIONAL NBC PROTECTION"

In 2004, the Federal Commission for NBC Protection (ComNBC)<sup>56</sup> has been tasked with elaborating a comprehensive concept on national NBC protection. The project aimed at improving CBRN protection and preparedness in Switzerland by creating an inventory of relevant organizations as well as their current tasks in order to highlight areas where further action is needed. The project resulted in various recommendations with respect to procedural and organizational issues. Specifically, the following main recommendations were issued in early 2006:<sup>57</sup>

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54 <http://www.bafu.admin.ch/org/organisation/00366/index.html?lang=en> [January 2007].

55 <http://www.bafu.admin.ch/biotechnologie/01744/01745/index.html?lang=en> [January 2007].

56 <http://www.komabc.ch/>

57 ComNBC (2006): Projekt „Nationaler ABC-Schutz“ Schlussbericht – Zusammenfassungen. 30 January 2006. [http://www.komabc.ch/d/publikationen/2006-03-23\\_Zusammenfassungen\\_Nationaler\\_ABC-Schutz\\_IN.pdf](http://www.komabc.ch/d/publikationen/2006-03-23_Zusammenfassungen_Nationaler_ABC-Schutz_IN.pdf) [January 2007].

- Improvement of overall coordination between the federal state and the cantons;
- Establishment of a process to continuously improve national NBC protection;
- Intensified focus of the ComNBC on strategic issues with the mandate to elaborate an overall CBRN strategy;
- Establishment of a national NBC Office with an operational and coordinative focus;
- Transformation of the Emergency Organisation Radioactivity (EOR) and its Steering Committee on Radioactivity (LAR) into an Emergency Organisation NBC and a Steering Committee NBC (LAABC) in order to improve the federal strategic-political leadership structures with respect to CBRN incidents;
- Expansion of the mandate of the National Emergency Operations Centre (NEOC);
- Establishment of an inter-cantonal CBRN coordination platform;
- Improvement of the availability and coordination of operating resources;
- Review and clarification of responsibilities;
- Extension of the mandatory reporting system with respect to human and animal diseases; and
- Improvement and standardization of the crisis communications infrastructure.

As of late 2006 and early 2007, some of these recommendations are already being implemented (see also section on civil protection).

#### BIOTERRORISM EXPERT COMMISSION

In September 2001, the leader of the Medical Services of the Swiss Army initiated the establishment of a Bioterrorism Expert Commission within his mandate for the Coordinated Medical Services (CMS), in response to a false warning of a smallpox attack in Switzerland and the subsequent anthrax scares. The commission acted as an emergency



task force and linked high-ranking representatives of the federal state and the cantons with national B-experts in order to assess the situation, advise the Federal Council, and coordinate response measures. It also dealt with questions of vaccinations and was involved in the elaboration of vaccination plans. The commission consisted of representatives from the Swiss armed forces, the Federal Office for Civil Protection (FOCP), the intelligence services, the Federal Office for Public Health (FOPH), and the Federal Veterinary Office (FVO), as well as cantonal institutions, hospitals, universities, and others.<sup>58</sup>

### SWISS EXPERT COMMITTEE FOR BIOSAFETY (SECB)

The Swiss Expert Committee for Biosafety (SECB)<sup>59</sup> advises the Swiss authorities on the protection of the population and the environment in the area of biotechnology and genetic engineering. It provides advice on the drafting of laws, ordinances, and guidelines and on the enforcement of these regulations. The SECB issues statements on license applications and recommendations on safety measures for laboratories and scientific studies involving genetically modified or pathogenic organisms. The committee mainly consists of experts from national academic institutions and is affiliated with the Federal Office for the Environment (FOEN).

### ERFA Bio

ERFA Bio<sup>60</sup> is an inter-cantonal body of experts in biological and genetic technology. It aims at the exchange of experiences in the field of biosafety,

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58 Cf. Lage- und Gefährdungsanalyse Schweiz nach den Terroranschlägen vom 11. September 2001. Bericht des Bundesrates an das Parlament vom 26. Juni 2002. <http://www.admin.ch/ch/d/ff/2003/1832.pdf> [January 2007]; Guery, Michael (2004): *Biologischer Terrorismus in Bezug auf die Schweiz - Unter besonderer Berücksichtigung rechtlicher Aspekte*. Zürcher Beiträge Nr. 74. Zürich: Center for Security Studies, ETH Zurich. <http://www.isn.ethz.ch/pubs/ph/details.cfm?id=10449> [January 2007]; and <http://www.vbs-ddps.ch/internet/group-gst/de/home/sanit/neu/neu3.html> [January 2007]. The future role of the Bioterrorism Expert Commission, if any, is unclear.

59 [http://www.efbs.ch/buwal/eng/fachgebiete/fg\\_efbs/index.html](http://www.efbs.ch/buwal/eng/fachgebiete/fg_efbs/index.html) [January 2007].

60 <http://www.erfa-bio.ch/>

especially in the execution of the legal basis related to pathogenic or genetically modified organisms. Its specialized working group “B-events”, which was active until 2004, elaborated cantonal B-protection plans and a regional laboratory concept. The B-section of ComNBC and the Coordination Committee of the Regional Laboratory Network (KoKo) have since taken over these tasks.

### PROJECT SAGBATA

Sagbata is a joint project by the Netherlands and Switzerland within the framework of the Euro-Atlantic Partnership Council (EAPC), initiated in 2003. It aims at the creation of a consequence management information tool in order to understand decision-making processes in the event of an attack with biological agents and to assess their consequences. The project scenario is based on a deliberate release of the Marburg virus. It focuses on the first phase of an attack where decision-makers have to make far-reaching decisions on the basis of uncertain information. The results from interviews with experts are used to elaborate a (computer-based) decision tree in order to comprehend the effects of a decision on the further course of crisis management. Results are to be used for exercises and ultimately also as reference aids in the case of an emergency. It is planned to extend the resulting decision-guidance tool to incidents involving chemical and nuclear substances as well.<sup>61</sup>

On the Swiss side, the National Emergency Operations Centre (NEOC) has the lead for the project, with the support of the Spiez Laboratory (LS), the Medical Services of the Swiss Army, and Komp Zen ABC.

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61 NATO / EAPC Dutch-Swiss Ad-hoc working group (2004): Project Sagbata – Project Plan. With support from NATO Civil Emergency Planning. Brussels: January 2004.

## EXERCISE 'BLACK ICE'

In September 2006, the Federal Department of Foreign Affairs (FDFA) and the US State Department jointly organized an international coordination exercise on bioterrorism in Montreux, Switzerland. The exercise assumed a fictional attack with the smallpox virus and examined complex international cooperation and coordination issues among various public and international institutions. It aimed at increasing participants' awareness of international capabilities and resources, as well as at identifying gaps and overlaps in the response to a potential bioterrorist attack.

The organizations participating in exercise Black ICE were the International Civil Aviation Organization (ICAO), the International Criminal Police Organization (Interpol), the International Maritime Organization (IMO), the International Organization for Migration (IOM), the North Atlantic Treaty Organisation (NATO), the Organization for Security and Cooperation in Europe (OSCE), the UN Department for Disarmament Affairs (UN DDA), the World Customs Organization (WCO), the World Food Program (WFP), and the World Health Organization (WHO).<sup>62</sup>

## EXERCISE 'EPIDEMIC IN SWITZERLAND'

The leadership exercise 'Epidemic in Switzerland', conducted in January 2005 aimed at optimizing the federal response to an epidemic in Switzerland and involved all seven members of the Federal Council, including their departments. The main focus was on interdepartmental cooperation, the review of responsibilities, and on communicative matters. In the final evaluation, recommendations were issued on the improvement of various leadership structures and communication processes of the Federal Council and the departments as well as their cooperation.<sup>63</sup>

62 <http://www.news.admin.ch/dokumentation/00002/00015/index.html?lang=en&msgid=7260> [January 2007].

63 Strategische Führungsausbildung SFA (2005): Führungsübung 2005: Epidemie in der Schweiz – Schlussbericht. <http://biblio.parlament.ch/e-docs/140476.pdf> [January 2007].

## LAWS AND LEGISLATION<sup>64</sup>

Biosecurity	Federal Law on Epidemics 1970 (SR 818.101)	This law requires the notification of the authorities about infectious diseases and an authorization/notification for laboratories and persons that handle pathogenic agents. It authorizes the Federal Council to regulate the transport, trade, and transit of pathogens, to limit or ban the use of certain pathogens, and to set the conditions for the use of pathogens. In addition, the law outlines provisions for vaccination, quarantine, and disease monitoring.
	Ordinance on the Protection against Major Accidents 1991 (SR 814.012)	This ordinance requires establishments that handle pathogenic or genetically modified microorganisms to notify the cantonal authorities and to take special safety measures to protect the population and the environment from lethal accidents. It also requires them to undertake precautionary measures to handle such eventualities. The regulators are authorized to assess the risk and issue permits accordingly.
Biosafety	Federal Law on the Protection of the Environment 1983 (SR 814.01)	This law regulates the handling of pathogenic or genetically modified organisms, which may only be used if they do not endanger humans and biodiversity. It also regulates the release of such organisms into the environment.
	Ordinance on the Contained Use of Organisms 1999 (SR 814.912)	The ordinance regulates the contained use of pathogenic and genetically modified organisms. It requires risk assessments, notification of and a license from the federal authorities, and special security measures. Activities in this area are classified according to four risk groups.
	Ordinance on the Release of Organisms into the Environment 1999 (SR 814.911)	The ordinance regulates the release of pathogenic and genetically modified organisms into the environment. It requires a governmental permission, due diligence, and the briefing of employees.

64 This chart may not include all relevant laws. It was compiled from the following sources: The laws themselves at <http://www.admin.ch/ch/d/sr/sr.html>; Interpol's website on "National Laws and Measures: Counter-Terrorism Regulation of Biology" - <http://www.interpol.int/Public/BioTerrorism/NationalLaws/>; and the Center for Nonproliferation Studies' (CNS) "Comparative Review of Biosecurity-Related Legislation" - <http://cns.miss.edu/research/cbw/biosec/pdfs/biolaw.pdf>.

	Ordinance on the Protection of Workers from Risks related to Exposure to Microorganisms at Work 1999 (SR 832.321)	This ordinance regulates protective measures that are required in order to protect workers from exposure to pathogenic or genetically modified microorganisms. It defines information and reporting requirements and requires the monitoring of workers' health. Microorganisms are classified according to four risk groups.
Criminalization	Swiss Penal Code 1937 (SR 311.0)	Among other things, the Swiss Penal Code criminalizes murder, hostage-taking, use of explosives with criminal intent, and the endangerment of public health. The latter includes the deliberate spreading of human diseases, zoonoses, and pathogenic or genetically modified organisms, as well as the contamination of drinking water. Penalties are also intended for criminal acts that endanger the lives of several persons or cause major damage. In addition, the penal code outlaws financing of terrorism, participation in terrorist organizations, and money laundering.
	Federal Law on War Material 1996 (SR 514.51)	Article 7 of this law prohibits the development, production, acquisition, import, export, transit, storage, and possession of nuclear, biological, and chemical weapons in Switzerland or by Swiss citizens, and any assistance in doing so.
Import / Export Controls	Federal Law on War Material 1996 (SR 514.51)	These two pieces of legislation regulate license requirements for the manufacture, import, export, or transit of war material. The law defines mechanisms for control and licensing as well as penalties.
	Ordinance on War Material 1998 (SR 514.511)	
	Federal Law on the Control of Goods Suitable for Civilian and Military Purposes and Specific Military Goods 1996 (SR 946.202)	The law regulates the development, export, import, and transit of dual-use and military goods. Specifically, it applies to goods that may be used to develop weapons of mass destruction, including microorganisms and toxins and related carrier systems. It defines control mechanisms, penalties, and the legal framework for licensing and confiscation of such materials. The ordinance explicitly refers to the lists of banned goods of the Australia Group and the Wassenaar Arrangement.
Ordinance on the Export, Import, and Transit of Goods Suitable for Civilian and Military Purposes and Specific Military Goods 1997 (SR 946.202.1)		



# UNITED KINGDOM<sup>1</sup>

## THE UK'S APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

As one of the three depositary states<sup>2</sup> of the Biological and Toxin Weapons Convention (BTWC), the UK has taken a leading role in the establishment of the treaty and in subsequent efforts to strengthen the convention in a multilateral framework. Accordingly, the UK expressed its disappointment over the failure so far of state parties to agree on an additional protocol to the convention. The UK ratified the Geneva Protocol in 1930 and the BTWC in 1975. Additionally, it is a member of the Australia Group and a participating state of the Wassenaar Arrangement.

To date, no biological attack has taken place in the UK. Nevertheless, the Foreign Affairs Committee noted the “horrific potential” of an attack involving biological agents, and stresses the fact that their use remains a possibility that must be addressed with the utmost seriousness. Emphasis is placed on threats arising from terrorist groups as well as from states, particularly those in the Persian Gulf, the Near East, and North Africa.<sup>3</sup> The British Security Service (MI5) does state that the US, UK, and Israel, and their representatives overseas, remain the primary targets for terrorist groups such as al-Qaida.<sup>4</sup>

The UK's strategy for dealing with the threat posed by biological weapons is based on the following four pillars: arms control, preventing supply, deterring use, and defending against use. The latter has four objec-

1 The country survey on the UK was reviewed by Steve Gee, Health Protection Agency (HPA); and David Stott, Senior Emergency Planning Officer, Lancashire County Council.

2 The two others are the United States and Russia.

3 Foreign Affairs Committee (2002): The Biological Weapons Green Paper. <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmcaff/150/150.pdf> [January 2007].

4 <http://www.mi5.gov.uk/output/Page26.html> [September 2006].

tives: to assess the hazard to the UK from biological and toxin warfare agents that might be used by an aggressor; to establish effective means and procedures for the detection, warning, identification, diagnosis, and monitoring of biological weapons (BW) agents; to provide physical protective measures to defend the UK armed forces against BW agents; and to provide medical countermeasures for prophylaxis, therapy, and treatment against BW agents.<sup>5</sup>

The UK pursues a multi-agency approach in response to the threat from biological weapons. The British management framework for responding to and recovering from the consequences of a terrorist incident would be similar to that adopted in relation to non-malicious incidents, except that it might be necessary for the police to take executive action in respect of the entire incident. Special significance is attributed to the provision of warnings, advice, and information to the public, in view of the potential impact of terrorist events on public confidence and the possibility of further attacks.

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

At the national level, the Home Office holds the lead responsibility for coordinating the response to a terrorist threat within the UK. The Cabinet Office is responsible for overall emergency planning and oversees the cross-departmental Capabilities Program, which is the core framework through which the government is seeking to build resilience across all parts of the UK.

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5 Secretary of State for Foreign and Commonwealth Affairs (2002): Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons. <http://www.fco.gov.uk/Files/kfile/btwc290402,0.pdf> [January 2007].



## PUBLIC HEALTH

### HEALTH PROTECTION AGENCY (HPA)

When the National Health Service (NHS) was reorganized in 2002, the opportunity was used to review and re-structure the provision of public advice on health protection issues. Previously, this advice had been provided by several sources: advice on infections was given by the Public Health Laboratory Service (PHLS) and the Defence Science and Technology Laboratory (DSTL) at Porton Down; advice on radiation was provided by the National Radiological Protection Board (NRPB); and advice on chemicals was received from several different information centers and the National Focus for Chemical Incidents. In addition, front line workers and regional staff, including consultants in communicable disease control, were seen as being professionally isolated and inconsistently supported. This process was given some impetus following the 11 September 2001 attacks in New York and Washington and the subsequent dissemination of anthrax-filled letters.

As a result, the Health Protection Agency (HPA)<sup>6</sup> was established as a special health authority in 2003. Its role is to provide an integrated approach to protecting UK public health through the provision of support and advice to the NHS, local authorities, emergency services, and the Department of Health (DH). The HPA provides a comprehensive service in support of health protection for all types of emergencies, regardless of whether they are natural, accidental, or deliberate, and irrespective of whether they are conventional or involve a release of chemical, biological, radiological, or nuclear (CBRN) substances. This includes preventing and controlling infectious diseases; reducing the adverse effects of chemical, microbiological, and radiological hazards; and preparing for potential or emerging threats. Specifically, the HPA has the responsibility to:

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6 <http://www.hpa.org.uk/>

- Provide training to doctors, nurses, biomedical scientists, and the emergency services in preparedness and response to potential bioterrorist incidents and in the diagnosis and recognition of symptoms of unusual dangerous microorganisms;
- Carry out and coordinate exercises at the local and national levels with the NHS, local authorities and the emergency services to improve national preparedness in the event of major bioterrorist incidents; and to
- Maintain surveillance of potential threats both nationally and internationally and work with international partners to reduce the impact of threats to public health.

The HPA is the sole manufacturer of the UK's licensed anthrax vaccine, which it produces for and on behalf of the UK government. It is supplied to the Department of Health (DH) for occupational health purposes and to the Ministry of Defense to protect service personnel from the use of anthrax as a biological weapon.<sup>7</sup>

In addition, the HPA is responsible for the delivery of the *Food, Water and Environmental (FWE) Microbiology Testing Service*, an integrated network of 30 laboratories in England and Wales.<sup>8</sup> The FWE laboratories provide specialist microbiological services that are an essential support for local authorities and the Food Standards Agency (FSA) in carrying out relevant statutory functions. Each HPA region is able to carry out the full range of accredited food, water, and environmental tests.

The HPA also maintains the *National Collection of Type Cultures (NCTC)*, which supplies reference bacterial cultures of medical, scientific, and veterinary importance to support academic, health, food, and veterinary institutions world-wide. The collection comprises over 5,000 bacterial cultures.<sup>9</sup>

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7 <http://www.hpa.org.uk/business/anthrax.htm> [January 2007].

8 [http://www.hpa.org.uk/hpa/fwe/fwe\\_default.htm](http://www.hpa.org.uk/hpa/fwe/fwe_default.htm) [January 2007].

9 <http://www.hpa.org.uk/nctc/default.htm> [January 2007].

Additionally, the following centers are under the responsibility of the HPA:

The *Communicable Disease Surveillance Centre (CDSC)*<sup>10</sup> functions as a coordinating information and response center exercising responsibility on behalf of the HPA for those national duties relating to control, monitoring, and provision of expert advice on infectious diseases. Specifically, the center:

- Is in charge of monitoring, early-warning, and responses to infectious diseases at a national level;
- Responds to infectious disease outbreaks, incidents, or issues of national significance and coordinates control measures;
- Provides comprehensive and authoritative public health information as well as news bulletins on infectious diseases;
- Provides expert public health advice for those responsible for controlling infectious diseases; and
- Participates in training programs for those involved in the surveillance and control of infectious diseases.

The *Centre for Infections (CfI)*<sup>11</sup> carries out a broad spectrum of work related to the prevention of infectious diseases. The tasks of the center include infectious disease surveillance, the provision of specialist and reference microbiological and microbial epidemiology, the coordination of investigations in the event of unusual national outbreaks, counseling to the government on the risks posed by various infections, and the response to international health alerts.

The *Centre for Emergency Preparedness and Response (CEPR)*<sup>12</sup> plays an important role in preparing for and coordinating responses to potential healthcare emergencies, including a possible deliberate release of noxious agents. The center works to improve the UK's emergency response

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10 [http://www.hpa.org.uk/infections/about/surveillance/surveillance\\_menu.htm](http://www.hpa.org.uk/infections/about/surveillance/surveillance_menu.htm) [January 2007].

11 <http://www.hpa.org.uk/infections/> [January 2007].

12 <http://www.hpa.org.uk/cepr/default.htm> [January 2007].

capability by developing the infrastructure for surveillance and early recognition of events. In order to improve preparedness, the center runs training courses and coordinates emergency exercises to test plans.

The work on SARS is also being used to develop the HPA's preparedness for other major emergencies. One of these could be a pandemic influenza, and the HPA has held a planning workshop that concentrates on modeling the epidemic.

Additionally, the HPA continues its program on preparing for a deliberate release. In September 2003, the Global Health Security Network of the G7 states plus Mexico held a continuous 48-hour international exercise. The purpose of the exercise was to test international communications during a deliberate release of smallpox. Staff from the HPA contributed, working in eight-hour shifts alongside the Department of Health team. During the exercise, a new application was developed to track details of patients as well as their immediate contacts. The exercise was considered to be very successful for the UK, and the lessons learned were fed into the revision of the government's smallpox plan and the HPA's own internal planning.<sup>13</sup>

#### DEPARTMENT OF HEALTH (DH)

The Department of Health (DH)<sup>14</sup> coordinates the resources of the National Health Service (NHS) in England and would take control of these in the event of a complex and significant emergency through its *Emergency Planning Coordination Unit (EPCU)*.<sup>15</sup> National guidance and policy is prepared by the DH's Emergency Preparedness Division (EPD).

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13 [http://www.hpa.org.uk/hpa/board\\_meetings/docs\\_2003/031030/board\\_meeting\\_0376\\_cereport.pdf](http://www.hpa.org.uk/hpa/board_meetings/docs_2003/031030/board_meeting_0376_cereport.pdf) [January 2007].

14 <http://www.dh.gov.uk/>

15 [http://www.dh.gov.uk/AboutUs/MinistersAndDepartmentLeaders/ChiefMedicalOfficer/ProgressOnPolicy/ProgressBrowsableDocument/fs/en?CONTENT\\_ID=4102885&MULTIPAGE\\_ID=5014866&chk=xNuobw](http://www.dh.gov.uk/AboutUs/MinistersAndDepartmentLeaders/ChiefMedicalOfficer/ProgressOnPolicy/ProgressBrowsableDocument/fs/en?CONTENT_ID=4102885&MULTIPAGE_ID=5014866&chk=xNuobw) [January 2007].

EPCU is responsible for the coordination of contingency planning to maintain the NHS's state of readiness for responding to major incidents involving infectious diseases. The unit is integrated with emergency planning activities across government and more widely through the EU, NATO, and other organizations. Part of this role includes the health responses to dealing with a terrorist threat or actual attack. EPCU provides information to the Home Office, which coordinates efforts against terrorism. Its job is to ensure that emergency planning arrangements continue to work effectively, which includes assisting primary care trusts in undertaking their new responsibilities for emergency planning. EPCU works closely with the HPA, which also has a health emergency planning function.

The DH has issued specific guidance to the NHS and increased its preparedness by stockpiling medical equipment, antidotes, antibiotics, and vaccines. Both in 2001 and 2003, the Department of Health engaged with industry to procure contingency supplies of smallpox vaccine.<sup>16</sup>

#### HEALTH AND SAFETY EXECUTIVE (HSE)

The Health and Safety Executive (HSE)<sup>17</sup> has the mission to protect public health and safety by ensuring that risks in the workplace are properly controlled. The HSE regulates health and safety in nuclear installations, mines, factories, farms, hospitals, schools, offshore gas and oil installations, and other workplaces. It also regulates the safety of the gas grid, railway safety, and many other aspects of the protection of both workers and the public. The HSE's remit encompasses the workplace health and safety of other responding agencies, including the emergency services. In addition, its chemical, biological, radiological, and nuclear (CBRN) experts can provide relevant specialist or technical advice to support

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16 Select Committee on Science and Technology (2003): *The Government Response to 'Fighting Infection'*. [http://www.hcsu.org.uk/index.php?option=com\\_docman&task=doc\\_download&gid=432](http://www.hcsu.org.uk/index.php?option=com_docman&task=doc_download&gid=432) [January 2007].

17 <http://www.hse.gov.uk/>

planning for, response to, and recovery from emergencies – especially, but not exclusively, events that involve major industrial hazard sites.

The principal legislation that applies in the field of microbiological safety is the Control of Substances Hazardous to Health Regulation 2002 (COSHH). It requires employers to assess the risks of exposure to biological agents, and to either prevent exposure or control it adequately.<sup>18</sup>

### FOOD STANDARDS AGENCY (FSA)

The Food Standards Agency (FSA)<sup>19</sup> promotes microbiological safety of food throughout the food chain. It is responsible for the strategy for reducing food-borne illnesses, promoting a hazard analysis-based approach to food safety management, and providing guidance for producers, retailers, caterers, and the general public. It also deals with microbiological food hazards and outbreaks of food-borne diseases. Specifically, the role of the Food Standards Agency is to:

- Ensure that food contaminated to unacceptable levels does not enter the food chain;
- Provide advice and information on food safety issues; and to
- Ensure, in conjunction with the Environment Agency (EA), the safe disposal of contaminated food.

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### CIVIL CONTINGENCIES SECRETARIAT (CCS)

The Civil Contingencies Secretariat (CCS)<sup>20</sup> is part of the Cabinet Office. It was established in July 2001, and reports to the prime minister

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18 <http://www.hse.gov.uk/biosafety/hseandinfection.htm> [January 2007].

19 <http://www.foodstandards.gov.uk/>

20 <http://www.ukresilience.info/>

through the security and intelligence coordinator and the permanent secretary to the Cabinet Office. It was set up to improve the resilience of the central government and the UK. “Resilience” as defined by the Cabinet Office is the ability to detect, prevent, and, if necessary, handle disruptive challenges that can lead to or result in crisis.<sup>21</sup> Disruptive challenges could range from floods and outbreaks of human or animal disease to terrorist attacks.

Like all Cabinet Office Secretariats, the CCS supports ministers collectively. Specifically, it services the Civil Contingencies Committee (COBRA), which deals with managing and exercising arrangements to handle individual crises as they arise. The CCS is organized around three divisions: An assessments division, which evaluates potential and evolving threats; an operations division, which develops and reviews departmental continuity and contingency plans; and a policy division, which gives the Cabinet Secretariat support in consequence management.

The aim of the CCS is to improve the UK’s resilience to disruptive challenges by working with others inside and outside of the government on the anticipation, preparation, prevention, and resolution of threats. Its current objectives are:

- To identify and assess potential and imminent disruptive domestic challenges and assist in the development of an integrated response;
- To build partnerships with other organizations to develop and share best practices in horizon-scanning, and to enhance the knowledge of the UK’s critical networks and infrastructures;
- To ensure that the government can continue to function and deliver public services during crises, working with departments and other secretariats in the Cabinet Office to ensure that plans and systems to cover the full range of potential disruption are in place and are exercised;

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21 <http://www.ukresilience.info/preparedness/ukgovernment/capabilities.shtm> [January 2007].

- To improve resilience against disruption across government and the public sector, including by supporting ministers in developing policy, agreeing priorities, and planning assumptions, and ensuring that core response capabilities are developed accordingly; and
- To improve at all levels of government, the wider public sector, and the private and voluntary sectors the capability to prepare for, respond to, and manage potential challenges through development of key skills and awareness.

During times of crisis, the UK government operates a “lead government department” system where appropriate departments ensure that the supply of essential services continues. This departmental work is coordinated at the cabinet level through the Civil Contingencies Secretariat (CCS) and the Civil Contingencies Committee (COBRA), which is normally chaired by the prime minister or the home secretary.

The *Emergency Planning College (EPC)*<sup>22</sup> is an integral part of the CCS. It was set up to provide training in crisis management and emergency planning to local and central government offices, the emergency services, the private sector, and volunteer networks. It plays a key role in the development and promulgation of the UK’s resilience doctrine, and in the development of the cross-organizational communities to deliver it.

#### FIRE AND RESILIENCE DIRECTORATE (FRD)

The Fire and Resilience Directorate (FRD)<sup>23</sup> was created in late 2005 by a merger of the Fire and Rescue Service Directorate (FRSD) with the Civil Resilience Directorate (CRD). The FRD’s aim is to bring together and better direct all the resilience work done by the former Office of the Deputy Prime Minister (ODPM), now called the *Department for*

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22 <http://www.epcollege.gov.uk/>

23 <http://www.communities.gov.uk/index.asp?id=1159221> [January 2007].



*Communities and Local Government (DCLG)*,<sup>24</sup> which contributes to the Cabinet Office-led Capabilities Program. The FRD is responsible for developing plans for site clearance and has contributed to the work on chemical, biological, radiological, and nuclear (CBRN) resilience conducted by the Home Office by producing guidance on counteracting the effects of CBRN incidents on buildings and infrastructures.

The FRD's "New Dimension" program was established to improve resilience within the fire and rescue service and to ensure it could respond to an incident on the scale of the 11 September 2001 attacks taking place in the UK. The program provides or improves on capabilities such as public mass decontamination, urban search and rescue, and dealing with flooding and structural collapse. The FRD's "Firelink" project is an investment in radio communications for the fire and rescue service and will deliver national interoperability both within the service and with other emergency services. Additionally, the FRD has a team that is specialized in scientific and technical research to ensure, among other things, that the fire and rescue service is well equipped to respond effectively to a CBRN attack.<sup>25</sup>

### LOCAL RESILIENCE FORUMS (LRF)

The Local Resilience Forums (LRF)<sup>26</sup> were created in 2004 in response to the Civil Contingencies Act, which requires first responders to form a LRF. The LRF are the principal mechanism for multi-agency cooperation under the act, based on police districts. The forum is a process allowing the organizations charged with civil protection to cooperate in order to facilitate planning and response to emergencies, and to produce a Community Risk Register.

First responders are classified according to two categories. Category 1 responders are organizations at the core of the response to most emer-

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24 <http://www.communities.gov.uk/>

25 <http://www.communities.gov.uk/index.asp?id=1123765> [January 2007].

26 <http://www.ukresilience.info/preparedness/ukgovernment/lrfs.shtm> [January 2007].

gencies. They are responsible for the full range of civil protection duties and are required to:<sup>27</sup>

- Assess the risk of emergencies;
- Put in place emergency plans;
- Put in place arrangements to warn, inform, and advise the public in the event of an emergency; and to
- Cooperate with other local responders to enhance coordination and efficiency.

Category 2 organizations such as the Health and Safety Executive or transport and utility companies are less involved in the core of emergency planning work and are subject to less stringent legal obligations.

#### THE NATIONAL MASS FATALITIES WORKING GROUP

At the national level, planning for mass fatality incidents comes under the responsibility of the Home Office. The National Mass Fatalities Working Group assists the Home Office in producing relevant guidance and in directing central government assistance to where it is needed. Members represent the broad range of organizations, specialists, and individuals involved in planning for and responding to a mass fatality incident. Activities involve identifying casualties, investigating the cause of death, and disposing of victims.<sup>28</sup>

Most incidents in the UK would be handled primarily at a local level by the relevant emergency services and local authorities. However, a mass fatality incident is likely to require special arrangements at the local, regional, and national levels, depending on the scale and complexity of the incident.

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27 <http://www.cheshirefire.co.uk/Assets/lrfannualreport.pdf> [October 2006].

28 <http://security.homeoffice.gov.uk/responding-to-incidents/managing-consequences/dealing-with-fatalities/> [August 2006].

## EMERGENCY PLANNING SOCIETY (EPS)

The Emergency Planning Society (EPS)<sup>29</sup> is the national professional association for all actors involved in emergency planning and crisis and disaster management. The membership is drawn from a wide range of backgrounds, including local government, industry, the emergency services, educational establishments, the legal profession, and others. The primary aims of the society are to promote effective emergency planning and management, to influence policy related to emergency planning, and to promote the professional interests of its members.<sup>30</sup>

The EPS maintains various professional issue groups. The CBRN Professional Interest Group aims to be an active and effective focus within the EPS for the discussion and dissemination of issues relating to CBRN emergency planning.<sup>31</sup> The group assists in the review of relevant government guidance documents and regulations and provides advice to responders.

## NATIONAL SECURITY

### JOINT INTELLIGENCE COMMITTEE (JIC)

The Joint Intelligence Committee (JIC)<sup>32</sup> is the central body in the UK's interdepartmental intelligence machinery. It is chaired by the security and intelligence coordinator, who advises the prime minister on the coordination of the intelligence services, the prioritization of intelligence requirements, and arrangements for assessing the performance of the security and intelligence agencies.

The JIC advises on setting priorities for intelligence collection and assesses performance against these criteria. It is also responsible for as-

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29 <http://www.the-eps.org/>

30 <http://www.the-eps.org/index.php?tab=groups&area=1&group=16> [January 2007].

31 <http://www.the-eps.org/index.php?area=11&tab=groups&group=56> [January 2007].

32 <http://www.intelligence.gov.uk/machinery/jic.asp> [January 2007].

sessing and giving early warning of external developments and threats likely to affect British interests. It draws on all sources of information, overt and covert. The principal recipients of JIC assessments are the prime minister, cabinet ministers, and senior officials in policy-making departments. Other JIC members include the heads of the three security and intelligence agencies, the chief of defence intelligence, and senior representatives of the Foreign and Commonwealth Office (FCO), the Ministry of Defence, the Department of Trade and Industry (DTI), the Home Office, and HM Treasury.<sup>33</sup>

Government departments' intelligence requirements and priorities for matters involving national security, economic prosperity, and the prevention of serious crime are reviewed annually by the JIC and approved by the relevant ministers. The requirements are arranged according to three orders of importance reflecting the scale, directness, and immediacy of the risk or benefit to UK interests. The statement of requirements gives comprehensive guidance to the collectors of intelligence, namely the Secret Intelligence Service (SIS) and the Government Communications Headquarters (GCHQ).<sup>34</sup> The Security Service (MI5) contributes intelligence to meet some of the JIC requirements, but, in line with its statutory functions, formulates its own set of plans and priorities, which are approved by the home secretary.<sup>35</sup>

### SECURITY SERVICE (MI5)

The Security Service (MI5)<sup>36</sup> investigates and seeks to disrupt attempts by countries of concern to acquire material, technology, or expertise in the UK that could be relevant to a mass casualty weapons program. This is done in close cooperation with other government departments and agencies. In addition, MI5's International Counter Terrorism branch

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33 <http://www.mi5.gov.uk/output/Page151.html> [October 2006].

34 GCHQ has two missions: signals intelligence and information assurance. Cf. <http://www.gchq.gov.uk/>

35 <http://www.mi5.gov.uk/output/Page151.html> [October 2006].

36 <http://www.mi5.gov.uk/>

monitors the threat from international extremist groups and their potential to acquire weapons of mass destruction.

### SECRET INTELLIGENCE SERVICE (SIS)

The Secret Intelligence Service (SIS or MI6)<sup>37</sup> provides the British government with a global covert capability to promote and defend the nation's security and economic well-being. SIS operates world-wide to collect secret foreign intelligence in support of the government's policies and objectives. SIS assists the government in responding to current challenges such as regional instability, terrorism, the proliferation of weapons of mass destruction, and illegal narcotics. SIS, like the other British intelligence and security agencies, is subject to parliamentary, ministerial, judicial, and financial oversight.

### JOINT TERRORISM ANALYSIS CENTRE (JTAC)

Created in 2003, the Joint Terrorism Analysis Centre (JTAC)<sup>38</sup> is the UK's center for the analysis and assessment of international terrorism. Although the head of JTAC is responsible to the director general of the Security Service (MI5), JTAC operates as a self-standing organization comprising representatives from 11 government departments and agencies.<sup>39</sup> JTAC has established itself as an authoritative and effective mechanism for analyzing all-source intelligence on the activities, intentions, and capabilities of international terrorist groups that may threaten UK and allied interests worldwide. JTAC sets threat levels and issues threat warnings as well as in-depth reports on trends, terrorist networks, and capabilities.<sup>40</sup>

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37 <http://www.sis.gov.uk/>

38 <http://www.mi5.gov.uk/output/Page421.html> [August 2006].

39 <http://www.mi5.gov.uk/output/Page65.html> [August 2006].

40 The Stationary Office (2005): National Intelligence Machinery. <http://www.cabinetoffice.gov.uk/publications/reports/intelligence/NationalIntelligenceMachinery.pdf> [January 2007].

### COUNTER-TERRORISM AND INTELLIGENCE DIRECTORATE (CTID)

The Counter-Terrorism and Intelligence Directorate (CTID)<sup>41</sup> works closely with the police and security services in order to advise ministers, develop policies, and provide security measures to combat the threat from terrorism. Reporting to the home secretary and the minister of state for the Home Office, the CTID has the responsibility to:

- Exercise the UK response to a terrorist incident;
- Develop legislation relating to terrorism in the UK and overseas;
- Provide appropriate protective security measures and protection packages for public figures at risk;
- Ensure that the UK's critical infrastructure is protected from attack;
- Ensure that the UK is prepared to deal with a chemical, biological, or nuclear release; and to
- Coordinate between government and the emergency services during terrorist incidents or counter-terrorism operations.

### NATIONAL COUNTER TERRORISM SECURITY OFFICE (NaCTSO)

The National Counter Terrorism Security Office (NaCTSO)<sup>42</sup> is a specialist police organization co-located with the Security Service (MI5) in the National Security Advice Centre (NSAC). NaCTSO coordinates a nationwide network of specialist police advisors known as Counter Terrorism Security Advisors (CTSAs), who provide protective and counter-terrorism security advice to support businesses. This includes chemical, biological, radiological, and nuclear protective security. The advice takes into account scenarios for both conventional and non-conventional attacks, and the aim is to reduce vulnerability to terrorist threats. The CTSAs work closely with other police forces throughout the country, government departments, and other agencies.

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41 <http://security.homeoffice.gov.uk/about-us/about-the-directorate/?version=1> [January 2007].

42 <http://www.secureyourfertiliser.gov.uk/nactso.htm> [January 2007].

## POLICE NATIONAL CBRN CENTRE

The Police National CBRN Centre provides training, equipment, and CBRN support to the national police services, in collaboration with the Health Protection Agency (HPA), the Defence Science and Technology Laboratory (DSTL), and the Armed Forces' Defence CBRN Centre. The purpose of the Police CBRN Centre is to ensure that officers have the necessary skills and equipment to respond effectively to CBRN incidents. By the beginning of 2005, nearly 7,000 UK police officers had received training, most of them in forming cordons and ensuring that unaffected people are kept away from the scene of a non-conventional incident.<sup>43</sup> The center provides strategy and training services as well as advice on research and development, including best practices and procedures in relation to operational issues, and contributes to the equipment procurement process.

## MILITARY DEFENSE AND RESEARCH

### BRITISH ARMED FORCES

In general, civil authorities can call upon the national structure, organization, skills, equipment, and training of the armed forces in order to manage the response to and recovery from emergencies. This support is governed by the Military Aid to the Civil Authority (MACA) arrangements.<sup>44</sup>

Formed in 1998, the *Joint CBRN Regiment*<sup>45</sup> provides the British armed forces with effective defenses against chemical and biological weapons and nuclear contamination. The regiment's key role is the operational support of deployed British troops from all three services (land,

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43 <http://www.homeoffice.gov.uk/security/protecting-the-uk/preparing-for-incidents/> [January 2007].  
44 Emergency Planning College (2005): *Emergency Response and Recovery*. <http://www.ukresilience.info/ccact/emergresponse.pdf> [January 2007].  
45 <http://www.jtmbc.org/>

air, and sea). Equipped with reconnaissance vehicles and specialized CBRN detection equipment, the regiment can move at very short notice to any potential trouble spot. Members of the Joint CBRN Regiment have served in Kuwait, Afghanistan, and Iraq. In addition, the regiment may also be called to offer military assistance to civil authorities during peacetime, dealing with accidents or incidents involving radiological, biological, or chemical substances. For example, it provided support and advice during the outbreak of foot-and-mouth disease in 2001.

The *Defence CBRN Centre* is the military training center for tri-service CBRN defense for operations on land, situated within the purview of the Royal Air Force. Since 2001, the aforementioned Police National CBRN Centre has been based at the same site in Winterbourne Gunner, lending a multi-agency element to the center. This cooperation is a unique contribution to homeland defense within the UK.<sup>46</sup>

In order to provide a good level of protection against anthrax, the UK Ministry of Defense started the *Voluntary Immunization Program Against Anthrax*. Due to limited vaccine stocks, the program initially only included military and civilian personnel deployed on operations to the Gulf region and in specialized CBRN units. In 2002, as new supplies of the vaccine became available, the ministry was able to expand the program so that eventually all UK service personnel, including reservists and those essential civilians who could be deployed on operations overseas, will be routinely offered immunization against anthrax.<sup>47</sup>

#### DEFENCE SCIENCE AND TECHNOLOGY LABORATORY (DSTL)

The Defence Science and Technology Laboratory (DSTL),<sup>48</sup> located at Porton Down, is the center of scientific excellence of the UK Ministry of Defence (MoD). It supplies scientific and technical research and advice to the MoD and other government departments.

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46 [http://www.army.mod.uk/ukpep/where/winterbourne\\_gunner.htm](http://www.army.mod.uk/ukpep/where/winterbourne_gunner.htm) [January 2007].

47 <http://www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/HealthandSafety/AnthraxVIP/> [January 2007].

48 <http://www.dstl.gov.uk/>



In the area of chemical and biological terrorism, the DSTL supports the response units at all levels, from the scene of the incident to policy decisions in government. The incident support service includes detection of chemical and biological agents and advice on contamination and control.

The DSTL provides a facility for testing suspected chemical or biological weapon materials. Scientists at this facility have processed over 1,000 samples on behalf of the Home Office. This round-the-clock service rapidly delivers the reliable results needed in critical situations.

The DSTL is divided into several departments, which have the following responsibilities:

- The Environmental Sciences Department provides the MoD with a science and technology platform to assess, manage, monitor, and control biological, chemical, and radiological hazards, including secure transport and storage;
- The Detection Department conducts the research and development of sensors and systems for the detection of chemical and biological agents, along with related hazard assessment and consequence management. Throughout the 1991 Gulf War, DSTL experts were permanently on hand to provide crucial information to protect allied troops from Iraqi biological weapons using the DSTL biological detection system. In addition, the department runs the UK's designated laboratory under the Chemical Weapons Convention (CWC) and the national laboratory for chemical and biological attack confirmation;
- The Biomedical Sciences Department is the center for all life sciences research and development at the DSTL. It provides the MoD with a scientific base for the development of effective medical countermeasures to chemical and biological agents and ballistic countermeasures for military personnel. The DSTL works closely with collaborators in the UK and abroad to sequence the genomes of particular pathogens and to exploit bioinformatics for new vaccine and antimicrobial targets. In particular, the DSTL has initi-

ated a program to sequence the genome of *Francisella tularensis*.<sup>49</sup> The department also boasts a pool of experts on microbiological containment.

Additionally, the DSTL is establishing partnerships with private companies at an early stage of vaccine development to secure manufacturing capacity, from the pilot stage to large-scale manufacturing, for biodefense vaccines. The Department of Health (DH) liaises closely with the MoD to ensure that public health needs are taken into account where appropriate.<sup>50</sup>

## CIVILIAN RESEARCH AND LABORATORIES

### NATIONAL INSTITUTE FOR BIOLOGICAL STANDARDS AND CONTROL (NIBSC)

The National Institute for Biological Standards and Control (NIBSC)<sup>51</sup> is responsible for providing reference standards to control and standardize the quality and safety of vaccines and other biological medicines, testing samples of batches if required, and re-testing any samples that may have been associated with suspected adverse events. The NIBSC's divisions of Bacteriology and Virology are both actively engaged in research and standardization projects concerned with vaccines against potential biological weapons. The Division of Virology has been closely involved in the development of a variety of guidance documents for the EU and the WHO related to smallpox vaccines, and has evaluated various vaccines for potential purchase by the Department of Health (DH). At

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49 DSTL (2005): *Annual Report and Accounts 2004/2005*. [http://www.dstl.gov.uk/annual\\_report05.pdf](http://www.dstl.gov.uk/annual_report05.pdf) [January 2007].

50 Select Committee on Science and Technology (2003): *The Government Response to 'Fighting Infection'*. [http://www.hcsu.org.uk/index.php?option=com\\_docman&task=doc\\_download&gid=432](http://www.hcsu.org.uk/index.php?option=com_docman&task=doc_download&gid=432) [January 2007].

51 <http://www.nibsc.ac.uk/>

the Division of Bacteriology, a collaborative project with DSTL and the Health Protection Agency (HPA) is under way on improved vaccines against anthrax and plague.<sup>52</sup>

### BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL (BBSRC)

The Biotechnology and Biological Sciences Research Council (BBSRC)<sup>53</sup> funds a significant amount of basic and enabling research in the biosciences that relates to prevention of bioterrorism. There are four broad research areas that are of direct relevance:<sup>54</sup>

- **Diagnostics:** The BBSRC funds research in detection, identification, and surveillance of biological agents, including plant-, animal-, and food-borne pathogens. Research includes work on biological sensing systems.
- **Dispersal and persistence:** The BBSRC funds research on the natural spread and persistence of plant and animal pathogens in the environment in order to improve the understanding and forecasting of infectious diseases. This comprises research on biophysics, including the modeling of airflows and the behavior of aerosols, which is applicable to the airborne dispersion of and the surface contamination by microorganisms.
- **Decontamination:** The BBSRC funds multidisciplinary projects in the areas of bioavailability of pollutants, environmental pollution sensing, and monitoring. In this field, particular importance is given to bioremediation – the use of plants and microbes to decontaminate land, water, or air.

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52 National Biological Standards Board (2003): Annual Report & Accounts 2002/03. [http://www.nibsc.ac.uk/documents/nibsc\\_report\\_2000303.pdf](http://www.nibsc.ac.uk/documents/nibsc_report_2000303.pdf) [January 2007].

53 <http://www.bbsrc.ac.uk/>

54 Select Committee Inquiry on the Scientific Response to Terrorism – Memorandum Submitted by Research Councils UK. February 2003. <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmsctech/415/415ap39.htm> [January 2007].

- Basic biology of disease mechanisms: A significant proportion of the BBSRC-funded research aids the response to terrorism indirectly by increasing basic knowledge in biology.

### MEDICAL RESEARCH COUNCIL (MRC)

The UK Medical Research Council (MRC)<sup>55</sup> is a national organization funded by the UK taxpayer promoting research into all areas of medical and related sciences, with the aim of improving the health and quality of life in the UK.

The MRC is engaged in fundamental medical research involving a range of microbiological, chemical, and radiological agents. A considerable part of the basic research supported by MRC has added to the understanding of the effects of hazardous materials on the human body, and how to best counteract them. This research includes toxicology as well as studies on the effects of radiation and pathogens on human tissue. The MRC also funds research conducted by a number of other organizations in the field of disease control.

### NATURAL ENVIRONMENT RESEARCH COUNCIL (NERC)

The activities of the Natural Environment Research Council (NERC)<sup>56</sup> concentrate on responses to nuclear, chemical, and biological contamination of the natural environment. Relevant activities undertaken by NERC research and collaborative centers include: modeling studies, environmental surveys, remediation systems, emergency planning, remote sensing, baseline studies, airborne surveying, and contamination research. Within the NERC, the following centers have responsibilities relevant to biodefense:<sup>57</sup>

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55 <http://www.mrc.ac.uk/>

56 <http://www.nerc.ac.uk/>

57 Select Committee Inquiry on the Scientific Response to Terrorism – Memorandum Submitted by Research Councils UK. February 2003. <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmsctech/415/415ap39.htm> [January 2007].

The NERC's *Centre for Ecology and Hydrology (CEH)* has experience in dealing with the effects of sudden releases of chemicals and organisms into an environment. It also has experience in the organization and execution of structured environmental surveys that allow the collation of national contamination pictures from a relatively small number of samples. The CEH can identify and predict the distribution of chemicals and certain organisms from point sources, predict food chain accumulation, and determine effects.

The NERC's *British Geological Survey (BGS)* provides tools for detecting contaminants as well as baseline data against which future contamination episodes can be tracked and the scope of clean-up measures can be assessed. The BGS researches the potential pathways of chemicals and contaminants from both urban and rural environments into the ground water.

The *Proudman Oceanographic Laboratory (POL)* has expertise in the modeling of coastal seas, which includes the ability to model the dispersal of chemical and biological substances in coastal waters.

The *Plymouth Marine Laboratory (PML)* has capacities and extensive expertise in the measurement and identification of a range of chemical and biological constituents in estuarine and coastal waters. These range from complex mixtures of organic and inorganic chemicals to the detection, identification, and enumeration of bacteria, viruses, and toxic micro-algae.

The *Universities Weather Research Network (UWERN)* is part of NERC's Centre for Atmospheric Science. It is currently researching on urban meteorology, which has implications for the dispersal of hazardous substances in the urban atmospheric environment.

## NATIONAL ECONOMY

### EXPORT CONTROL AND NON-PROLIFERATION DIRECTORATE (XNP)

The *Export Control Organization (ECO)*<sup>58</sup> is part of the Export Control and Non-Proliferation Directorate (XNP) at the Department of Trade and Industry (DTI). ECO's chief task is to process applications for licenses to export controlled military and dual-use goods and technologies from the UK. About 10,000 applications are processed every year, as well as around 4,000 ratings, i.e., advice to exporters about whether a specific export needs a license. Licenses are approved on the advice of the Foreign and Commonwealth Office (FCO), the Ministry of Defense (MOD), and, where sustainable development issues are involved, the Department for International Development (DFID).

The *Non-Proliferation Directorate*<sup>59</sup> is also part of the DTI's Export Control and Non-Proliferation Directorate (XNP) and is responsible for the following:

- Non-proliferation of nuclear, chemical, and biological weapons;
- Implementation and verification of relevant international regimes and conventions in the UK;
- The International Atomic Energy Agency (IAEA); and
- The Organisation for the Prohibition of Chemical Weapons (OPCW).

The XNP's responsibilities in the chemical and biological area include DTI interests in policy relating to non-proliferation of chemical and biological weapons, e.g., in the context of the Chemical Weapons Convention (CWC), the work of the Organisation for the Prohibition of Chemical Weapons (OPCW), and the Biological and Toxin Weapons

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58 <http://www.dti.gov.uk/europeandtrade/strategic-export-control/index.html> [January 2007].

59 <http://www.dti.gov.uk/europeandtrade/non-proliferation/index.html> [January 2007].

Convention (BTWC). The DTI, as the UK national authority, is responsible for the implementation of the CWC in the UK and also contributes to the development of UK and international policy on non-proliferation issues related to chemical and biological arsenals.

## ANIMAL HEALTH

### DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS (DEFRA)

The Department for Environment, Food and Rural Affairs (Defra; see also Environmental Protection)<sup>60</sup> develops the policies and operational readiness necessary for controlling and managing an outbreak of exotic disease. This work is managed by the Exotic Disease and Emergency Preparedness Program. This program includes:<sup>61</sup>

- Implementing disease control legislation together with disease control policies for foot-and-mouth disease, highly pathogenic avian influenza, rabies, and other exotic diseases;
- Implementing the scientific modeling and evidence base to support disease control policies;
- The development of national framework contingency plans for the main exotic diseases and of national and local operational and veterinary instructions;
- Work to ensure an operational state of readiness for:
  - Implementing a foot-and-mouth disease emergency vaccination program, including the purchase of diagnostic tests and vaccines;
  - Veterinary and staff resources for disease emergencies; and
  - Supply of plant, equipment, disposal facilities and contractors.

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60 <http://www.defra.gov.uk/>

61 DEFRA (2005): Departmental Report 2005. <http://www.defra.gov.uk/corporate/deprep/2005/2005report.pdf> [January 2007].

- Financial systems for disease emergencies;
- Laboratory capability for disease emergencies; and
- Contingency planning exercises at local and national levels, including operational partners and stakeholders.

Within Defra, the *Veterinary Laboratories Agency (VLA)* provides specialist veterinary research, consultancy, surveillance, and laboratory services in the areas of:

- Transmissible spongiform encephalopathy;
- Statutory and exotic bacterial and viral diseases;
- Food and environmental safety;
- Emerging diseases and welfare; and
- International trade.

The VLA's aim is to deliver veterinary research, surveillance, consultancy, and laboratory testing services through a series of integrated science programs, and to maintain an emergency response capability for animal health and public health threats.

The VLA also plays a key role in MedVetNet, an international network for the prevention and control of zoonoses funded by the EU Framework 6 Program. Its objective is to develop a network of excellence for the integration of veterinary, medical, and food sciences in order to improve research on the prevention and control of zoonoses.<sup>62</sup>

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62 Ibid.



## ENVIRONMENTAL PROTECTION

### DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS (DEFRA)

The Department for Environment, Food and Rural Affairs (Defra; see also Animal Health)<sup>63</sup> is actively engaged in the Cabinet Office's Capabilities Program, which is the core framework through which the government seeks to build resilience across the UK. Risk assessments have been carried out and emergency plans reviewed in all of Defra's main areas of responsibility for emergency planning, such as animal and plant diseases, flood defense, water and food supply, and environmental contamination.

Defra is the lead department for coordinating consequence management in case of incidents involving deliberate (and in some cases, accidental) releases of chemical, biological, radiological, or nuclear (CBRN) material. During 2004–5, the department has:<sup>64</sup>

- Established a new CBRN team to develop policy, to coordinate the departmental response to an incident, and to produce and test robust contingency plans;
- Established a cross-Defra CBRN Network and a CBRN Planning Board to give strategic direction;
- Funded and actively contributed to CBRN research programs; and
- Published and distributed strategic national guidance on decontamination of the open environment following a CBRN incident.

Within Defra, the *Government Decontamination Service (GDS)*<sup>65</sup> provides expert advice and guidance on ways to decontaminate buildings

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63 <http://www.defra.gov.uk/>

64 DEFRA (2005): Departmental Report 2005. <http://www.defra.gov.uk/corporate/deprep/2005/2005report.pdf> [January 2007].

65 <http://www.gds.gov.uk/>

and the environment after a CBRN incident. It fulfils four principal functions:<sup>66</sup>

- To provide advice, guidance, and assistance on decontamination-related issues to responsible authorities in their contingency planning for CBRN and hazardous materials incidents;
- To identify and assess the ability of specialist contractors in the private sector to carry out decontamination operations in such circumstances and ensure that responsible authorities have access to those arrangements if the need arises;
- To work with government departments, responsible authorities, specialist suppliers, research organizations, and other countries to improve decontamination technologies and capabilities; and
- To advise the central government on the national capability for the decontamination of buildings, infrastructure, mobile transport assets, and the open environment.

#### ENVIRONMENT AGENCY (EA)

The Environment Agency (EA)<sup>67</sup> is the leading public body for protecting and improving the environment in England and Wales. As an environmental regulator, with a wide range of roles and responsibilities, it responds to many different types of incidents affecting the natural environment, human health or property. The Environment Agency's main priorities at incidents affecting the environment are to:<sup>68</sup>

- Prevent or minimize the impact of an incident;
- Investigate the cause of the incident and consider enforcement action; and to

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66 Office of the Deputy Prime Minister (2005): Guidance on development of a site clearance capability in England and Wales. [http://www.communities.gov.uk/pub/763/GuidanceondevelopmentofasiteclearancecapabilityinEnglandandWalesPDF1846Kb\\_id1123763.pdf](http://www.communities.gov.uk/pub/763/GuidanceondevelopmentofasiteclearancecapabilityinEnglandandWalesPDF1846Kb_id1123763.pdf) [January 2007].

67 <http://www.environment-agency.gov.uk/>

68 Emergency Planning College (2005): Emergency Response and Recovery. <http://www.ukresilience.info/ccact/emergresponse.pdf> [January 2007].

- Seek remediation, clean-up, or restoration of the environment.

In the event of a release of hazardous substances, the role of the Environment Agency will be to:

- Advise the local authority on the appropriate storage, transport, and disposal of hazardous wastes and the treatment of liquid effluents;
- Continue to identify risks to the environment and people during each separate phase of the decontamination process and to adjust the recovery strategy to protect vulnerable environmental pathways and sensitive receptors; and to
- Ensure that it continues to fulfill its regulatory role appropriately.

## PAST AND PRESENT INITIATIVES AND POLICIES

### CAPABILITIES PROGRAM

The Capabilities Program<sup>69</sup> is the core framework through which the British government seeks to identify and develop the capabilities necessary to build resilience across all parts of the UK. The Capabilities Program aims to ensure that a robust infrastructure is in place to deal rapidly, effectively, and flexibly with the consequences of conventional or non-conventional disruptive activity.

The program consists of a total of 17 capability work streams. These fall into three groups:

- Three work streams that are essentially structural, dealing with the central (national), regional, and local response capabilities, respectively;

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69 <http://www.ukresilience.info/preparedness/ukgovernment/capabilities.shtm> [January 2007].

- Five work streams that deal with the maintenance of essential services (food, water, fuel, transport, health, financial services, etc.); and
- Nine functional work streams, dealing with the respective assessment of risks and consequences. These include chemical, biological, radiological, and nuclear (CBRN) resilience; infectious diseases in humans, animals, and plants; mass casualties; mass fatalities; mass evacuation; site clearance; and issuance of warnings and information to the public.

‘Capability’, as used by the Cabinet Office, is a military term that refers to personnel, equipment, and training and to matters such as plans, doctrine, and concepts of operations.<sup>70</sup>

#### CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN) RESILIENCE PROGRAM

The Chemical, Biological, Radiological and Nuclear (CBRN) Resilience Program brings together expertise on chemical, biological, radiological, and nuclear (CBRN) terrorism from across government and partner agencies. Led by the Home Office, the CBRN Resilience Program was established as part of the government’s Capabilities Program in October 2001, with the main aim of ensuring a quick and effective response from all parties concerned in the event of a terrorist incident, in order to save lives and to minimize the impact on property and the environment.<sup>71</sup> Plans for dealing with CBRN incidents include the following procedures:

- Identifying the source of the threat;
- Giving advice to victims caught in the area and to others worried about contamination;

70 <http://www.ukresilience.info/preparedness/ukgovernment/workstreams.shtm> [January 2007].

71 <http://security.homeoffice.gov.uk/cbrn-resilience/> [January 2007].

- Arranging urgent medical attention for casualties; and
- Decontaminating victims and the area itself.

The two bodies running the CBRN Resilience Program are the CBRN Strategic Board and the CBRN Performance and Delivery Group. The Strategic Board is made up of senior representatives from all the key delivery partners, and is chaired by the Home Office. It is responsible for program policy, direction, and prioritization. The Performance and Delivery Group reports to the Strategic Board and is also chaired by the Home Office. Made up of representatives from all the main delivery partners, it is responsible for generating proposals for new work and monitors program performance.<sup>72</sup>

Under the CBRN resilience program, the Home Office has provided:<sup>73</sup>

- Mobile decontamination units for nationwide use by ambulances and emergency departments;
- Personal protection suits for key health workers;
- Stockpiles of emergency medical equipment, strategically stored around the country and available within 24 hours;
- Special training for police officers to deal with CBRN incidents; and
- High-performance gas-tight suits for fire-fighters.

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72 <http://security.homeoffice.gov.uk/cbrn-resilience/managing-programme/> [January 2007].

73 <http://www.homeoffice.gov.uk/security/protecting-the-uk/preparing-for-incidents/?version=1> [January 2007].

CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR (CBRN)  
SCIENCE AND TECHNOLOGY PROGRAM

The Chemical, Biological, Radiological and Nuclear (CBRN) Science and Technology Program, led by the Home Office, aims to ensure that plans to protect the UK from a CBRN terrorism incident are based on a firm scientific foundation. The program aims to:<sup>74</sup>

- Develop improved technological solutions to enhance the response at the strategic and operational levels;
- Develop improved mathematical models to predict the effect of a release of CBRN materials for use in planning more effective countermeasures;
- Establish a scientific evidence base to inform and support policy and planning decisions; and to
- Produce new or revised procedures to ensure a safe and effective response.

The program has strong links with the CBRN Resilience Program and its bodies.

EXERCISE HORIZON

Exercise Horizon consisted of three separate exercises held in 2004 and 2005, and was the biggest CBRN exercise to be held in the UK to date. Exercise Horizon 1 aimed to test the operational and tactical command procedures of the front-line responders. The exercise tested the Fire and Rescue Service's handling of its mass decontamination equipment, as well as the memorandum of understanding between the police, the ambulance, the military, and the Fire and Rescue Service. Horizon 1 involved around 2,000 response personnel and 450 volunteers.

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74 <http://security.homeoffice.gov.uk/science-technology/using-cbrn-science-technology/> [January 2007].

Exercise Horizon 2 was developed to review key aspects of the recovery phase, focusing primarily on the local authorities' responses to post-decontamination issues raised by the Horizon scenario, such as transport of casualties, inter-agency liaison, and activation of rest centers.

Exercise Horizon 3 was developed to train regional agencies at the strategic level in responding to a variety of issues, such as intra- and inter-agency notification and escalation of the incident response, deployment of resources and capabilities, media issues, and consequence management.<sup>75</sup>

### FOREIGN AFFAIRS COMMITTEE (FAC)

The objective of the Foreign Affairs Committee (FAC)<sup>76</sup> is to examine the expenditure, administration, and policy of the Foreign and Commonwealth Office (FCO), which is responsible, among other things, for the diplomatic service and UK participation in international and regional multilateral organizations.

In 2002, the FAC published a Green Paper on biological weapons<sup>77</sup> advising the government on the level of threat and how to counter it. The report concluded that the threat should not be underestimated and could not be addressed through national measures alone. Consequently, the FAC recommended that the establishment of a coordinating and investigative mechanism be promoted within the BTWC, and that the government strengthen the UN system for investigating suspicious outbreaks and allegations of biological weapons use. With respect to the UK, the report suggested that the government take steps to strengthen its control over biotechnological research and over dangerous pathogens.

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75 Home Office (2005): CBRN Newsletter, Issues 3 & 4. <http://security.homeoffice.gov.uk/news-publications/publication-search/cbrn-newsletter/> [January 2007].

76 [http://www.parliament.uk/parliamentary\\_committees/foreign\\_affairs\\_committee.cfm](http://www.parliament.uk/parliamentary_committees/foreign_affairs_committee.cfm) [January 2007].

77 Foreign Affairs Committee (2002): The Biological Weapons Green Paper. <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmcaff/150/150.pdf> [January 2007].

### ADVISORY COMMITTEE ON DANGEROUS PATHOGENS (ACDP)

The remit of the Advisory Committee on Dangerous Pathogens (ACDP)<sup>78</sup> is to provide advice to workers and others on risks from exposure to dangerous pathogens. It publishes advice and guidance on working with biological agents and advises various government departments (mainly HSE, Defra, and the HPA) on broader issues, such as contingency plans for infectious diseases, as well as on specific issues, such as waste management.

The ACDP compiles the official list of biological agents<sup>79</sup> that are classified according to four hazard groups (HG<sub>1</sub>-HG<sub>4</sub>). This list is legally binding, as it is required by the Control of Substances Hazardous to Health Regulations 2002 (COSHH) and approved by the Health and Safety Commission. The ACDP also issues the free Biological Agents Bulletin, which covers laboratory issues as well as news about biological agents in general.

### NATIONAL BIOMANUFACTURING CENTRE (NBC)

The National Biomanufacturing Centre (NBC)<sup>80</sup> is a government-funded biopharmaceutical design center that works with biotechnology companies to develop and manufacture a wide variety of novel biopharmaceutical medicines and to fulfill requirements for vaccine production. It provides the expertise and facilities to develop and manufacture medicines for clinical trials. Its role is to support new and existing biotechnology companies by providing product development services that are designed to meet shortcomings of skills and resources within these organizations.

The National Biomanufacturing Centre (NBC), based in Speke near Liverpool, is operated by Eden Biodesign Ltd. It is funded by the

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78 <http://www.hse.gov.uk/aboutus/meetings/acdp/> [January 2007].

79 ACDP (2004): Approved List of Biological Agents. <http://www.hse.gov.uk/pubns/misc208.pdf> [January 2007].

80 <http://www.biomanufacturing.co.uk/>



Northwest Regional Development Agency, the European Regional Development Fund, and the UK Government Department of Trade and Industry (DTI).<sup>81</sup>

## LAWS AND LEGISLATION<sup>82</sup>

Biosecurity	Anti-terrorism, Crime and Security Act 2001	The purpose of this act is to build on legislation in a number of areas to ensure that the government has the necessary powers to counter the terrorist threat to the UK. Part 7 of the act places an obligation on managers of laboratories and other premises to notify the authorities about their holdings of specified pathogenic microorganisms and toxins. On request, it also requires that the police be notified about individuals with access to dangerous substances. The secretary of state has the power to prevent specific individuals from gaining access to such disease strains or the locations where they are held.
	Public Health (Control of Disease) Act 1984  Public Health (Infectious Diseases) Regulations 1988	These two pieces of legislation define infectious diseases that are notifiable and provide the statutory basis for monitoring them. Occurrences of these diseases must be reported to the CDSC on a weekly basis. The act enables the government, among other things, to move people to hospitals for examination or treatment without their consent.
	Anthrax Prevention Order 1971	This order prohibits or restricts imports of certain animal hair products that are likely to be infected with anthrax.

81 <http://www.biomanufacturing.co.uk/vision.htm> [January 2007].

82 This chart may not include all relevant laws. It was compiled from the following sources: The laws themselves at <http://www.opsi.gov.uk/acts.htm>; Interpol's website on "National Laws and Measures: Counter-Terrorism Regulation of Biology" - <http://www.interpol.int/Public/BioTerrorism/NationalLaws/>; and the Center for Nonproliferation Studies' (CNS) "Comparative Review of Biosecurity-Related Legislation" - <http://cns.miis.edu/research/cbw/biosec/pdfs/biolaw.pdf>.

PART ONE: Country Surveys

Biosafety	Control of Substances Hazardous to Health Regulations 2002 (COSHH)	This is the main piece of legislation that applies to infections at work. It requires employers to protect employees and provides for risk assessments, prevention and control of exposure, protective measures for persons and facilities, health surveillance, and information and training for workers. COSHH makes reference to the Approved List of Biological Agents that are classified according to four risk groups (HG1-HG4).
	Genetically Modified Organisms (Contained Use) Regulations 2000	This provision applies to the contained use of genetically modified microorganisms. The regulations are similar to those of COSHH.
	Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004	These regulations deal with the protection of people who are directly or indirectly involved in transporting dangerous goods, including infectious microorganisms.
Criminalization	Biological Weapons Act 1974	This act prohibits the development, production, acquisition, and possession of certain biological agents and toxins as well as biological weapons.
	Anti-terrorism, Crime and Security Act 2001	Part 6 of this act amends the Biological Weapons Act of 1974 and extends its territorial applicability. It prohibits transfers of biological agents and toxins as well as assistance for such transfers. This applies also to transfers taking place outside the UK, if they are carried out by UK citizens. In addition, the act outlaws the development, production, and movement of biological weapons abroad. Part 13 makes it illegal to perpetrate hoaxes involving noxious substances or objects.
	Terrorism Act 2000	Under Part 6 of this act, it is prohibited to provide or receive instructions or training in the use of biological, chemical, or nuclear weapons.
Import / Export Controls	Export Control Act 2002	The Export Control Act empowers the authorities to impose controls on exports from the UK; on transfers of technology from the UK and by UK citizens; on the provision of technical assistance; and on the acquisition, disposal, or movement of goods. It also stipulates penalties for violations of export controls.

Export of Goods, Transfer of Technology and Provision of Technical Assistance (Control) Order 2003

This order establishes a framework to control exports or transfers of military and dual-use goods, software, and technology, and to control goods, software, and technology related to weapons of mass destruction (WMD) and the provision of WMD-related technical assistance. It gives effect to certain provisions of Council Regulation (EC) 1334/2000, which establishes a Community regime for restricting exports of dual-use goods and technologies.

Dual-Use Items (Export Control) Regulations 2000

These regulations implement certain aspects of Council Regulation (EC) 3381/94, which establishes a Community regime for the control and licensing of exports of dual-use goods.



# UNITED STATES<sup>1</sup>

## THE US APPROACH TO THE BIOLOGICAL THREAT

### POLITICAL BACKGROUND AND THREAT PERCEPTION

The US is one of the three depositary states<sup>2</sup> of the Biological and Toxin Weapons Convention (BTWC) and ratified it on 26 March. It also ratified the 1925 Geneva Protocol on 22 January 1975. Furthermore, the US is a member of the Australia Group and a participating state of the Wassenaar Arrangement. The US government has been heavily criticized for its last-minute opposition against the establishment of a monitoring and verification mechanism during the 5<sup>th</sup> Review Conference of the BTWC in 2002, and, in general, for its unilateral approach in dealing with the threat of biological agents.

US biodefense activities and initiatives have been boosted remarkably in the wake of the al-Qaida attacks of 11 September 2001 and the delivery of anthrax spores via the US Postal Service. The administration of US President George Bush has made strengthening the nation's defenses against biological weapons a critical national priority: "Bioterrorism is a real threat to our country. It's a threat to every nation that loves freedom. Terrorist groups seek biological weapons; we know some rogue states already have them. It's important that we confront these real threats to our country and prepare for future emergencies."<sup>3</sup> Accordingly, the president's budget for the fiscal year 2006 requested a total of US\$5.1

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1 The country survey on the US was written by Susanne Schmid, Center for Security Studies (CSS); with contributions by Sergio Bonin. It was reviewed by Frank Gottron, US Congressional Research Service (CRS).

2 The two others are Russia and the United Kingdom.

3 President George W. Bush on 12 June 2002. <http://www.whitehouse.gov/homeland/20040430.html> [October 2006].

billion for civilian biodefense activities on the federal level, whereas the funding for fiscal year 2001 only amounted US\$418 million.<sup>4</sup>

In the 2003 CIA report “The Darker Bioweapons Future”, a panel of life science experts concluded that advances in biotechnology, coupled with the difficulty in detecting hazardous biological activities, have the potential to create a much more dangerous biological warfare threat than previously known.<sup>5</sup> The panel noted that “the effects of some of these engineered biological agents could be worse than any disease known to man.”<sup>6</sup>

The administration’s vigorous biodefense efforts have added to the complex structure of governmental agencies, universities, private enterprises, and other non-governmental organizations with links to biodefense. The government is therefore engaged in efforts to increase coordination and integration, such as the creation of the Department of Homeland Security, which is tasked with leveraging resources and coordinating the transition of multiple agencies and programs into a single, integrated agency for the protection of the US population and homeland.

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

On an operational level, the Department of Health and Human Services (HHS) is the lead coordinating agency for the response to a biological incident. The Department of Homeland Security (DHS) is the lead agency for crisis and consequence management of such an incident. The

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4 This number does not include the biodefense budget of the Department of Defense (DoD). Cf. Ari Schuler (2005): Billions for Biodefense: Federal Agency Biodefense Budgeting, FY2005-FY2006. In: *Biosecurity and Bioterrorism*. Vol. 3, No. 2: pp. 94-101.

5 Central Intelligence Agency (CIA), Directorate of Intelligence: *The Darker Bioweapons Future*. Unclassified report, 3 November 2003. <http://www.fas.org/irp/cia/product/bw1103.pdf> [October 2006].

6 Ibid.

Federal Bureau of Investigation (FBI) coordinates the US government's response as the lead agency in the event of a threat involving weapons of mass destruction.

## PUBLIC HEALTH

### DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

The Department of Health and Human Services (HHS)<sup>7</sup> is the US government's principal agency for protecting the health of the population. It includes more than 300 programs covering a wide spectrum of activities, including health and social science research, preventing disease (including immunization services), assuring food and drug safety, substance abuse treatment and prevention, and medical preparedness for emergencies, including potential terrorist attacks. Additionally, the HHS is the lead agency providing essential human services to the US population, such as Medicare and Medicaid.<sup>8</sup>

The HHS works closely with state and local governments, and many HHS-funded services are provided at the local level by state or county agencies, or through private sector grantees.<sup>9</sup> Operating divisions administering the department's biodefense programs include the following agencies:<sup>10</sup>

The *Office of Public Health Emergency Preparedness (OPHEP)*<sup>11</sup> serves as the HHS's principal advisory staff on matters related to bioterrorism and other public health emergencies. The OPHEP also coordinates interagency activities between the HHS, other Federal departments, agencies, offices, and state and local officials responsible for emergency

7 <http://www.hhs.gov/>

8 <http://www.hhs.gov/about/whatwedo.html> [October 2006].

9 Ibid.

10 Some of the agencies under the responsibility of HHS are listed under other sections of the US country survey.

11 <http://www.hhs.gov/ophep/> [November 2006].

preparedness and the protection of the civilian population from acts of bioterrorism and other public health emergencies. It also administers the Project BioShield program (see initiatives section).

The *Centers for Disease Control and Prevention (CDC)*<sup>12</sup> is an agency of the HHS based in Atlanta, Georgia. Known as the Communicable Disease Center until 1946 and as the Center for Disease Control until 1970, the agency was founded to help control malaria.<sup>13</sup> The CDC provides a system of health surveillance to monitor and prevent disease outbreaks (including bioterrorism), to implement disease prevention strategies, and to maintain national health statistics.<sup>14</sup> The CDC focuses national attention on developing and applying disease prevention and control (especially infectious diseases), environmental health, health promotion, and education activities designed to improve the health of the US population. The CDC has remained at the forefront of public health efforts to prevent and control infectious and chronic diseases, injuries, workplace hazards, disabilities, and environmental health threats.

The CDC also guards against international disease transmission, with personnel stationed in more than 25 foreign countries. The CDC director is at the same time the administrator of the Agency for Toxic Substances and Disease Registry, which helps prevent exposure to hazardous substances from waste sites on the US Environmental Protection Agency's (EPA) National Priorities List, and develops toxicological profiles of chemicals at these sites.<sup>15</sup> Furthermore, the CDC maintains

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12 <http://www.cdc.gov/>. An organizational chart is available at <http://www.cdc.gov/maso/pdf/cdc.pdf> [October 2006].

13 <http://www.cdc.gov/about/default.htm> [October 2006].

14 <http://www.hhs.gov/about/whatwedo.html> [October 2006].

15 <http://www.hhs.gov/about/whatwedo.html> [October 2006].



one of the country's Biosafety Level 4 (BSL-4) laboratories<sup>16</sup> and is one of the two official repositories of smallpox strains in the world.<sup>17</sup>

One component of CDC's overall mission to combat emerging infectious diseases is the Laboratory Response Network (LRN), an effort to strengthen local, state, and national public health laboratory capacity in response to acts and threats of biological and chemical terrorism (see initiatives section).<sup>18</sup>

Together with the US Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), the CDC maintains the *Select Agent Program (SAP)*,<sup>19</sup> which oversees and registers the handling or ownership of biological agents and toxins that have the potential to pose a severe threat to public health (HHS/CDC), animal or plant health, or to animal or plant products (USDA/APHIS). The National Select Agent Registry Program requires the registration of facilities including government agencies, universities, research institutions, and commercial entities that possess, use, or transfer biological agents and toxins that pose a significant threat.<sup>20</sup> Registration requires that the US Department of Justice (DOJ) complete a security risk assessment for the facility, its owners, and the responsible official.<sup>21</sup> The DOJ has designated

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16 At present, there are five high-containment infectious disease laboratories in the US: the Centers for Disease Control, Atlanta, Georgia; the US Army Medical Research Institute of Infectious Diseases, Fort Detrick, Frederick, Maryland; the Viral Immunology Center at Georgia State University, Atlanta, Georgia; the National Institutes of Health (NIH), Bethesda, Maryland; and the Southwest Foundation for Biomedical Research, San Antonio, Texas. In addition, four new laboratories are under design or construction: the Center for Biodefense at the University of Texas Medical Branch in Galveston, Texas, the NIH Rocky Mountain BSL-4 Laboratory in Hamilton, Montana, and the National Emerging Infectious Diseases Laboratory at Boston University Medical Center in Boston, Massachusetts, and the National Biodefense Analysis and Countermeasure Center in Frederick, Maryland. Cf. <http://www.bu.edu/phpbin/news-cms/news/?dept=4&cid=37739&template=4> [October 2006].

17 An international agreement implemented by the WHO restricts the repository of smallpox virus cultures to two designated facilities, one in the US (CDC) and one in Russia (Vector).

18 <http://www.bt.cdc.gov/lrn/partners.asp> [October 2006].

19 <http://www.cdc.gov/od/sap/> [October 2006].

20 <http://www.selectagents.gov/>; the list of select agents and toxins can be found here: <http://www.cdc.gov/od/sap/docs/salist.pdf> [October 2006].

21 [http://www.aphis.usda.gov/programs/ag\\_selectagent/](http://www.aphis.usda.gov/programs/ag_selectagent/) [October 2006].

the Federal Bureau of Investigation's (FBI) Criminal Justice Information Services Division (CJIS)<sup>22</sup> to conduct the security risk assessments.

The CDC's component organizations include the *Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER)*, and the *Coordinating Center for Infectious Diseases (CCID)*. The COTPER<sup>23</sup> provides strategic direction for the CDC to support terrorism preparedness and emergency response efforts.<sup>24</sup> To carry out its mission, COTPER fosters collaborations, partnerships, integration, and resource leveraging to increase the CDC's health impact and achieve population health goals; it provides strategic direction to support CDC's terrorism preparedness and emergency response efforts; it manages CDC-wide preparedness and emergency response programs; it maintains concerted emergency response operations, including the Strategic National Stockpile and the Director's Emergency Operations Center; and it communicates terrorism preparedness and emergency response activities to internal and external stakeholders.<sup>25</sup>

The *National Center for Infectious Diseases (NCID)*<sup>26</sup> is a subordinate organization of the CCID and is responsible of preventing illness, disability, and death caused by infectious diseases in the US and around the world. The Bioterrorism Preparedness and Response Program, established by the CDC as part of the HHS 1999 Bioterrorism Initiative, is now under the auspices of the NCID. Another subordinate organization of the CCID is the National Immunization Program (NIP).<sup>27</sup> The NIP consults, trains, and assists health departments in planning, developing, and implementing immunization programs; it supports the establishment of vaccine supply contracts for vaccine distribution to state and local immunization programs and supports a nationwide framework

22 <http://www.fbi.gov/hq/cjis/cjis.htm> [October 2006].

23 <http://www.bt.cdc.gov/>

24 <http://www.cdc.gov/about/cio.htm> [October 2006].

25 Information sheet on the Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER), provided by the Management Analysis and Services Office of the CDC. <http://www.cdc.gov/maso/pdf/COTPERfs.pdf> [October 2006].

26 <http://www.cdc.gov/ncidod/> [October 2006].

27 <http://www.cdc.gov/nip/> [October 2006].

for effective surveillance of designated diseases for which effective immunizing agents are available.<sup>28</sup>

The *Food and Drug Administration (FDA)*<sup>29</sup> is responsible for protecting the US public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, food supply, cosmetics, and products that emit radiation, by conducting investigations, inspections, and licensing of medical devices, pharmaceuticals, and biological therapeutics.<sup>30</sup> The FDA is responsible for carrying out certain provisions of the Bioterrorism Act, particularly the protection of the food and drug supply.<sup>31</sup> In addition to a nationwide field force, the mission of the FDA is carried out by six product-oriented centers, including the Center for Biologics Evaluation and Research (CBER), the Center for Devices and Radiological Health (CDRH), the Center for Drug Evaluation and Research (CDER), the National Center for Toxicological Research (NCTR), and the Office of Counterterrorism Policy and Planning, each of them tasked with specific aspects of bio-defense.

The *Center for Biologics Evaluation and Research (CBER)*<sup>32</sup> regulates and licenses biological and related products including blood, vaccines, tissue, allergenics, and biological therapeutics. As part of US counterterrorism efforts, the CBER works with various government agencies to identify gaps in medical countermeasures. It facilitates development of products, including new smallpox and anthrax vaccines, and botulinum antitoxins.<sup>33</sup>

28 <http://www.cdc.gov/nip/webutil/about/default.htm> [October 2006].

29 <http://www.fda.gov/>

30 <http://www.fda.gov/opacom/morechoices/mission.html> [October 2006].

31 Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Public Law 107-188. Signed into law by US President George Bush 12 June 2002. <http://www.fda.gov/oc/bioterrorism/bioact.html> [October 2006].

32 <http://www.fda.gov/cber/> [October 2006].

33 Expediting the Development, Availability, and Approval of Medical Products for Counterterrorism. Presentation by Karen Midthun, Deputy Director for Medicine, Center for Biologics Evaluation and Research, FDA, 20 June 2005. <http://www.fda.gov/cber/summaries/bio2005062005km.pdf> [October 2006].

The *Office of Science and Engineering Laboratories (OSEL)* – formerly the Office of Science and Technology (OST) – is the laboratory of the *Center for Devices and Radiological Health (CDRH)*.<sup>34</sup> Its objectives include diagnostic test validation for counterterrorism efforts, such as microarray screening of mutant microorganisms of significance to biodefense research; diagnostic genomic tests for CDC-listed biological threat agents; and evaluation of genetic tests for the detection of chemical toxicants that pose a terrorism threat.<sup>35</sup>

The *Center for Drug Evaluation and Research (CDER)*<sup>36</sup> regulates and licenses pharmaceuticals and works with other federal agencies to ensure that adequate supplies of medicine and vaccines are available to the US public to help prepare the US for possible bioterrorism attacks.<sup>37</sup>

The *National Center for Toxicological Research (NCTR)*<sup>38</sup> investigates the biological effects of widely used chemicals. Research at the NCTR is aimed at understanding critical biological events in the expression of toxicity and at developing methods to improve assessment of human exposure, susceptibility, and risk. In collaboration with the Department of Justice, the HHS, and the Department of Defense (DoD), NCTR researchers are working in three areas of bioterrorism research: identification of virulent biomarkers using mass spectrometry, rapid detection of microorganisms using polymerase chain reaction technology, and exploring safe and efficacious neuron-protective strategies to protect exposed populations.<sup>39</sup>

Established in 2003, the *Office of Counterterrorism Policy and Planning* provides guidance and leadership in counterterrorism policy. It is responsible for strategic planning and sets FDA counterterrorism priorities. It provides policy leadership and represents the FDA in counterterrorism

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34 <http://www.fda.gov/cdrh/> [October 2006].

35 Office of Science and Engineering Laboratories (OSEL): Annual Report Fiscal Year 2003. <http://www.fda.gov/cdrh/osel/annualreports/fy2003/osel-fy2003.pdf> [October 2006].

36 <http://www.fda.gov/cder/> [October 2006].

37 <http://www.fda.gov/cder/drugprepare/default.htm> [October 2006].

38 <http://www.fda.gov/nctr/> [October 2006].

39 <http://www.fda.gov/nctr/initiatives/initiatives.htm#Bioterrorism> [October 2006].

policy issues and interagency working groups. It also coordinates and communicates the FDA's counterterrorism policy.<sup>40</sup>

The *Health Resources and Services Administration (HRSA)*<sup>41</sup> is the principal federal agency charged with increasing the access to health care for those who are medically underserved. The HRSA's programmatic portfolio includes a range of programs or initiatives designed to increase access to care, improve quality, and safeguard the health and well-being of the US population, including the Bioterrorism and Curriculum Development Program (BTCDDP / see initiatives section).<sup>42</sup>

The *Agency for Healthcare Research and Quality (AHRQ)*<sup>43</sup> is the lead agency for research on health care quality, costs, outcomes, and patient safety. In fiscal year 2000, the AHRQ received US\$5 million to support and conduct research to improve the capacity of the nation's healthcare system to respond to possible incidents of bioterrorism. Since that time, AHRQ has initiated several major projects and activities designed to assess and enhance the linkages between the clinical care delivery system and the public health infrastructure.<sup>44</sup> AHRQ's portfolio of bioterrorism research is a natural outgrowth of its ongoing efforts to develop evidence-based information aimed at improving the quality of the US healthcare system. This work is a critical component of the larger initiative of the HHS to develop public health programs to combat bioterrorism.

The AHRQ has a comprehensive range of bioterrorism preparedness tasks. The projects conducted within AHRQ aim at assessing and improving preparedness in the healthcare system, integrating information technology in bioterrorism preparedness, and training for health care providers.<sup>45</sup>

40 [http://www.hhs.gov/ophep/ophemc/bioshield/docs/Lushniak\\_26Sept06.pdf](http://www.hhs.gov/ophep/ophemc/bioshield/docs/Lushniak_26Sept06.pdf) [December 2006].

41 <http://www.hrsa.gov/>

42 <http://www.hrsa.gov/about/strategicplan.htm> [October 2006]; <http://www.hrsa.gov/bioterrorism/> [October 2006].

43 <http://www.ahrq.gov/>

44 <http://www.ahrq.gov/news/focus/bioterror.htm> [October 2006].

45 Ibid.

The *Agency for Toxic Substances and Disease Registry (ATSDR)*<sup>46</sup> takes responsive public health actions and provides health information to prevent harmful exposures and diseases related to toxic substances. The ATSDR is directed by congressional mandate to perform specific functions concerning the effects of hazardous substances in the environment on public health. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency releases of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances.<sup>47</sup>

## CIVIL PROTECTION AND EMERGENCY MANAGEMENT

### HOMELAND SECURITY COUNCIL (HSC)

President Bush's Executive Order of 8 October 2001<sup>48</sup> established a Homeland Security Council,<sup>49</sup> which is responsible for advising and assisting the president with respect to all aspects of homeland security. Located in the Office of the President, the Homeland Security Council is charged with coordinating a broad spectrum of federal, state, local, and private-sector entities to reduce the potential for terrorist attacks and other threats, and to mitigate damage should an incident occur. The chair of the council, the assistant to the president for Homeland Security and Counterterrorism, serves as the president's homeland security and counterterrorism advisor and, at the president's direction, sets HSC meeting agendas and helps develop government-wide strategy.

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46 <http://www.atsdr.cdc.gov/>

47 <http://www.atsdr.cdc.gov/about.html> [October 2006].

48 <http://www.whitehouse.gov/news/releases/2001/10/20011008-2.html> [December 2006].

49 <http://www.whitehouse.gov/hsc/> [October 2006].

In addition to the president, the members of the HSC are the vice president, the secretary of homeland security, the secretary of the treasury, the secretary of defense, the attorney general, the secretary of health and human services, the secretary of transportation, the director of national intelligence, the director of the Federal Bureau of Investigation, and the assistant to the president for homeland security and counterterrorism.<sup>50</sup>

In April 2004, the HSC developed Homeland Security Presidential Directive 10 (HSPD-10), which details the entire federal government's biodefense strategy (see initiatives section).

### OFFICE OF HOMELAND SECURITY

The mission of the Office of Homeland Security is to develop and coordinate the implementation of a comprehensive national strategy to secure the US from terrorist attacks, including bioterrorism. In the event of an emergency, the office would coordinate the executive branch's efforts to detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the US. The office works with executive departments and agencies, state and local governments, and private entities to ensure the adequacy of the national strategy for detecting, preparing for, preventing, protecting against, responding to, and recovering from terrorist threats or attacks within the US.<sup>51</sup>

### DEPARTMENT OF HOMELAND SECURITY (DHS)

In March 2003, 23 federal agencies, programs, and offices were merged to become the Department of Homeland Security (DHS).<sup>52</sup> The new department brought a coordinated approach to national security. More than 87,000 different governmental jurisdictions at the federal, state,

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50 Ibid.

51 <http://www.whitehouse.gov/news/releases/2001/10/20011008.html> [December 2006].

52 <http://www.dhs.gov/>

and local levels have homeland security responsibilities.<sup>53</sup> The DHS consists of four major directorates: Border and Transportation Security, Emergency Preparedness and Response, Science and Technology, and Information Analysis and Infrastructure Protection.<sup>54</sup> Major components of the DHS include the following agencies:

The *Directorate for Emergency Preparedness and Response*<sup>55</sup> works with state, local, and private-sector partners to identify threats, determine vulnerabilities, and target resources where risk is greatest, thereby safeguarding US borders, seaports, bridges and highways, and critical information systems.<sup>56</sup> The directorate encompasses several components, including the Office of the Chief Medical Officer and the Office of Grants and Training (G&T).

The *Office of the Chief Medical Officer* has primary responsibility for working with other federal agencies in completing comprehensive plans for executing DHS responsibilities to prevent and mitigate biological attacks.<sup>57</sup> It oversees and coordinates all medical activities of the DHS to ensure appropriate preparation for and response to incidents with medical significance. It serves as the principal medical advisor of the secretary of homeland security, providing real-time health and medical guidance in response to terrorist acts and natural disasters, coordinates the department's biodefense activities, including its pandemic influenza portfolio, and ensures the department has a unified approach to medical preparedness, serving as the principal liaison with the HHS, the Department of Agriculture, the Department of Veterans Affairs, state and local public health, and the private sector medical community.<sup>58</sup>

The *Office of Grants and Training* (G&T) is responsible for preparing the US against terrorism by assisting states, local and tribal jurisdictions, and regional authorities as they prevent, deter, and respond to terrorist

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53 <http://www.dhs.gov/xabout/structure/> [October 2006].

54 [http://www.dhs.gov/xabout/history/editorial\\_0133.shtm](http://www.dhs.gov/xabout/history/editorial_0133.shtm) [October 2006].

55 [http://www.dhs.gov/xabout/structure/editorial\\_0794.shtm](http://www.dhs.gov/xabout/structure/editorial_0794.shtm) [October 2006].

56 <http://www.dhs.gov/xabout/structure/> [October 2006].

57 [http://www.dhs.gov/xabout/structure/editorial\\_0794.shtm](http://www.dhs.gov/xabout/structure/editorial_0794.shtm) [October 2006].

58 [http://www.dhs.gov/xabout/structure/editorial\\_0880.shtm](http://www.dhs.gov/xabout/structure/editorial_0880.shtm) [October 2006].



acts. G&T provides a broad array of assistance to US first responders through funding, coordinated training, exercises, equipment acquisition, and technical assistance. It administers the 2006 Homeland Security Grant Program (HSGP) that will award approximately US\$1.7 billion to enhance the ability of states, territories, and urban areas to prepare for, prevent, and respond to terrorist attacks and other major disasters. HSGP funds can be used for preparedness planning, equipment acquisition, training, exercises, management, and administration.<sup>59</sup>

The *Directorate for Science and Technology (S&T Directorate)*<sup>60</sup> is the primary research and development arm of the DHS. It provides federal, state, and local officials with the technology and capabilities to protect the US homeland.<sup>61</sup> The S&T Directorate develops and deploys systems to prevent, detect, and mitigate the consequences of chemical, biological, radiological, nuclear, and conventional explosive attacks.

It administers the BioWatch program (see initiatives section) and develops equipment, protocols, and training procedures for response to and recovery from chemical, biological, radiological, nuclear, and explosive attacks; it enhances the technical capabilities of the department's operational elements and other federal, state, local, and tribal agencies to fulfill their homeland security-related missions; it develops methods and capabilities to test and assess threats and vulnerabilities, and anticipates new technological developments as well as emerging threats; it develops technical standards and establishes certified laboratories to evaluate homeland security and emergency responder technologies; and it supports research in science and technology.<sup>62</sup>

The biological countermeasures program in the S&T Directorate has an emphasis on high-consequence biological threats, including agricultural diseases such as foot-and-mouth disease, and high-volume contamination of food supplies. The Plum Island Animal Disease Center

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59 <http://www.ojp.usdoj.gov/odp/> [October 2006].

60 [http://www.dhs.gov/xabout/structure/editorial\\_0530.shtm](http://www.dhs.gov/xabout/structure/editorial_0530.shtm) [October 2006].

61 <http://www.dhs.gov/xabout/structure/> [October 2006].

62 [http://www.dhs.gov/xabout/structure/editorial\\_0530.shtm](http://www.dhs.gov/xabout/structure/editorial_0530.shtm) [October 2006].

(PIADC) was transferred to the DHS in 2003 in order to contribute to this program. The biological countermeasures program seeks to reduce the probability and potential consequences of a biological attack on the nation's civilian population and its agricultural system.<sup>63</sup>

The DHS started constructing a new facility for the *National Biodefense Analysis and Countermeasures Center (NBACC)* in June 2006, which will be managed by the S&T Directorate after its expected completion in 2008. This new facility will house two centers, the *Biological Threat Characterization Center (BTCC)* and the *National Bioforensic Analysis Center (NBFAC)*. HSPD-10 charged the BTCC with defining the characteristics of biological agents and conducting rigorous biennial biodefense risk assessments in order to guide national biodefense research, development, and acquisition efforts, and to provide scientific support to the intelligence community. The NBFAC is the lead federal facility for conducting and facilitating the technical forensic analysis and interpretation of materials recovered following a biological attack to support the appropriate lead federal agency.<sup>64</sup> A third component of the NBACC that will not be housed in the new facility is the Biodefense Knowledge Center. This center provides technical biological threat expertise to the DHS and develops material threat determinations as part of Project BioShield (see initiatives section).

The DHS's *Office of Intelligence and Analysis* is responsible for using information and intelligence from multiple sources to identify and assess current and future threats to the US.<sup>65</sup>

The *Office of Operations Coordination*<sup>66</sup> is responsible for monitoring the security of the US on a daily basis and coordinating activities within the department and with governors, homeland security advisors, law

63 Department of Homeland Security (DHS): Fact Sheet: Plum Island Animal Disease Center Transition. Press Release, 6 June 2003. [http://www.dhs.gov/xnews/releases/press\\_release\\_0176.shtm](http://www.dhs.gov/xnews/releases/press_release_0176.shtm) [October 2006].

64 DHS: DHS Starts Construction for the National Biodefense Analysis and Countermeasures Center. Press Release, 26 June 2006. [http://www.dhs.gov/xnews/releases/press\\_release\\_0933.shtm](http://www.dhs.gov/xnews/releases/press_release_0933.shtm) [October 2006].

65 <http://www.dhs.gov/xabout/structure/> [October 2006].

66 [http://www.dhs.gov/xabout/structure/editorial\\_0797.shtm](http://www.dhs.gov/xabout/structure/editorial_0797.shtm) [October 2006].

enforcement partners, and critical infrastructure operators in all 50 states and more than 50 major urban areas nationwide.<sup>67</sup> The Office of Operations Coordination works to deter, detect, and prevent terrorist acts by coordinating the work of federal, state, territorial, tribal, local, and private-sector partners and by collecting and fusing information from a variety of sources.<sup>68</sup>

Information is shared and combined on a daily basis by the two parts of the office that are referred to as the “Intelligence Side” and the “Law Enforcement Side”. The two parts are identical and function in tandem, but require different levels of security clearance in order to access information. Its intelligence analysts focus on highly classified intelligence in order to discern how the information contributes to the current threat picture for any given area. The law enforcement section is dedicated to tracking the different enforcement activities across the country that may have a terrorist nexus. The two pieces are fused together create a real-time snapshot of the nation’s threat environment at any given moment.<sup>69</sup>

The office is responsible for conducting joint operations across all organizational elements, coordinating activities related to incident management, employing all department resources to translate intelligence and policy into action, and overseeing the *National Operations Center (NOC)*, which collects and combines information from more than 35 federal, state, territorial, tribal, local, and private-sector agencies.<sup>70</sup> The NOC links key headquarters components, including the former Homeland Security Operations Center (HSOC), and comprises five sub-elements: The Interagency Watch, the National Response Coordination Center,

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67 <http://www.dhs.gov/xabout/structure/> [October 2006].

68 [http://www.dhs.gov/xabout/structure/editorial\\_0797.shtm](http://www.dhs.gov/xabout/structure/editorial_0797.shtm) [October 2006].

69 Ibid.

70 Ibid.

the Information and Analysis Component, the National Infrastructure Coordination Center, and the Operational Planning Element.<sup>71</sup>

The NOC serves as the nation's nerve center for information-sharing and domestic incident management – increasing the vertical coordination between federal, state, territorial, tribal, local, and private-sector partners.<sup>72</sup> Through the NOC, the office provides real-time situation awareness and monitoring, coordinates incidents and response activities, and, in conjunction with the Office of Intelligence and Analysis, issues advisories and bulletins concerning threats to homeland security, as well as specific protective measures. The NOC – which operates 24 hours a day, seven days a week, 365 days a year – coordinates information-sharing to help deter, detect, and prevent terrorist acts and to manage domestic incidents. Information on domestic incident management is shared with Emergency Operations Centers at all levels through the Homeland Security Information Network (HSIN).<sup>73</sup>

The *Federal Emergency Management Agency (FEMA)*<sup>74</sup> became part of the DHS on 1 March 2003. FEMA's continuing mission within the new department is to lead the efforts to prepare the nation for all hazards and effectively manage federal response and recovery efforts following any national incident. FEMA also initiates proactive mitigation activities, trains first responders, and manages the National Flood Insurance Program.<sup>75</sup> FEMA has more than 2,600 full-time employees. They work at FEMA headquarters in Washington, D.C., at regional and area offices across the country, at the Mount Weather Emergency Operations Center, and at the National Emergency Training Center in Emmitsburg, Maryland. FEMA also has nearly 4,000 standby disaster

71 FEMA: Quick Reference Guide to the Final Version of the National Response Plan of 22 May 2006. Published 21 April 2005. [http://www.fema.gov/txt/emergency/nims/ref\\_guide\\_nrp.txt](http://www.fema.gov/txt/emergency/nims/ref_guide_nrp.txt) [October 2006].

72 DHS: Fact Sheet: Homeland Security Operations Center (HSOC). Press Release, 8 July 2004. [http://www.dhs.gov/xnews/releases/press\\_release\\_0456.shtm](http://www.dhs.gov/xnews/releases/press_release_0456.shtm) [October 2006].

73 [http://www.dhs.gov/about/structure/editorial\\_0797.shtm](http://www.dhs.gov/about/structure/editorial_0797.shtm) [October 2006].

74 <http://www.fema.gov/>

75 <http://www.fema.gov/about/index.shtm> [October 2006].

assistance employees who are available for deployment after disasters. Often, FEMA works in partnership with other organizations that are part of the nation's emergency management system. These partners include state and local emergency management agencies, 27 federal agencies, and the American Red Cross.<sup>76</sup>

## NATIONAL SECURITY

### FEDERAL BUREAU OF INVESTIGATION (FBI)

The Federal Bureau of Investigation (FBI)<sup>77</sup> coordinates the US government's response in the event of a threat involving weapons of mass destruction as the lead federal agency. Should the FBI be notified of an incident or threat involving chemical, biological, or radiological/nuclear materials, including any threats directed against the water infrastructure, it would begin its response with a threat assessment coordinated by the *Weapons of Mass Destruction Operations Unit (WMDOU)*. The WMDOU would immediately notify experts and the responsible federal agencies, which would conduct a real-time assessment and to determine the credibility of the threat. Based on the credibility and scope of the threat, the WMDOU would coordinate an appropriate and tailored response by federal assets and the owners and operators of the facility to meet the requirements of the on-scene responders, and would oversee the investigation to its conclusion.<sup>78</sup>

The FBI currently manages a number of programs in order to enhance real-time information sharing, intelligence gathering, and to provide timely dissemination of threat warnings. First, there are several co-operation programs between the National Infrastructure Protection Center (NIPC) and the FBI. Second, the FBI *Domestic Terrorism/Counter*

76 <http://www.fema.gov/about/index.shtm> [October 2006].

77 <http://www.fbi.gov/>

78 Ronald L. Dick (2001): *Terrorism: Are America's Water Resources and Environment at Risk?* <http://www.fbi.gov/congress/congress01/ronddick100401.htm> [October 2006].

*Terrorism Planning Section* works to enhance operational co-operation and information sharing within the US intelligence and law enforcement community. Representatives from 20 federal agencies participate in this section. Third, the FBI currently heads the *Joint Terrorism Task Forces (JTTFs)* in 35 field offices across the US. The JTTFs integrate the counterterrorism resources of federal, state, and local agencies, and represent a resource for information regarding the local threat environment. Fourth, the FBI manages the National Threat Warning System (NTWS) to ensure that vital information regarding terrorism reaches the US counterterrorism and law enforcement communities. Alerts, advisories, or assessment messages may be transmitted. Currently, over 34 federal agencies involved in the US government's counterterrorism efforts receive information via secure teletype using this system. The messages are also transmitted to all FBI Field Offices and Foreign Liaison Posts. If the threat information requires nationwide dissemination to all federal, state, and local law enforcement agencies, the FBI transmits messages via the National Law Enforcement Telecommunications System (NLETS), which reaches over 18,000 agencies. Fifth, the FBI disseminates appropriate threat warnings to over 40,000 companies in the private sector via the unclassified Awareness of National Security Issues and Response (ANSIR) Program.<sup>79</sup>

As mentioned above, the FBI's *Criminal Justice Information Services Division (CJIS)*<sup>80</sup> was designated by the Department of Justice (DOJ) to participate in the Select Agent Program (SAP), led by the Centers for Disease Control (CDC) and the Plant Health Inspection Service (APHIS), by conducting the security risk assessments of facilities and workers handling potentially harmful biological agents.

Furthermore, the FBI, in collaboration with the Association of Public Health Laboratories (APHL) and CDC, has established the Laboratory Response Network (LRN), which is a unique collaboration effort between law enforcement and public health agencies. The

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79 Ibid.

80 <http://www.fbi.gov/hq/cjisd/cjis.htm> [October 2006].

FBI brought its forensic expertise and requirements to the program. A partnership between the public health and law enforcement sectors is a prerequisite for an effective response to a chemical or biological attack under this program.<sup>81</sup>

CENTRAL INTELLIGENCE AGENCY (CIA) / DIRECTOR OF  
CENTRAL INTELLIGENCE (DCI)

The *DCI Counterterrorism Center (CTC)* was established in 1986 under the Central Intelligence Agency's (CIA) Directorate of Operations to help combat international terrorist threats. Officers from the agency's Directorate of Intelligence serve in its analytic components to provide regional and functional expertise – the first permanent unit combining analysis and operations. After the 11 September 2001 terrorist attacks in New York and elsewhere, the existing analytic component in the CTC was significantly expanded and named the Office of Terrorism Analysis (OTA).<sup>82</sup> OTA analysts concentrate on informing policymakers and supporting the intelligence, law enforcement, homeland security, and military communities.<sup>83</sup>

The *DCI Center for Weapons Intelligence, Nonproliferation, and Arms Control (WINPAC)* was established in 2001, bringing together experts on all types of foreign weapons threats into one center.<sup>84</sup> The WINPAC provides intelligence support aimed at protecting the US and its interests from all foreign weapons threats. WINPAC officers are a diverse group with a variety of backgrounds and work experiences; they include mathematicians, engineers (including nuclear, chemical, biological, mechanical, and aerospace engineers, among others), physicists, economists, political scientists, computer specialists, and physical scientists.<sup>85</sup>

81 <http://www.bt.cdc.gov/lrn/partners.asp> [October 2006].

82 [https://www.cia.gov/cia/di/timeline\\_section.html](https://www.cia.gov/cia/di/timeline_section.html) [October 2006].

83 [https://www.cia.gov/cia/di/organizationt\\_ota\\_page.html](https://www.cia.gov/cia/di/organizationt_ota_page.html) [October 2006].

84 [https://www.cia.gov/cia/di/timeline\\_section.html](https://www.cia.gov/cia/di/timeline_section.html) [October 2006].

85 [https://www.cia.gov/cia/di/organizationt\\_winpac\\_page.html](https://www.cia.gov/cia/di/organizationt_winpac_page.html) [October 2006].

The *Office of Transnational Issues (OTI)* produces analytic assessments on critical intelligence-related issues that transcend regional and national boundaries. Drawing on a broad range of experts in engineering, science, and social science disciplines, the OTI's analysis addresses energy and economic security, illicit financial activities, societal conflicts, humanitarian crises, and the long-term military and economic strategic environment. In November 2003, the OTI issued a report entitled "The Darker Bioweapons Future".<sup>86</sup>

#### OFFICE OF THE DIRECTOR OF NATIONAL INTELLIGENCE (ODNI)

In August 2004, the president established the *National Counterterrorism Center (NCTC)*.<sup>87</sup> In December 2004, Congress codified the NCTC in the Intelligence Reform and Terrorism Prevention Act (IRTPA)<sup>88</sup> and placed the NCTC under the responsibility of the Office of the Director of National Intelligence (ODNI).<sup>89</sup> Building on the Terrorist Threat Integration Center (TTIC), the NCTC serves as the primary organization for analyzing and integrating foreign and domestic intelligence acquired from all US government departments and agencies pertaining to terrorism and counterterrorism. The center identifies, coordinates, and prioritizes the counterterrorism intelligence requirements of the US intelligence agencies. The analytical capabilities of the TTIC were integrated into the NCTC. All departments and agencies that have analytic resources on transnational terrorism, or conduct operations against transnational terrorism, contribute analysts and staff to the NCTC. The director of NCTC reports directly to the president.<sup>90</sup>

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86 CIA: The Darker Bioweapons Future. <http://www.fas.org/irp/cia/product/bw1103.pdf> [October 2006].

87 <http://www.nctc.gov/>

88 [http://www.nctc.gov/about\\_us/about\\_nctc.html](http://www.nctc.gov/about_us/about_nctc.html) [October 2006].

89 <http://www.dni.gov/>

90 The White House: Fact Sheet: Making America Safer by Strengthening Our Intelligence Capabilities. Office of the Press Secretary, 2 August 2004. <http://www.whitehouse.gov/news/releases/2004/08/20040802-7.html> [October 2006].



In December 2005, the director of national intelligence (DNI) announced the formal establishment of the *DNI National Counterproliferation Center (NCPC)*, after the Intelligence Reform and Terrorism Prevention Act (IRTPA)<sup>91</sup> of 2004 had provided the basis for enhanced coordination, planning, and information-sharing amongst the intelligence community on proliferation issues. The NCPC manages and coordinates strategic planning within the intelligence community to enhance intelligence support to US efforts to stem the proliferation of WMD and related delivery systems. It works with the intelligence community to identify critical intelligence gaps or shortfalls in collection, analysis or exploitation, and develop solutions to ameliorate or close these gaps. It also cooperates with the intelligence community to identify long-term proliferation threats and requirements, and to develop strategies to ensure the intelligence community is positioned to address these threats and issues. The NCPC reaches out to elements both inside and outside the intelligence community and the US government to identify new methods or technologies that can enhance the capabilities of the intelligence community to detect and defeat future proliferation threats.<sup>92</sup>

## MILITARY DEFENSE AND RESEARCH

### OFFICE OF THE SECRETARY OF DEFENSE (OSD)

The *Office of the Special Assistant for Chemical and Biological Defense and Chemical Demilitarization Programs (OSA CBD&CDP)*<sup>93</sup> within the Office of the Secretary of Defense (OSD)<sup>94</sup> is responsible for leading, guiding, and integrating the DoD Chemical and Biological Defense

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91 Intelligence Reform and Terrorism Prevention Act of 2004. Public Law 108-458, 17 December 2004. [http://www.nctc.gov/docs/pl108\\_458.pdf](http://www.nctc.gov/docs/pl108_458.pdf) [October 2006].

92 Office of the Director of National Intelligence (ODNI): ODNI News Release No. 9-05. 21 December 2005. <http://www.fas.org/irp/news/2005/12/dni122105.pdf> [October 2006].

93 <http://www.acq.osd.mil/cp/index.html> [October 2006].

94 <http://www.defenselink.mil/osd/> [October 2006].

Program (DoD CDBP).<sup>95</sup> The National Defense Authorization Act for Fiscal Year 1994 mandates the coordination and integration of all Department of Defense (DoD) chemical and biological defense programs into the DoD CDBP.<sup>96</sup> The objective of the DoD CDBP is to enable US forces to survive, fight, and win in a chemically or biologically contaminated warfare environment.

The DoD's Chemical and Biological Defense Program (CDBP) provides development and procurement of systems to enhance the ability of US forces to deter and defend against chemical and biological agents during regional contingencies.<sup>97</sup> The DoD CDBP is a key part of a comprehensive national strategy to counter the threat of chemical and biological weapons as outlined in the National Strategy to Combat Weapons of Mass Destruction of December 2002.<sup>98</sup> In support of counter-proliferation, the DOD CDBP provides operational capabilities to facilitate passive defense and force protection missions. These capabilities also provide US forces with the ability to rapidly and effectively mitigate the effects of a chemical or biological attack against the deployed forces. In support of consequence management, the DOD CDBP provides capabilities to respond to the effects of WMD use against US forces deployed abroad, and in the US itself.<sup>99</sup> Each year, the DoD publishes an annual report to Congress on the state of the CDBP.<sup>100</sup>

The *Chemical and Biological Defense Information Analysis Center (CBIAC)*<sup>101</sup> is a DoD Information Analysis Center (IAC) under contract to the OSD's Director of Defense Research and Engineering, and administratively managed by the Defense Technical Information Center. The

95 <http://www.acq.osd.mil/cp/mission.html> [October 2006].

96 Department of Defense (DoD): *Chemical and Biological Defense Program. Annual Report to Congress*, March 2000. <http://www.defenselink.mil/pubs/chembio02012000.pdf> [October 2006].

97 *Ibid.*

98 The White House: *National Strategy to Combat Weapons of Mass Destruction*. 17 September 2002. <http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf> [October 2006].

99 DoD: *Chemical and Biological Defense Program. Annual Report to Congress*, March 2006. <http://www.acq.osd.mil/cp/nbc06/cbdpreporttocongress2006.pdf> [October 2006].

100 Cf. <http://www.acq.osd.mil/cp/> [October 2006].

101 <http://www.cbiac.apgea.army.mil/> [October 2006].

CBIAC serves as the focal point for scientific and technical information in support of the DoD's Chemical, Biological, Radiological and Nuclear (CBRN) defense capabilities. It provides services to DoD organizations, other government groups, and their approved contractors.

The *Defense Advanced Research Projects Agency (DARPA)*<sup>102</sup> is responsible for maintaining the technological superiority of the US military and preventing technological surprise from harming the national security by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use. One of the agency's "Technology Thrusts" is in the biological sciences.<sup>103</sup> The mission of the Defense Science Office (DSO) within DARPA is to identify and pursue the most promising technologies within a broad spectrum of the science and engineering research communities and to develop those technologies into important, new military capabilities.<sup>104</sup> The DSO's programs in the biological sciences explore four key areas: defending against biological warfare agents and naturally emerging pathogens, maintaining human combat performance, enhancing system performance via biologically inspired designs, and biomaterials.<sup>105</sup>

The *Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD)*<sup>106</sup> is the principal advocate and single point of contact for all chemical, biological, nuclear, and radiological detection, as well as vaccine and medical diagnostic acquisition efforts within the scope of the JPEO-CBD charter (e.g., the smallpox vaccination program<sup>107</sup> or the anthrax vaccine immunization program<sup>108</sup>).

Within the JPEO, seven joint project managers lead, manage, and direct the acquisition and fielding of chemical and biological detection and reconnaissance systems, individual and collective protection systems,

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102 <http://www.darpa.mil/>

103 <http://www.fas.org/biosecurity/resource/usgovernment.htm> [October 2006].

104 <http://www.darpa.mil/dso/index.htm> [October 2006].

105 <http://www.darpa.mil/dso/thrust/biosci/biosci.htm> [October 2006].

106 <http://www.jpeocbd.osd.mil/> [October 2006].

107 <http://www.smallpox.army.mil/> [October 2006].

108 <http://www.anthrax.osd.mil/> [October 2006].

decontamination systems, information management systems, medical devices, drugs, and vaccines, and systems for protecting installations and troops. Located throughout the US, each joint project office leverages the expertise from across the services under a single chain of command, providing chemical and biological defense technology, equipment, and medicine.<sup>109</sup> The JPEO supports all military services to include homeland defense, allies, as well as US citizens and troops abroad.<sup>110</sup>

#### DEPARTMENT OF THE ARMY<sup>111</sup>

The *United States Army Medical Research Institute for Infectious Diseases (USAMRIID)*<sup>112</sup>, located at Fort Detrick, Maryland, conducts basic and applied research on biological threats resulting in medical solutions to protect US troops. USAMRIID, an organization of the U.S. Army Medical Research and Materiel Command, is the lead medical research laboratory for the DoD's medical biological defense research. The institute plays a key role as the only laboratory in the DoD equipped to safely study highly hazardous infectious agents that require maximum containment at Biosafety Level 4.<sup>113</sup>

Through the USAMRIID and the Naval Medical Research Center (NMRC)<sup>114</sup> in Bethesda, Maryland, the DoD contributes scientific expertise to the LRN's national laboratory level (see initiatives section). Other military laboratories also serve as LRN reference laboratories.<sup>115</sup>

The *Edgewood Chemical and Biological Center (ECBC)*<sup>116</sup> at Aberdeen Proving Ground, Maryland – the home of the U.S. Army's Research, Development and Engineering Command (RDECOM) – is the country's principal research and development center for non-medical chemi-

109 [http://www.jpeocbd.osd.mil/page\\_manager.asp?pg=1/](http://www.jpeocbd.osd.mil/page_manager.asp?pg=1/) [October 2006].

110 [http://www.jpeocbd.osd.mil/page\\_manager.asp?pg=1&sub=0/](http://www.jpeocbd.osd.mil/page_manager.asp?pg=1&sub=0/) [October 2006].

111 <http://www.army.mil/>

112 <http://www.usamriid.army.mil/>

113 <http://www.usamriid.army.mil/aboutpage.htm> [October 2006].

114 <http://www.nmrc.navy.mil/>

115 <http://www.bt.cdc.gov/lrn/partners.asp> [October 2006].

116 <http://www.edgewood.army.mil/>

cal and biological defense. ECBC develops technology in the areas of detection, protection, and decontamination – from basic research through technology development, engineering design, equipment evaluation, product support, sustainment, field operations and disposal.<sup>117</sup>

The *U.S. Army Pine Bluff Arsenal (PBA)*<sup>118</sup> was established in November 1941. PBA's initial mission in World War II was the manufacture of incendiary grenades and bombs. PBA became the only US site for the full-scale production of biological munitions in 1953 and continued this mission until 1969. Today, PBA remains the second largest stateside storage site for the nation's stockpile of chemical agents. PBA is the only active chemical and biological defense arsenal in the US.

PBA's mission today is to provide the US and allied armed forces with critical products and services that are primarily unavailable from other sources. PBA's core primary missions include: conventional ammunition, chemical and biological defense, engineering and technical support, mobile and powered system support, and base operations support to numerous tenant activities. Chemical and Biological Defense is a growing field of expertise at PBA. Since the US increased its focus on homeland defense, PBA has initiated programs for training civilian first responders and provided chemical and biological defense technical equipment assistance and training.<sup>119</sup>

#### DEPARTMENT OF THE AIR FORCE<sup>120</sup>

The *United States Air Force Counterproliferation Center*<sup>121</sup> at the Air War College in Maxwell, Alabama, undertakes and directs counterproliferation research and education. This involves assessing nuclear, biological, chemical, and missile (NBC/M) proliferation threats and the means of

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117 <http://www.fas.org/biosecurity/resource/usgovernment.htm> [October 2006].

118 <http://www.pba.army.mil/>

119 Pine Bluff Arsenal Newcomers Guide. Available from the Pine Bluff Arsenal webpage. <http://www.pba.army.mil/Right%20Column/Welcome.pdf> [October 2006].

120 <http://www.af.mil/>

121 <http://www.au.af.mil/au/awc/awcgate/awc-cps.htm> [October 2006].

addressing those threats. This also includes research and education on such topics as appropriate military and diplomatic strategy when confronting NBC/M opponents, active defenses, counterforce capabilities, passive defenses, international nonproliferation diplomacy, nonproliferation, and arms control treaty regimes, NBC/M export controls, US and allied force protection measures against weapons of mass destruction (WMD) threats, counter-terrorist activities, deterrence of conflicts, and deterrence of escalation of conflicts involving WMD opponents.<sup>122</sup>

## CIVILIAN RESEARCH AND LABORATORIES

### NATIONAL INSTITUTES OF HEALTH (NIH)

The National Institutes of Health (NIH)<sup>123</sup> is an operating division of the Department of Health and Human Services (HHS), established in 1887 as the Hygienic Laboratory. It is the primary federal agency for conducting and supporting medical research, supporting over 38,000 research projects in diseases nationwide.<sup>124</sup> The NIH comprises 27 separate institutes and centers conducting research to help prevent, detect, diagnose, and treat disease and disability.<sup>125</sup> In response to the anthrax attacks of 2001, the NIH launched and expanded research on diseases caused by bioterrorism agents. The NIH also investigates the production of effective vaccines for deadly diseases like HIV/AIDS, tuberculosis, malaria, and biological agents, including such that could be used in a terrorist attack. Additionally, novel research methods are being developed that can rapidly identify the causes of outbreaks, such as the outbreak of the Severe Acute Respiratory Syndrome (SARS).<sup>126</sup>

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122 <http://www.au.af.mil/au/awc/awcgate/cpsabout.htm> [October 2006].

123 <http://www.nih.gov/>

124 <http://www.hhs.gov/about/whatwedo.html> [October 2006].

125 <http://www.nih.gov/about/Faqs.htm> [October 2006].

126 <http://www.nih.gov/about/NIHoverview.html> [October 2006].

The NIH conducts medical and behavioral research. Its mission is to establish fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. The NIH conducts and supports research in various fields including the causes, diagnosis, prevention, and cure of human diseases and the biological effects of environmental contaminants.<sup>127</sup>

The *National Institute of Allergy and Infectious Diseases (NIAID)*,<sup>128</sup> an institute of the NIH, conducts and supports research to study the causes of allergic, immunologic, and infectious diseases, and to develop better means of preventing, diagnosing, and treating these illnesses.<sup>129</sup> The NIAID conducts and supports much of the research aimed at developing new and improved medical tools against potential bioterrorism agents. Since 2001, NIAID has greatly accelerated its biodefense research program, launching several new initiatives to catalyze development of vaccines, therapies, and diagnostic tests.<sup>130</sup> The NIAID is organized in several divisions, including the Division of Microbiology and Infectious Diseases (DMID)<sup>131</sup> and the Dale and Betty Bumpers Vaccine Research Center (VRC)<sup>132</sup>.

The *Division of Microbiology and Infectious Diseases (DMID)* supports extramural research to control and prevent diseases caused by virtually all human infectious agents except HIV. This includes research on emerging and re-emerging infectious diseases and on pathogens of varying lethality. DMID supports a wide variety of projects from basic to applied research, along with the development and clinical evaluation of new drugs, vaccines, and diagnostic tools. DMID is actively involved in NIH's efforts to expand research related to potential agents of bioterrorism. Components

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127 <http://www.nih.gov/about/> [October 2006].

128 <http://www.niaid.nih.gov/>

129 <http://www.nih.gov/about/almanac/organization/NIAID.htm> [October 2006].

130 <http://www.fas.org/biosecurity/resource/usgovernment.htm> [October 2006].

131 <http://www.niaid.nih.gov/dmid/default.htm> [October 2006].

132 <http://www3.niaid.nih.gov/about/organization/vrc/default.htm> [October 2006].

of the biodefense research program include development of diagnostics, therapeutics, and vaccines, as well as genomics research, basic research on agents that could be used for bioterrorism, and the development of an infrastructure to support advanced research. Recognizing the enormous potential of microbial genomics research, NIH has invested significantly in resources for large-scale DNA sequencing of the genomes of human pathogens and invertebrate vectors of disease, including microorganisms that might be used for bioterrorism. DMID participates in this effort by generating information to identify pathogens in forensics, trace microbial evolution, locate targets for vaccine and drug development, and identify mutations that contribute to drug resistance.<sup>133</sup>

The *Dale and Betty Bumpers Vaccine Research Center (VRC)*<sup>134</sup> is made up of various research laboratories, including the Biodefense Research Laboratory, where research comprises three areas: 1) the development of vaccines and antivirals against hemorrhagic fever viruses such as Ebola, Marburg, and Lassa; 2) studies of the mechanism of vaccine-induced immune protection, and 3) basic research to understand the mechanism of virus replication (entry) and neutralization.<sup>135</sup>

In 2005, NIAID completed a national network of ten *Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases (RCEs)*,<sup>136</sup> to support research focused on countering threats from bioterror agents and emerging infectious diseases. Each center is comprised of a consortium of universities and complementary research institutions serving a specific geographical region. The primary objective of the RCEs program is to support the NIAID Biodefense and Emerging Infectious Diseases Research Agenda. The centers, located throughout the US, will build and maintain a strong scientific infrastructure supporting multifaceted research and development activities that promote scientific discovery and translational research capacity required to create the next generation

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133 <http://www.niaid.nih.gov/dmid/default.htm> [October 2006].

134 <http://www.vrc.nih.gov/>

135 [http://www.vrc.nih.gov/VRC/labs\\_sullivan.htm](http://www.vrc.nih.gov/VRC/labs_sullivan.htm) [October 2006].

136 <http://www.rcebiodefense.org/>



of therapeutics, vaccines, and diagnostics for various biological agents. The research being conducted within the RCEs spans a broad range of biodefense and emerging infectious disease topics, including basic research on bacterial and viral disease processes; new approaches to blocking the action of anthrax, botulinum, and cholera toxins; developing new vaccines against anthrax, plague, tularemia, smallpox, and hemorrhagic fevers; creating new immunization strategies and delivery systems; generating new antibiotics and other therapeutics; designing new advanced diagnostic methods and devices; conducting immunological studies of host-pathogen interactions; and developing computational and genomic approaches for studying infectious diseases.<sup>137</sup>

#### NATIONAL SCIENCE ADVISORY BOARD FOR BIOSECURITY (NSABB)

The National Science Advisory Board for Biosecurity (NSABB)<sup>138</sup> advises the secretary of the Department of Health and Human Services (HHS), the director of the National Institutes of Health (NIH), and the heads of all federal departments and agencies that conduct or support life science research. The NSABB will advise on and recommend specific strategies for the efficient and effective oversight of federally conducted or supported dual-use biological research, taking into consideration both national security concerns and the needs of the research community.<sup>139</sup>

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137 <http://www3.niaid.nih.gov/Biodefense/Research/rce.htm> [October 2006].

138 <http://www.biosecurityboard.gov/>

139 HHS: National Science Advisory Board for Biosecurity. Signed by the Secretary of HHS on 16 March 2006. <http://www.biosecurityboard.gov/revised%20NSABB%20charter%20signed%20031606.pdf> [October 2006].

NONPROLIFERATION AND ARMS CONTROL TECHNOLOGY  
WORKING GROUP (NPAC-TWG)

The purpose of the Nonproliferation and Arms Control Technology Working Group (NPAC-TWG)<sup>140</sup> is to ensure effective coordination of research and development in the areas of arms control and nonproliferation and to guard against redundant arms control- and nonproliferation-related R&D and technology programs within and among departments and agencies.

A component of NPAC-TWG, the Biological Weapons Detection Focus Group's objectives are to identify national bioweapons-related needs and requirements, to identify technologies and programs currently being developed or applied, to identify technology areas and programs that could support national biodefense-related needs, to identify gaps and overlaps among programs, and to provide senior decision-makers with information and recommendations.<sup>141</sup>

LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)

The Lawrence Livermore National Laboratory (LLNL)<sup>142</sup> is managed and operated by the University of California on behalf of the Department of Energy. The goal of the Biosciences Directorate at the LLNL<sup>143</sup> is to enhance the nation's health and security through multidisciplinary research in genomics, molecular biochemistry, and biotechnology. Objectives include understanding genetic and biochemical causes of disease, countering potential future biological terrorism, and developing and applying the laboratory's computational biology capabilities.<sup>144</sup>

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140 <http://www.npactwg.org/>

141 <http://www.fas.org/biosecurity/resource/usgovernment.htm> [October 2006].

142 <http://www.llnl.gov/>

143 <http://www.llnl.gov/bio/> [October 2006].

144 <http://www.fas.org/biosecurity/resource/usgovernment.htm> [October 2006].

## NATIONAL ECONOMY

### DIRECTORATE OF DEFENSE TRADE CONTROLS (DDTC)

The Directorate of Defense Trade Controls (DDTC)<sup>145</sup> within the US Department of State, in accordance with the Arms Export Control Act (AECA)<sup>146</sup> and the International Traffic in Arms Regulations (ITAR),<sup>147</sup> is charged with monitoring the trade in defense articles and defense services covered by the United States Munitions List (USML).<sup>148</sup> The USML covers items specially designed or modified for military purposes and certain dual-use commodities that can be used to manufacture military equipment. Biological agents are addressed in Category XIV: Toxicological Agents, Including Chemical Agents, Biological Agents, and Associated Equipment.<sup>149</sup> In order to meet its obligation to monitor arms exports, the DDTC relies on extensive interagency cooperation and coordination with the DoD, the US Customs and Border Protection, the Intelligence Community, the Justice Department, and US attorneys to review alleged diversions and unauthorized transfers.<sup>150</sup>

### BUREAU OF INDUSTRY AND SECURITY (BIS)

The mission of the Bureau of Industry and Security (BIS),<sup>151</sup> which is part of the US Department of Commerce, is to advance US national security, foreign policy, and economic objectives by ensuring an effective system of export controls and treaty compliance.<sup>152</sup> The BIS is charged

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145 <http://www.pmdtc.org/>

146 <http://www.pmdtdtc.state.gov/aeca.htm> [October 2006].

147 [http://www.pmdtdtc.state.gov/itar\\_index.htm](http://www.pmdtdtc.state.gov/itar_index.htm) [October 2006].

148 What is Defense Trade? Information sheet available from the Directorate of Defense Trade Controls website. [http://www.pmdtc.org/docs/ddtc\\_overview.doc](http://www.pmdtc.org/docs/ddtc_overview.doc) [October 2006].

149 The United States Munitions List, Consolidated ITAR 2006. Code of Federal Regulations, Part 121, p. 26. [http://www.pmdtdtc.state.gov/docs/itar/itar\\_part\\_121.doc](http://www.pmdtdtc.state.gov/docs/itar/itar_part_121.doc) [October 2006].

150 What is Defense Trade? DDTC information sheet. [http://www.pmdtc.org/docs/ddtc\\_overview.doc](http://www.pmdtc.org/docs/ddtc_overview.doc) [October 2006].

151 <http://www.bis.doc.gov/>

152 <http://www.bis.doc.gov/about/index.htm> [October 2006].

with the development, implementation, and interpretation of US export control policy for dual-use commodities, software, and technology.<sup>153</sup> It therefore maintains the Commerce Control List (CCL) as part of the Export Administration Regulations (EAR),<sup>154</sup> which includes items controlled for national security and foreign policy purposes as well as goods that are in short supply. Items on the CCL cannot be exported to foreign countries without an appropriate export license.<sup>155</sup>

BIS is currently building up an Office of Technology Evaluation that will be tasked with implementing “smart export controls” that identify the items and technologies that pose the greatest threats to US national security without unnecessarily burdening US exporters.<sup>156</sup>

#### DEFENSE SECURITY COOPERATION AGENCY (DSCA)

In recent years, the Defense Security Cooperation Agency (DSCA),<sup>157</sup> the lead DoD agency for security assistance programs, significantly increased end-use monitoring. Since early 2002, the Golden Sentry program has focused on improving recordkeeping and inventory control for all arms transferred, with special attention dedicated to the most sensitive transfers. Starting in June 2004, the DSCA and the Defense Threat Reduction Agency (DTRA) began a joint effort to enhance the DoD’s worldwide monitoring and inventory control of arms transfers to foreign governments.<sup>158</sup>

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153 <http://www.bis.doc.gov/PoliciesAndRegulations/index.htm> [October 2006].

154 <http://bxa.fedworld.gov/> [October 2006].

155 Laws and Regulation Governing the Protection of Sensitive but Unclassified Information. Report prepared by the Federal Research Division, Library of Congress, under an Interagency Agreement with the NASA Office of Inspector General, September 2004. <http://www.loc.gov/rr/frd/pdf-files/sbu.pdf> [October 2006].

156 <http://www.stimson.org/exportcontrol/?SN=EX20020606368/> [October 2006]; <http://www.bis.doc.gov/News/2006/FoulonExportControlForum.htm> [October 2006].

157 <http://www.dsc.osd.mil/>

158 Defense Security Cooperation Agency (DSCA): DSCA Teams with DTRA on End-Use Monitoring. News release, 4 June 2004. <http://fas.org/asmp/campaigns/MANPADS/DSCA4Jun04.pdf> [October 2006].

## FOOD AND NUTRITION SERVICE (FNS)

The Food Security Act of 1985 requires the secretary of agriculture to establish a Disaster Task Force to assist states in implementing and operating various disaster food programs. The Food and Nutrition Service's (FNS)<sup>159</sup> Disaster Task Force coordinates the FNS overall response to disasters and emergencies. It operates under the general direction of the administrator of FNS. The FNS Disaster Task Force consists of the administrator, the associate administrator, the disaster coordinator, the deputy administrator for management, the deputy administrator for governmental affairs and public information, representatives from the food stamp and special nutrition programs, and representatives from regional offices affected by the disaster.<sup>160</sup>

## ANIMAL HEALTH

### DEPARTMENT OF AGRICULTURE (USDA)

The Department of Agriculture's (USDA)<sup>161</sup> *Animal and Plant Health Inspection Service (APHIS)*<sup>162</sup> is responsible for protecting US agriculture and the environment from pests, diseases, and weeds, and plays an important role in ensuring the safe advancement of biotechnology, in collaboration with the EPA and the FDA. The APHIS laboratory in Ames, Iowa, in collaboration with the veterinary diagnostic laboratory community, acts as a reference and sentinel laboratories for the detection of zoonotic agents. The USDA's Food Safety and Inspection Services laboratories also act as reference and sentinel laboratories for agents that may be found in meat, poultry, and egg products.<sup>163</sup>

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159 <http://www.fns.usda.gov/>

160 <http://www.au.af.mil/au/awc/awcgate/frp/frpesf11.htm> [October 2006].

161 <http://www.usda.gov/>

162 <http://www.aphis.usda.gov/>

163 <http://www.bt.cdc.gov/lrn/partners.asp> [October 2006].

Furthermore, APHIS is responsible for the animal and plant health (agricultural) part of the Select Agent Program (SAP), while the CDC is concerned with human health.<sup>164</sup>

The *Plum Island Animal Disease Center (PIADC)*<sup>165</sup> is managed jointly by the DHS and the USDA. It became part of the DHS on 1 June 2003, but the USDA will continue its research, development, and diagnostics programs at PIADC, contributing to PIADC's expanded agro-terrorism mission.<sup>166</sup>

Generally, the Plum Island Animal Disease Center is responsible for research and diagnosis to protect US animal industries and exports against catastrophic economic losses caused by foreign animal disease agents accidentally or deliberately introduced into the US. These missions are accomplished by basic and applied research directed toward: more sensitive and accurate methods of disease agent detection and identification; development of new strategies to control disease epidemics, including rDNA vaccines, antiviral drugs, and transgenic, disease-resistant animals; and diagnostic investigations of suspect cases of diseases outbreaks in US livestock.<sup>167</sup>

The PIADC will contribute to DHS's biological countermeasures program in the Department's Science and Technology Directorate. The biological countermeasures program seeks to reduce the probability and potential consequences of a biological attack on the nation's civilian population and its agricultural system. The biological countermeasures program places its greatest emphasis on high-consequence biological threats, including agricultural diseases such as foot-and-mouth disease and high-volume contamination of food supplies.<sup>168</sup>

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164 [http://www.aphis.usda.gov/programs/ag\\_selectagent/](http://www.aphis.usda.gov/programs/ag_selectagent/) [October 2006].

165 <http://www.ars.usda.gov/plum/> [October 2006].

166 DHS: Fact Sheet: Plum Island Animal Disease Center Transition. [http://www.dhs.gov/xnews/releases/press\\_release\\_0176.shtm](http://www.dhs.gov/xnews/releases/press_release_0176.shtm) [October 2006].

167 <http://www.ars.usda.gov/AboutUs/AboutUs.htm?modecode=19-40-00-00/> [October 2006].

168 DHS: Fact Sheet: Plum Island Animal Disease Center Transition. [http://www.dhs.gov/xnews/releases/press\\_release\\_0176.shtm](http://www.dhs.gov/xnews/releases/press_release_0176.shtm) [October 2006].

## ENVIRONMENTAL PROTECTION

### ENVIRONMENTAL PROTECTION AGENCY (EPA)

The Environmental Protection Agency (EPA)<sup>169</sup> leads the nation's environmental science, research, education, and assessment efforts. In performing environmental research, the EPA works to assess environmental conditions and to identify, understand, and solve current and future environmental problems.<sup>170</sup> Because of its inherent role in protecting human health and the environment from possible harmful effects of certain chemical, biological, and nuclear radiochemical materials, EPA is actively involved in counterterrorism planning and response efforts. EPA is currently working with the Laboratory Response Network (LRN / see initiatives section) on laboratory-related issues and tests that will assist in monitoring US drinking water assets. In addition, the agency is a key component of the BioWatch Program (see initiatives section), a program that monitors the air in selected cities for potential threat agents. EPA assists with air sample collection and provides the air samplers, while the LRN laboratories perform the daily tests on collected samples.<sup>171</sup>

There are several research programs under the domain of EPA, including the *National Center for Environmental Assessment (NCEA)*,<sup>172</sup> which serves as the national resource center for the overall process of human health and ecological risk assessments. The NCEA integrates data and models on hazards, dose-responses, and exposure in order to produce risk characterizations.<sup>173</sup>

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169 <http://www.epa.gov/>

170 <http://www.epa.gov/epahome/aboutepa.htm> [October 2006].

171 <http://www.bt.cdc.gov/lrn/partners.asp> [October 2006].

172 <http://cfpub.epa.gov/ncea/> [October 2006].

173 <http://www.epa.gov/epahome/program2.htm> [October 2006].

## PAST AND PRESENT INITIATIVES AND POLICIES

### HOMELAND SECURITY PRESIDENTIAL DIRECTIVE 10 (HSPD-10)

In April of 2004, President Bush issued Homeland Security Presidential Directive 10 (HSPD-10). This directive, developed by the Homeland Security Council (HSC), details the entire federal government's bio-defense strategy. It details the duties and roles for each federal agency involved in biodefense. Although this document is classified, the non-classified version, "Biodefense for the 21<sup>st</sup> Century", provides an overview of the federal government's overall strategy and roles at the departmental level.<sup>174</sup>

### LABORATORY RESPONSE NETWORK (LRN)

The Laboratory Response Network (LRN)<sup>175</sup> is a program of the Centers for Disease Control and Prevention (CDC). The LRN is a national network of local, state, and federal laboratories for public health, food testing, veterinary diagnostics, and environmental testing that have the capacity to respond to biological and chemical terrorism and other public health emergencies. The more than 140 laboratories that make up the LRN are affiliated with federal agencies, military installations, international partners, and state or local public health departments. The LRN is also a collaborative effort between key stakeholders in the preparation and response to biological and chemical terrorism. The Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI), and the Association of Public Health Laboratories (APHL) were key partners in establishing the LRN.<sup>176</sup>

Congress funds the LRN through the Department of Health and Human Services (HHS), which oversees CDC activities. Between 2002

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174 <http://www.whitehouse.gov/homeland/20040430.html> [October 2006].

175 <http://www.bt.cdc.gov/lrn/> [October 2006].

176 <http://www.bt.cdc.gov/lrn/faq.asp> [October 2006].



and 2004, the LRN received about US\$390 million for bioterrorism preparations and about US\$95 million for chemical terrorism preparations. Each year, through a governmental cooperative agreement, the money is distributed among LRN member laboratories to fund staff positions and renovations, and to acquire the latest technology. The individual states are responsible for determining how they will distribute the funds among their public health laboratories.<sup>177</sup>

### STRATEGIC NATIONAL STOCKPILE (SNS) PROGRAM

In 1999, Congress charged the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) with the establishment of the National Pharmaceutical Stockpile (NPS). The mission was to provide a re-supply of large quantities of essential medical materiel to states and communities during an emergency within 12 hours. On 1 March 2003, the NPS became the Strategic National Stockpile (SNS) Program.<sup>178</sup> The Division of Strategic National Stockpile (DSNS), part of the Coordinating Office for Terrorism Preparedness & Emergency Response (COTPER) of the CDC, delivers critical medical assets to the site of a national emergency. The SNS is a national repository of antibiotics, chemical antidotes, vaccines, antitoxins, life-support medications, intravenous administration and airway maintenance supplies, and medical/surgical items.<sup>179</sup>

SNS has large quantities of medicine and medical supplies to protect the US public if there is a public health emergency (terrorist attack, flu outbreak, earthquake, etc.) severe enough to cause local supplies to run out. Once federal and local authorities agree that the SNS is needed, medicines will be delivered to any state in the US within 12 hours. Each

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177 *Ibid.*

178 <http://www.bt.cdc.gov/stockpile/> [October 2006].

179 Information sheet on the COTPER. <http://www.cdc.gov/maso/pdf/COTPERfs.pdf> [October 2006].

state has plans to receive and distribute SNS medicine and medical supplies to local communities as quickly as possible.<sup>180</sup>

### PROJECT BIOSHIELD

On 21 July 2004, President Bush signed the Project BioShield Act<sup>181</sup> (Project BioShield) into law as part of a broader strategy to defend the US against the threat of mass casualty weapons. Project BioShield provides the government with the ability to develop, acquire, stockpile, and provide the medical countermeasures needed by encouraging private companies to develop new bioterrorism countermeasures. HHS has a leadership role in the program and works in close collaboration with key partners, including the Department of Homeland Security and the Department of Defense.<sup>182</sup>

The Project BioShield Act of 2004 provides expedited procedures for bioterrorism-related procurement, hiring, and awarding of research grants, making it easier for the Department of Health and Human Services (HHS) to commit substantial funds quickly to countermeasure projects. The HHS secretary can contract to purchase countermeasures while they are still due for several more years of development. However, companies are not paid until development is complete and the product is delivered. The HHS secretary now also has the authority to temporarily allow the emergency use of countermeasures that lack Food and Drug Administration (FDA) approval. Project BioShield is designed to assure biotechnology and pharmaceutical companies that the government will buy new, effective biological countermeasures for the Strategic National Stockpile (SNS).<sup>183</sup>

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180 <http://www.bt.cdc.gov/stockpile/> [October 2006].

181 Project BioShield Act. Public Law 108-276. 21 July 2004. [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_public\\_laws&docid=f:publ276.108.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ276.108.pdf) [October 2006].

182 <http://www.hhs.gov/ophep/ophenc/bioshield/> [October 2006].

183 Congressional Research Service (CRS) Report for Congress: Project BioShield. RS21507, Updated 5 June 2006. <http://fpc.state.gov/documents/organization/70298.pdf> [October 2006].

The first Project BioShield contract was announced on 4 November 2004. VaxGen Inc. will receive US\$877.5 million to deliver 75 million doses of a new type of anthrax vaccine within three years. Other acknowledged potential targets for Project BioShield procurement include more advanced anthrax vaccines and treatments, next-generation smallpox vaccines, botulinum antitoxin, a next generation plague vaccine, and anti-radiation treatments.<sup>184</sup>

### BIOWATCH PROGRAM

The Department of Homeland Security (DHS) has prioritized preparation against biological weapon attacks and has deployed the BioWatch Program to provide early warning of a mass pathogen release. The BioWatch Program uses a series of pathogen detectors that are co-located with Environmental Protection Agency (EPA) air quality monitors. These detectors collect airborne particles onto filters, which are subsequently transported to laboratories for analysis. It is expected that this system will provide early warning of a pathogen release, alerting authorities before victims begin to show symptoms and providing the opportunity to deliver treatments earlier, thus reducing illness and death.<sup>185</sup>

The DHS has not confirmed the exact number of cities engaged in the BioWatch program, nor the number of pathogens that are detected using BioWatch equipment. However, it is reported that at least 31 cities are included in the BioWatch program, while the program may expand to as many as 120 cities.<sup>186</sup>

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184 Ibid.

185 Congressional Research Service (CRS) Report for Congress: The BioWatch Program: Detection of Bioterrorism. RL32152, 19 November 2003. [http://digital.library.unt.edu/govdocs/crs//data/2003/upl-meta-crs-8189/RL32152\\_2003Nov19.pdf](http://digital.library.unt.edu/govdocs/crs//data/2003/upl-meta-crs-8189/RL32152_2003Nov19.pdf) [October 2006].

186 Ibid.

NATIONAL BIOTERRORISM SYNDROMIC SURVEILLANCE  
DEMONSTRATION PROGRAM

The main purpose of the National Bioterrorism Syndromic Surveillance Demonstration Program<sup>187</sup> is to identify unusual clusters of illness by monitoring and analyzing new cases of illness derived from electronic patient-encounter records supplied by participating healthcare organizations. It aims to use data from health plans and practice groups to detect localized outbreaks and to facilitate rapid public health follow-up. The CDC-funded program grew out of collaborative projects between state health departments and covers a population of more than 20 million individuals.<sup>188</sup>

BIOTERRORISM AND CURRICULUM DEVELOPMENT PROGRAM  
(BTCDP)

The purpose of the BTCDP is to improve the capability of the nation's healthcare workforce to respond to bioterrorism and other public health emergencies. The goal of this program is to enable the healthcare workforce to: (1) recognize indications of a terrorist event and other public health emergencies; (2) treat patients and communities in a safe and appropriate manner; (3) participate in a coordinated response, and (4) rapidly and effectively alert the public health system of such an event at the community, state, and national level.<sup>189</sup>

NIAID STRATEGIC PLAN FOR BIODEFENSE RESEARCH

In response to the anthrax attacks, NIAID developed the Strategic Plan for Biodefense Research in 2002 that outlines plans for addressing research needs for bioterrorism and emerging and re-emerging

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187 <https://btsurveillance.org/btpublic/> [October 2006].

188 <http://www.cdc.gov/mmwr/preview/mmwrhtml/su5301a10.htm> [October 2006].

189 <http://www.emprints.hawaii.edu/partners.html> [October 2006].

infectious diseases.<sup>190</sup> The purpose of the strategic plan is to guide the implementation of basic and translational biodefense research and to engage partners in academia, industry, and other private and public-sector entities to develop biodefense-related diagnostics, therapeutics, and vaccines.<sup>191</sup>

NIAID has launched research initiatives in areas ranging from the basic biology of microbes and their interactions with the human immune system to preclinical and clinical evaluation of new therapeutics and vaccines. These initiatives are designed to take advantage of recent ideas from academic and industrial scientists on ways to understand and combat agents that could potentially be used for bioterrorism. In addition, NIAID releases progress reports highlighting accomplishments in biodefense research.<sup>192</sup>

### NATIONAL RESPONSE PLAN

The National Response Plan<sup>193</sup> establishes a comprehensive all-hazards approach to enhance the ability of the US to manage domestic incidents. The plan incorporates best practices and procedures from incident management disciplines – homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector – and integrates them into a unified structure. The National Response Plan lays out how the federal government coordinates with state, local, and tribal governments and the private sector during incidents. The

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 190 National Institute of Allergy and Infectious Diseases (NIAID): Selected Scientific Areas of Research. Fiscal Year 2004. [http://www3.niaid.nih.gov/about/overview/profile/fy2004/pdf/research\\_biodefense.pdf](http://www3.niaid.nih.gov/about/overview/profile/fy2004/pdf/research_biodefense.pdf) [October 2006].

191 NIAID: NIAID Biodefense Research Agenda for Category B and C Priority Pathogens. Progress Report, June 2004. [http://www3.niaid.nih.gov/Biodefense/Research/category\\_bc\\_progress\\_report.pdf](http://www3.niaid.nih.gov/Biodefense/Research/category_bc_progress_report.pdf) [October 2006].

192 NIAID: Selected Scientific Areas of Research. [http://www3.niaid.nih.gov/about/overview/profile/fy2004/pdf/research\\_biodefense.pdf](http://www3.niaid.nih.gov/about/overview/profile/fy2004/pdf/research_biodefense.pdf) [October 2006]. Cf. research plans and agendas: <http://www3.niaid.nih.gov/about/overview/planningpriorities> [October 2006].

193 [http://www.dhs.gov/xprepresp/committees/editorial\\_0566.shtm](http://www.dhs.gov/xprepresp/committees/editorial_0566.shtm) [October 2006].

Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA), in close coordination with the DHS Office of the Secretary, maintain the National Response Plan.<sup>194</sup>

The National Response Plan includes a Biological Incident Annex, which outlines the actions, roles, and responsibilities associated with a response to a disease outbreak of known or unknown origin, but of national significance. The annex specifies biological incident response actions including threat assessments, notification procedures, laboratory testing, joint investigative procedures, and activities related to recovery. The annex explicitly pursues an all-hazards approach, which includes responses to a bioterror event, an influenza pandemic, emerging infectious diseases, or a novel pathogen outbreak.<sup>195</sup>

#### PROLIFERATION SECURITY INITIATIVE (PSI)

The administration of US President George W. Bush launched the Proliferation Security Initiative (PSI)<sup>196</sup> in May 2003 to stem the trafficking of WMD, including biological weapons and related materials.<sup>197</sup>

The long-term objective of the PSI is to create a web of counter-proliferation partnerships with cooperating countries, which will make it more difficult for proliferators to carry out their trade in WMD and missile-related technology. PSI is an activity, not an organization, which seeks to develop new means to disrupt WMD trafficking at sea, in the air, and on land.<sup>198</sup>

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194 DHS: Fact Sheet: National Response Plan. Press Release, 6 January 2005. [http://www.dhs.gov/xnews/releases/press\\_release\\_0581.shtm](http://www.dhs.gov/xnews/releases/press_release_0581.shtm) [October 2006].

195 DHS: National Response Plan. December 2004. [http://www.dhs.gov/xlibrary/assets/NRP\\_FullText.pdf](http://www.dhs.gov/xlibrary/assets/NRP_FullText.pdf) [December 2006].

196 <http://www.state.gov/t/np/c10390.htm> [October 2006].

197 <http://www.fas.org/irp/offdocs/nspd/biodef.html> [October 2006].

198 Congressional Research Service (CRS) Report for Congress: Proliferation Security Initiative (PSI). RS21881, June 7, 2005. <http://www.fas.org/sgp/nuke/RS21881.pdf> [October 2006].

## LAWS AND LEGISLATION<sup>199</sup>

Biosecurity	Public Health Security and Bioterrorism Preparedness and Response Act (2002)	This Act allocates money for the federal, state, and local governments to evaluate public health emergency preparedness and to plan and conduct additional preparations for public health emergencies. The act also addresses provisions concerning the control of biological agents and toxins; safety and security measures concerning food, drug, and water supplies; and development of countermeasures against bioterrorism. Specifically, it requires any facility working on selected agents to register with the HHS and subjects such facilities to access controls and physical security measures. Furthermore, it establishes a national database of registered facilities. Similar powers are given to the USDA with respect to plant and animal pathogens.
	Antiterrorism and Effective Death Penalty Act (1996)	This act defines a list of selected infectious agents and requires facility registration, transfer notifications, verification procedures, and agent disposal precautions. It authorizes the secretary of HHS to regulate how biological agents are to be identified as potential threats and how they are to be transferred.
Biosafety	Select Agent Regulations, 42 CFR 73	The regulations of section 73 implement provisions of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 and are regulated by HHS/CDC. This piece of legislation establishes requirements regarding possession and use in the US, receipt from outside the US, and transfer within the US, of certain biological agents and toxins. This includes requirements concerning registration, security risk assessments, safety and security plans, emergency response plans, training, transfers, record-keeping, inspections, and notifications. Entities regulated under the regulations of section 73 are academic institutions and biomedical centers; commercial manufacturing facilities (the pharmaceutical industry); federal, state, and local laboratories, including clinical and diagnostic laboratories; and research facilities.

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 199 This chart may not include all relevant laws. It was compiled from the following sources: The Federation of American Scientists (FAS) website on US biosecurity legislation – <http://www.fas.org/biosecurity/resource/legislation.htm>; the CDC websites on Public Laws and Regulations related to the Select Agent Program – <http://www.cdc.gov/od/sap/regulations.htm> and <http://www.selectagents.gov/selectagentRegulation.htm>; and the Center for Nonproliferation Studies’ (CNS) “Comparative Review of Biosecurity-Related Legislation” – <http://cns.miis.edu/research/cbw/biosec/pdfs/biolaw.pdf>.

PART ONE: Country Surveys

	Select Agent Regulations, 7 CFR 331 and 9 CFR 121	These are corresponding sets of regulations designed to protect animal and plant health and animal and plant products, established by USDA/APHIS. The regulations govern the possession, use, and transfer of biological agents and toxins that have been determined to have the potential to pose a severe threat to public health and safety, to animal health, to plant health, or to animal or plant products.
	Hazardous Materials Regulations, 49 CFR Part 171-180	These regulations set out requirements for the safe transportation of infectious substances, including regulated medical waste, and are administered by the Department of Transportation (DOT). This law defines packaging requirements, requirements for the transportation of genetically modified microorganisms, and communication requirements for shipments of certain materials.
	Interstate Shipment of Etiologic Agents, 42 CFR 72	This HHS/CDC regulation establishes packaging requirements for transporting diagnostic specimens, biological products, certain etiologic agents, and other materials. The requirements of this rule are in addition to other requirements for the transportation of hazardous materials enacted by the Department of Transportation and other agencies of the federal government.
Criminalization	USA PATRIOT Act (2001)	The USA PATRIOT Act bans terrorist activities in the US and around the world, and enhances the investigatory tools of law enforcement agencies. In certain circumstances, the act also prescribes penalties for knowingly possessing biological agents, toxins, or delivery systems, especially in the case of certain restricted persons. It places additional restrictions and penalties on those who are allowed to possess, use, or transfer biological agents and toxins.
	Antiterrorism and Effective Death Penalty Act (1996)	The law makes it a federal crime to threaten, attempt, or conspire to use a biological weapon, and broadens the definition of biological weapons to include components of infectious substances, toxic materials, and recombinant molecules.
	Biological Weapons Anti-Terrorism Act (1990)	This act implements the Biological and Toxin Weapons Convention (BTWC) and aims at protecting the US from biological terrorism by prohibiting certain conduct pertaining to biological weapons, including knowingly developing, producing, stockpiling, transferring, acquiring, retaining, or possessing any biological agent, toxin, or delivery system for use as a weapon, or knowingly assisting a foreign state or any organization in this regard.



<p>Import / Export Controls</p>	<p>Export Administration Act (1979, amended 2001)</p>	<p>The act provides the statutory authority for export controls on sensitive dual-use goods and technologies, including such items that can contribute to the proliferation of nuclear, biological, and chemical weaponry. It confers upon the president the power to control exports for reasons of national security or foreign policy, or to prevent shortages. It authorizes the president to establish export licensing mechanisms for items detailed on the Commerce Control List (CCL). The CCL currently provides detailed specifications for about 2,400 dual-use items including equipment, materials, software, and technology that is likely to require some type of export license from the Commerce Department's Bureau of Industry and Security (BIS).</p>
	<p>Chemical and Biological Weapons Control and Warfare Elimination Act (1991)</p>	<p>This act establishes economic and diplomatic sanctions against countries that use chemical or biological weapons in violation of international law. It also imposes sanctions against companies that aid in the proliferation of chemical and biological weapons.</p>



**PART TWO**

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**INTERNATIONAL AND  
SUPRA-NATIONAL ORGANIZATIONS**



# WORLD HEALTH ORGANIZATION (WHO)<sup>1</sup>

## THE WHO'S APPROACH TO THE BIOLOGICAL THREAT

The World Health Organization (WHO)'s objective in the field of infectious diseases is an integrated global alert and response system for epidemics and other public health emergencies, based on strong national public health systems and capacities and an effective international mechanism for a coordinated response. The WHO continuously tracks the evolving infectious disease situation, sounds the alarm when needed, share expertise, and protects populations from the consequences of epidemics. Thereby, the focal point of the WHO's work is entirely based on public health considerations, irrespective of the source of a health threat.

## PAST AND PRESENT INITIATIVES AND POLICIES

### INTERNATIONAL HEALTH REGULATIONS (IHR)

The revised International Health Regulations,<sup>2</sup> referred to as IHR (2005), were adopted in May 2005 and are scheduled to enter into force in June 2007. The broadened purpose and scope of the IHR (2005) are "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate

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1 The survey on WHO was written by Isabelle Abele-Wigert, Center for Security Studies (CSS); and Sergio Bonin. It was reviewed by Cathy E. Roth, World Health Organization (WHO).

2 <http://www.who.int/csr/ihr/en/> [January 2007].

with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.”<sup>3</sup>

The renewed mandate given to member states and the WHO under the IHR (2005) has also increased their respective roles and responsibilities. In particular, state parties to the IHR (2005) are required to develop, strengthen, and maintain core surveillance and response capacities to detect, assess, notify, and report to the WHO public health events and respond to public health risks and public health emergencies. The WHO collaborates with state parties to evaluate their public health capacities, facilitate technical cooperation, logistical support and the mobilization of financial resources for building capacity in surveillance and response.<sup>4</sup>

The IHR (2005) will have a significantly broader scope of application compared to the current Regulations IHR (1969), which are limited to notification of, and the response to, cases of cholera, plague, and yellow fever only. Under the IHR (2005), state parties must offer notification of all events that may constitute a *Public Health Emergency of International Concern (PHEIC)*.<sup>5</sup>

Notifications and reports are communicated to the WHO through National IHR Focal Points, designated by state parties. On receiving advice from an emergency committee, the director-general may make temporary recommendations, if a PHEIC is occurring, in order to prevent or reduce the international spread of disease and to avoid unnecessary interference with international traffic. On 26 May 2006, the member states of the WHO adopted resolution WHA59.2, which calls for immediate compliance, on a voluntary basis, with the provisions of IHR (2005) considered relevant to the risk posed by the avian and potential human pandemic influenza.<sup>6</sup>

3 Fifty-Eight World Health Assembly. Revision of the International Health Regulations. 23 May 2005. [http://www.who.int/csr/ihr/IHRWHA58\\_3-en.pdf](http://www.who.int/csr/ihr/IHRWHA58_3-en.pdf) [January 2007].

4 <http://www.who.int/csr/ihr/en> [January 2007].

5 A PHEIC is defined in the Regulations as an extraordinary public health event which constitutes a public health risk to other States, through the international spread of diseases, and may require a coordinated international response.

6 Summary update on IHR (2005), September 2006. <http://www.who.int/csr/ihr/voluntary-compliance06EN%20.pdf> [January 2007].

## EPIDEMIC AND PANDEMIC ALERT AND RESPONSE (EPR)

Confronted with the potential threat to global health security by the intentional release of biological agents, the WHO advocates investment in national, regional, and global public health operations, as well as in infrastructures for early detection and immediate response. At the national and global levels, the major human and technical resources for epidemic containment reside within the public health infrastructure.

The WHO's strategy for *Global Health Security – Epidemic Alert and Response* systematically addresses the threat of natural and intentional epidemics through integrated strategies for combating the known, responding to the unexpected, and improving both global and national preparedness. The WHO's activities include intelligence on epidemics and systematic event detection; event verification; information management and dissemination, including the Outbreak Verification List (OVL) and the Weekly Epidemiological Record (WER); real-time alert; coordinated rapid outbreak response (together with the Global Outbreak Alert and Response Network GOARN); and outbreak response logistics. The Epidemic and Pandemic Alert and Response (EPR) has six core functions:<sup>7</sup>

- To support member states in the implementation of national capacities for epidemic preparedness and response in the context of the International Health Regulations IHR (2005), including laboratory capacities and early-warning alert and response systems;
- To support national and international training programs for epidemic preparedness and response;
- To coordinate and support member states in preparedness for and response to pandemic and seasonal influenza;
- To develop standardized approaches for readiness and response to major epidemic diseases (e.g., meningitis, yellow fever, plague);

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 7 <http://www.who.int/csr/en/> [January 2007].

- To strengthen biosafety, biosecurity, and preparedness for outbreaks of dangerous and emerging pathogens (e.g., SARS, viral hemorrhagic fevers); and
- To maintain and further develop a global operational platform to support outbreak response and the implementation of disaster planning at the regional levels.

### GLOBAL OUTBREAK ALERT & RESPONSE NETWORK (GOARN)

In April 2000, representatives of technical institutions, organizations, and networks in global epidemic surveillance and response met in Geneva to discuss “Global Outbreak Alert and Response”.<sup>8</sup> Participants identified the need for a global network, building on new and existing partnerships, to deal with the global threats of epidemics and emerging diseases. The WHO coordinates its international outbreak response using resources from the network and provides a secretarial service for the network as part of its Alert and Response Operations within Communicable Diseases Surveillance and Response (CSR).

The Global Outbreak Alert and Response Network (GOARN)<sup>9</sup> is a platform for technical collaboration between existing institutions and networks that pool human and technical resources for the rapid identification and confirmation of, and response to, outbreaks of international importance. The network provides an operational framework to link this expertise and skill to keep the international community constantly alert to the threat of outbreaks, and ready to respond. GOARN’s primary aims are:<sup>10</sup>

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8 World Health Organization, Department of Communicable Disease Surveillance and Response. Global Outbreak Alert and Response. Report of a WHO Meeting, Geneva, 26–28 April 2000. WHO/CDS/CSR/2000.3. <http://www.who.int/csr/resources/publications/surveillance/whocdscsr2003.pdf> [January 2007].

9 <http://www.who.int/csr/outbreaknetwork/en> [January 2007].

10 <http://www.who.int/csr/outbreaknetwork/goarnenglish.pdf> [January 2007].



- To assist countries with disease control efforts by delivering rapid and appropriate technical support to affected populations;
- To investigate and characterize events and assess the risk of rapidly emerging epidemic disease threats; and
- To support national outbreak preparedness by ensuring that responses contribute to sustained containment of epidemic threats.

The GOARN focuses technical and operational resources from scientific institutions in member states, medical and surveillance initiatives, regional technical networks, networks of laboratories, UN organizations (e.g., UNICEF and UNHCR), and international humanitarian nongovernmental organizations. Participation is open to technical institutions, networks, and organizations that have the capacity to contribute to international outbreak alert and response.

Since April 2000, the GOARN has been tasked with proposing agreed standards for international epidemic response through the development of *Guiding Principles for International Outbreak Alert and Response*<sup>11</sup> and operational protocols to standardize epidemiological, laboratory, clinical management, research, communications, logistics support, security, evacuation, and communications systems. These *Guiding Principles* aim to improve the coordination of international assistance in support of local efforts by partners in the *Global Outbreak Alert and Response Network*.<sup>12</sup>

In the event of an intentional release of a biological agent, the WHO's global alert and response activities and operational framework, together with the technical resources of the GOARN, would be vital for effective international containment efforts or specialized investigations, and, if required, would also provide an investigation/verification team as direct assistance. In addition, the WHO's network of over 250 collaborating

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 11 <http://www.who.int/csr/outbreaknetwork/guidingprinciples/en> [January 2007].

12 <http://www.who.int/csr/outbreaknetwork/en> [January 2007].

centers would provide assistance with transport and testing of samples at international laboratory facilities.<sup>13</sup>

As part of Alert and Response Operations, global epidemic intelligence is primarily focused on communicable diseases, but also identifies related conditions, such as food and water safety and chemical events. The *Global Public Health Intelligence Network (GPHIN)*,<sup>14</sup> developed by Health Canada in collaboration with the WHO, is a secure internet-based multilingual early-warning tool that continuously searches global media sources such as news wires and web sites for information about disease outbreaks and other events of potential international public health concern. GPHIN is one of the WHO's most important sources of informal information related to outbreaks.

Since many infectious diseases are zoonotic, information on occurrences of zoonotic diseases in animals is also important to public health officials. This is the reason why the WHO, the UN Food and Agricultural Organization (FAO), and the World Organisation for Animal Health (OIE) have developed the *Global Early Warning and Response System (GLEWS)* for transboundary animal diseases. GLEWS builds on the added value of combining information from each organization so that outbreaks can be detected earlier and the coordination of response will be improved. It aims to provide national animal health authorities with epidemiological information enhanced by an in-depth analysis concerning the occurrence and spread of major diseases. The program will further stimulate countries to notify the occurrence of animal diseases, including zoonoses, more rapidly.<sup>15</sup>

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13 <http://www.who.int/csr/delibepidemics/en/> [January 2007].

14 [http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004\\_gphin-rmispbk\\_e.html](http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html); and <http://www.who.int/csr/alertresponse/epidemicintelligence/en/index.html> [both January 2007].

15 <http://www.who.int/zoonoses/outbreaks/en> [January 2007].

## BIOSAFETY PROGRAMME

World Health Assembly Resolution WHA58.29 on the “Enhancement of laboratory biosafety”<sup>16</sup> showed the commitment of member states to improving Biosafety. The resolution called upon the WHO to support activities linked to the strengthening of biosafety. The WHO Biosafety Programme<sup>17</sup> supports member states with information, training, and advocacy with respect to biosafety and laboratory biosecurity principles and practices. It also advises the United Nations Committee of Experts on the Transport of Dangerous Goods in the development of international regulations for transporting infectious substances. The program produces a variety of guidelines and guidance documents on biosafety and laboratory biosecurity.

The overall goal of the WHO Biosafety Programme is to prevent infections arising from inappropriate handling of pathogenic microorganisms and to advocate for safe storage of valuable biological materials to prevent their loss, theft, or accidental release. Therefore, the WHO promotes:

- Safe practices in the handling of pathogenic microorganisms as recommended in the Laboratory Biosafety Manual, 3<sup>rd</sup> edition (2004)<sup>18</sup> and in international transport regulations;
- The development of national, regional, and international regulations, norms, and standards for the safe handling of infectious substances;<sup>19</sup> and
- Biosafety and laboratory biosecurity training.

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 16 [http://www.who.int/entity/csr/labepidemiology/WHA58\\_29-en.pdf](http://www.who.int/entity/csr/labepidemiology/WHA58_29-en.pdf) [January 2007].

17 <http://www.who.int/csr/labepidemiology/projects/biosafetymain/en/> [January 2007].

18 World Health Organization. Laboratory Biosafety Manual – Third Edition (2004). [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/index.html](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/index.html) [January 2007].

19 World Health Organization. Guidance on regulations for the Transport of Infectious Substances (2005). [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2005\\_22/en/index.html](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2005_22/en/index.html) [January 2007].

To support member states in their endeavors towards the development of a biosafety culture, the WHO provides biosafety information and technical assistance. The WHO Biosafety Programme works in close relation with the five WHO Biosafety Collaborating Centers that form the core of the WHO Biosafety Advisory Group (BAG), and other partners. The BAG is regularly invited to assist and advise the WHO's Biosafety Programme on a wide variety of biorisk management issues, including biosafety and laboratory biosecurity.

### WHO ACTIVITIES IN PANDEMIC INFLUENZA PREPAREDNESS

In November 2005, a meeting on avian influenza and human pandemic influenza was jointly organized by the WHO, the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), and the World Bank. Participants reached a number of conclusions and agreed on a 12-point action plan. Five of these actions concern human health matters and form the basis of the WHO's activities in preparation for avian influenza and pandemic influenza.

These activities aim to achieve two overarching objectives: First, to exploit all feasible opportunities to prevent the H<sub>5</sub>N<sub>1</sub> virus from developing the ability to ignite a pandemic; and, should this effort fail, secondly, to ensure that measures are in place to mitigate the high levels of morbidity and mortality and social and economic disruption that can be expected during the next pandemic.<sup>20</sup> The five strategic actions are the following:<sup>21</sup>

- Reduce human exposure to the H<sub>5</sub>N<sub>1</sub> virus;
- Strengthen the early-warning system;
- Intensify rapid containment operations;

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20 WHO activities in avian influenza and pandemic influenza preparedness, January - May 2006.  
[http://www.who.int/csr/disease/avian\\_influenza/WHOactivitiesJanMay2006.pdf](http://www.who.int/csr/disease/avian_influenza/WHOactivitiesJanMay2006.pdf) [January 2007].

21 Ibid.

- Build a capacity to cope with a pandemic by elaborating national response plans; and
- Coordinate global scientific research and development in vaccines and antiviral drugs.

In March 2006, the WHO convened a global technical meeting with more than 70 international experts to finalize an earlier version of the containment protocol for pandemic influenza that aims at limiting the consequences of an outbreak as early as possible. The protocol has four main parts: The first part describes the steps needed to recognize the signal or “triggering” event; the second part describes the immediate actions that should follow the identification of the threat; the third part describes the actions that should be undertaken once the overall situation has been assessed, and a decision has been made to launch rapid containment operations; and the fourth part provides guidance on requesting use of the global antiviral stockpile and its deployment to support containment operations.<sup>22</sup>

In addition, the WHO has established an *Influenza Pandemic Task Force (IPTF)* that met for the first time in September 2006. The IPTF is composed of 21 members and advises the WHO on potential public health issues of international concern related to avian and pandemic influenza, including issues such as the various phases of pandemic alert, the declaration of an influenza pandemic, and appropriate international response measures to a pandemic. The Task Force will serve as a temporary advisory body to the WHO until 15 June 2007, when the International Health Regulations (IHR) of 2005 come into force. At that time, an emergency committee will be convened if and when needed to advise WHO on disease events of international public health importance.<sup>23</sup>

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22 WHO pandemic influenza draft protocol for rapid response and containment. Updated draft 30 May 2006. [http://www.who.int/csr/disease/avian\\_influenza/guidelines/protocolfinal30\\_05\\_06a.pdf](http://www.who.int/csr/disease/avian_influenza/guidelines/protocolfinal30_05_06a.pdf) [January 2007].

23 <http://www.who.int/mediacentre/news/notes/2006/np28/en/index.html> [January 2007].

DRAFT RESOLUTION ON SMALLPOX ERADICATION

In January 2007, the Executive Board of the WHO issued a draft resolution on “Smallpox eradication: destruction of variola virus stocks” for consideration by the World Health Assembly.<sup>24</sup> The draft resolution reaffirms the decisions of previous Health Assemblies that the remaining stocks of variola virus should be destroyed. The only official samples of the variola virus are held in two laboratories in the US (Centers for Disease Control and Prevention) and Russia (State Research Center of Virology and Biotechnology Vector), where they have been kept since the last case of smallpox infection was registered in 1978. However, the resolution notes that “unknown stocks of live variola virus might exist, and that the deliberate or accidental release of any smallpox viruses would be a catastrophic event for the global community.”<sup>25</sup>

The WHO has repeatedly decided that these samples should be destroyed, but has refrained from determining a fixed date for this target, as growing concerns about bioterrorism have led some countries to argue in favor of retaining the samples for defensive research purposes. In its efforts, the WHO is supported by the Advisory Committee on Variola Virus Research.

REPORT ON ENHANCING CAPACITY-BUILDING IN  
GLOBAL PUBLIC HEALTH

During its 60<sup>th</sup> session in November 2005, the UN General Assembly adopted resolution 60/35 on “Enhancing capacity-building in global public health”, recalling the health-related Millennium Development Goals, as well as its resolutions 58/3 of 27 October 2003 and 59/27 of 23

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24 WHO draft resolution on Smallpox Eradication: Destruction of Variola Virus Stocks, 29 January 2007, EB120.R8. [http://www.who.int/gb/ebwha/pdf\\_files/EB120/B120\\_R8-en.pdf](http://www.who.int/gb/ebwha/pdf_files/EB120/B120_R8-en.pdf) [February 2007].

25 Ibid.

November 2004.<sup>26</sup> The text urges member states to further integrate public health into their national economic and social development strategies, including through the establishment and improvement of effective public health mechanisms, in particular via networks of disease surveillance, response, control, prevention, treatment, and information exchange. It also emphasizes the importance of active international cooperation in the control of infectious diseases. In this context, the resolution encourages member states to participate actively in the verification and exchange of surveillance data concerning public health emergencies, in close cooperation with the WHO, and to foster the implementation of the International Health Regulations 2005.

Resolution 60/35 also requested the UN secretary-general to submit a report on the implementation of the resolution to the 61<sup>st</sup> session of the General Assembly in 2006, which was prepared by the WHO.<sup>27</sup> The report outlines the centrality of health to development and the status of global public health, as well as the need for establishing national and international capacities and cooperation in public health. In particular, the report describes the current state of key infectious diseases, as well as a set of major health issues that have a significant health, economic, social, and political impact on individuals and nations. The report further highlights a number of frameworks and strategies that can help prevent, detect, report, prepare for, and respond to outbreaks of disease. The WHO urgently recommends increased investment in health systems, including the health workforce, and has stated that the General Assembly should emphasize the importance of this topic for global security and development.<sup>28</sup>

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 26 Cf. A/RES/60/35, Resolution adopted by the General Assembly – Enhancing capacity-building in global public health. 30 November 2005. <http://daccessdds.un.org/doc/UNDOC/GEN/N05/489/70/PDF/N0548970.pdf> [January 2007].

27 Cf. A/61/383, Enhancing capacity-building in global public health, Note by the Secretary-General. 25 September 2006. <http://daccessdds.un.org/doc/UNDOC/GEN/N06/535/84/PDF/N0653584.pdf> [January 2007].

28 Ibid.

RESOLUTION ON DELIBERATE USE OF BIOLOGICAL AND  
CHEMICAL AGENTS TO CAUSE HARM

In May 2002, the World Health Assembly passed a resolution, called “*Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health*”. The UN Secretariat provided a background paper for consideration by the World Health Assembly.<sup>29</sup> The strategy developed by the WHO to respond to this resolution includes the following four main areas:<sup>30</sup>

- International preparedness: The objective is to respond to the increased number of requests by member states for technical assistance on national chemical and biological weapons preparedness and response programs and training. The WHO revised and published its guidance on the public health response to biological and chemical weapons in 2004 (see below). In addition, a global reserve of smallpox vaccine is being established in order to enhance global preparedness. One component of that reserve is a vaccine stock, managed by the WHO, for emergency use after confirmation of a case of smallpox.<sup>31</sup>
- Global alert and response: In the event of the intentional release of a biological agent, the WHO’s global alert and response activities and operational framework together with the technical resources of the GOARN would be vital for effective international containment efforts in responding to a potential use of biological agents.
- National preparedness: Guidelines have been developed for the assessment of national CBW health preparedness and response plans

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29 World Health Organization, Fifty-fifth World Health Assembly. Report by the Secretariat. Deliberate use of biological and chemical agents to cause harm. Public health response. A55/20, 16 April 2002. [http://www.who.int/gb/ebwha/pdf\\_files/WHA55/ea5520.pdf](http://www.who.int/gb/ebwha/pdf_files/WHA55/ea5520.pdf) [January 2007].

30 <http://www.who.int/csr/delibepidemics/en/index.html> [January 2007].

31 Implementation of resolution WHA55.16. Report by the Secretariat to the Executive Board. EB116/9, 4 May 2005. [http://www.who.int/gb/ebwha/pdf\\_files/EB116/B116\\_9-en.pdf](http://www.who.int/gb/ebwha/pdf_files/EB116/B116_9-en.pdf) [January 2007].



according to the recommendations provided by a group of experts that met in Rome, Italy, in 2002.<sup>32</sup> Recommendations were issued on the development of guidelines, expert networks, and training. These tools, structures, and processes are now being established. The implementation phase will include the provision of technical assistance to member states through multilateral and bilateral activities.<sup>33</sup> In addition, the WHO Biosafety Programme provides information, training, and advocacy for laboratory biosafety procedures and practices.

- Preparedness for selected diseases and intoxications: The objective is to contribute to international preparedness on specific diseases associated with biological weapons by (a) establishing global networks of experts and laboratories; (b) establishing standards and procedures, and disseminating information; and (c) by setting up and implementing training.

#### WHO GUIDANCE 2004: PUBLIC HEALTH RESPONSE TO BIOLOGICAL AND CHEMICAL WEAPONS

This second edition of the WHO's "Guidance on Public Health Response to Biological and Chemical Weapons" of 1970 was revised and published in 2004.<sup>34</sup> It includes information designed to guide preparedness for and response to the deliberate use of biological and chemical agents that affect health. The Guidance makes the following recommendations:

- .....
- 32 World Health Organization, Department of Communicable Disease, Surveillance and Response. Strengthening national preparedness & response to biological weapons: Report of a WHO consultation with the participation of the Food and Agriculture Organization of the United Nations and the Office International des Epizooties. Rome, Italy 6-8 March 2002. WHO/CDS/CSR/EPH/2002/18. <http://www.who.int/csr/delibepidemics/preparedness-romemeeting/en> [January 2007].
  - 33 Cf. <http://www.who.int/csr/delibepidemics/en/Preparednessproject.pdf> [January 2007].
  - 34 World Health Organization. Public health response to biological and chemical weapons: WHO guidance (2004). <http://www.who.int/csr/delibepidemics/biochemguide/en/print.html> [January 2007].

- Public health authorities, in close cooperation with other government bodies, should draw up contingency plans for dealing with a deliberate release of biological or chemical agents intended to harm civilian populations. These plans should be consistent with, or part of, existing plans for outbreaks of disease, natural disasters, large-scale industrial or transportation accidents, and terrorist incidents. In accordance with World Health Assembly resolution WHA55.16, adopted in May 2002, the WHO offers technical support to member states in developing or strengthening preparedness for, and response to, the deliberate use of biological and chemical agents to cause harm.
- Preparedness for deliberate releases of biological or chemical agents should be based on standard risk-analysis principles, starting with risk and threat assessments in order to determine the relative priority that should be accorded to such releases in comparison with other dangers to public health in the country concerned.
- Preparedness for deliberate releases of biological or chemical agents can be increased in most countries by strengthening the public health infrastructure, and particularly public health surveillance and response.
- Attention is drawn to the international assistance and support available to all countries that are member states of specialized organizations (e.g., in cases of the use or threat of use of chemical weapons, and for preparedness planning), and to state parties to the 1972 Biological and Toxin Weapons Convention (e.g., in cases of violation of the treaty). Countries should actively participate in these multilateral regimes.
- Prevention of the hostile exploitation of biotechnology goes beyond the security interests of individual states and poses a challenge to humanity generally. All member states should therefore implement the 1972 Biological and 1993 Chemical Weapons Conventions fully and transparently; propagate the ethical principles that form the basis for these conventions in education and professional training; and support measures that promote their implementation.





# THE EUROPEAN UNION (EU)<sup>1</sup>

## THE EU'S APPROACH TO THE BIOLOGICAL THREAT

Shortly after the attacks of 11 September 2001, the US was hit by a spate of bioterrorist incidents involving anthrax spores. These terrorist acts had a significant impact in Europe. Civil protection and security forces were put on alert, and public health systems had to deal with numerous items of mail containing powders suspected of being contaminated with anthrax. Although all anthrax alerts in Europe turned out to be hoaxes and no actual bioterrorist attack is known to have taken place in Europe, the pressure on European countries was high, as they quickly had to devote resources to preventing a new type of threat.

The international community and the EU responded to this new threat by adopting a variety of measures:<sup>2</sup>

- The declaration by the EU heads of state and the president of the European Commission at the Ghent extraordinary meeting on 19 October 2001<sup>3</sup> and the concluding statement of the Health Council of 15 November 2001<sup>4</sup> called on the Commission to develop an action program of cooperation on preparedness and response to biological and chemical agent threats;
- The Commission launched a series of coordinated actions in the fields of civil protection, health, enterprise (pharmaceuticals),

1 The survey on the EU was written by Isabelle Abele-Wigert, Center for Security Studies (CSS); and Sergio Bonin. It was reviewed by Germain Thinus, EU Directorate-General for Health and Consumer Protection (DG SANCO).

2 <http://europa.eu/scadplus/leg/en/cha/c11576.htm> [January 2007].

3 [http://ec.europa.eu/justice\\_home/news/terrorism/documents/conseil\\_gand\\_en.pdf](http://ec.europa.eu/justice_home/news/terrorism/documents/conseil_gand_en.pdf) [January 2007].

4 [http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/l\\_034/l\\_03420020205en00130016.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2002/l_034/l_03420020205en00130016.pdf) [January 2007].

research, nuclear, transport, and energy. These were reported in the communication on “Civil protection: state of preventive alert against possible emergencies”<sup>5</sup> issued on 28 November 2001. On 20 December 2002, the Council and the Commission also adopted a joint program to improve cooperation between member states in the evaluation of chemical, biological, radiological, and nuclear (CBRN) risks, in related alert and intervention issues, and in the field of research.<sup>6</sup>

- The anthrax attacks in the US highlighted the fundamental importance of ensuring the availability of sufficient medicine in the EU and of the capability of the industry to make good any shortcomings in production and supply. A joint task force of the Commission and the pharmaceutical industry was established in December 2001 to address issues of availability, production capability, storage, and distribution capacity for medicine that could be used in the event of a bioterrorist attack. No medical supplies have yet been stockpiled at the Community level. However, the task force of the Commission and the pharmaceutical industry, together with the member states, has highlighted the need to establish a Community stockpile of smallpox vaccines, antibiotics, and antiviral medication.
- The Commission also cooperates bilaterally with the World Health Organization (WHO) on a number of subjects related to countering the effects of the deliberate release of biological and chemical agents. Moreover, meetings between the Council, the Commission, and NATO have led to an exchange of documents on activities related to CBRN issues. These exchanges could serve as a basis for further cooperation on deliberate releases.

Furthermore, the EU’s Directorate-General for Health and Consumer Protection (DG SANCO) is participating in the Global Health Security Initiative (GHSI),<sup>7</sup> which calls for con-

5 [http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/com/2001/com2001\\_0707en01.pdf](http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/com/2001/com2001_0707en01.pdf) [January 2007].

6 <http://www.sussex.ac.uk/Units/spru/hsp/2002-1220%20Progress%20Report.pdf> [January 2007].

7 <http://www.ghsi.ca/>

certed global action to strengthen the public health response to the threats of international CBRN terrorism, as well as of a pandemic influenza. This initiative was launched in November 2001 at the G7+ Ministerial Meeting in Ottawa.

## PAST AND PRESENT INITIATIVES AND POLICIES

### PROGRAMME OF COOPERATION ON PREPAREDNESS AND RESPONSE TO BIOLOGICAL AND CHEMICAL AGENT ATTACKS (BICHAT)

On 17 December 2001, the Commission of the European Communities released a “Programme of Cooperation on Preparedness and Response to Biological and Chemical Agent Attacks”,<sup>8</sup> or “Health Security Programme”, with the overall aim of coordinating and supporting public health and health security preparedness as well as the response capacity and planning of the member states against attacks with biological and chemical agents.

As the EU is a border-free area, it is essential that appropriate arrangements be made to ensure prompt notification and exchange of information in the event of threats and attacks. The importance of joint action led to the establishment of the Health Security Committee (HSC) in October 2001, consisting of high-ranking representatives of the national ministries of health, to promote cooperation in countering bioterrorism. The Committee agreed on a program of cooperation on preparedness and response to biological and chemical agent attacks, code-named BICHAT, which comprises 25 activities grouped under four objectives:<sup>9</sup>

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8 Commission of the European Communities/Health & Consumer Protection Directorate-General. Programme of Cooperation on Preparedness and Response to Biological and Chemical Agent Attacks. Luxembourg, 17 December 2001, G/FS D(2001) GG. [http://ec.europa.eu/health/ph\\_threats/Bioterrorisme/bioterrorism01\\_en.pdf](http://ec.europa.eu/health/ph_threats/Bioterrorisme/bioterrorism01_en.pdf) [January 2007].

9 <http://europa.eu/scadplus/leg/en/cha/c11576.htm> [January 2007].

- Set up an alert and information exchange mechanism: This mechanism consists of the Health Security Committee (HSC), the Health Emergency Operations Facility (HEOF), and various rapid alert systems (RAS). The HSC is responsible for exchanging information on health-related threats, on preparedness and response plans, and on crisis management strategies. The alert and information exchange mechanism has been completed with the establishment of the HEOF, which provides member states and the Commission with an overview of pandemic and epidemic phenomena, related data and information, and measurements taken in response to health-related emergencies. HEOF has the following tools and systems at its disposal:<sup>10</sup>
  - Warning systems: The Early Warning and Response System (EWRS) for general communicable diseases threats; the RAS BICHAT for CBRN threats; and the RAS CHEM for chemical incidents and threats. The RAS BICHAT, responsible for notifications of incidents involving the deliberate release of biological and chemical agents, has been in operation since June 2002. The system links the members of the HSC and the Commission with operational contact points that are designated by member states to provide round-the-clock coverage for urgent recall in an emergency.
  - “Scanning the Horizon” tools: These tools allow for active searching of information about health threats using internet scanning tools that complement the early warning function of routine surveillance systems. In particular, this includes the Medical Intelligence System (MedISys),<sup>11</sup> which browses the internet for latest information on health mat-

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10 Cf. [http://ec.europa.eu/health/ph\\_threats/com/Influenza/HEOF.pdf](http://ec.europa.eu/health/ph_threats/com/Influenza/HEOF.pdf) [January 2007].

11 There are two editions of this document, a public and a restricted version. Public version: <http://medusa.jrc.it/>



ters every ten minutes. MedISys is based on the European Media Monitor (EMM).<sup>12</sup>

- Situational awareness tools: The restricted, web-based Health Emergency & Diseases Information System (HEDIS)<sup>13</sup> provides real-time updates from MedISys, updated situational maps, online questionnaires, activity logbooks, virtual meetings, access to relevant documents, discussion forums, and access to modeling applications in order to evaluate emerging crises and facilitate action plans and exchange.
- Supporting tools: This includes MATRIX, a web-based tool allowing member states to assess their vulnerability vis-à-vis specific biological and chemical agents, as well as adapted communication means (audio and video conferencing systems, satellite phones, etc.) and the Digital Mapping Archive (DMA),<sup>14</sup> which provides access to maps and satellite views.

In addition, the HEOF links these systems with other early-warning, alert, and response systems at the EU level, and coordinates appropriate Commission response efforts. The Commission's crisis management structure and overall rapid alert system is ARGUS, which is run by the EU Commission Secretariat-General.<sup>15</sup> The ARGUS system links all of the Community's rapid-alert systems and the HEOF with appropriate coordinating structures to ensure timely responses in case of emergency.

Other alert and response networks at the disposal of the Commission include: ECURIE, the RAS for radioprotection run by the Directorate-General for Transport and Energy (DG TREN); RASFF, the RAS for food and feed; ADNS, the RAS for animal

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12 <http://press.jrc.it/>

13 <http://hedis.jrc.it/>

14 <http://dma.jrc.it/>

15 Cf. Commission provisions on "ARGUS" general rapid alert system, 23 December 2005. COM(2005) 662 final. [http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/com/2005/com2005\\_0662en01.pdf](http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/com/2005/com2005_0662en01.pdf) [January 2007].

health; and EUROPHYT, the RAS for plant health, all run by DG SANCO. In addition, the Monitoring and Information Centre (MIC) of the Directorate-General for Environment (DG ENV) facilitates the mobilization of civil protection resources from the member states in the event of major emergencies.<sup>16</sup>

Moreover, Commission services are setting up crisis rooms, which are internally linked, with the aim of collecting and analyzing information in near-real time in the event of a disaster. Among them are the Directorates-General (DG) for External Relations (DG RELEX), for Transport and Energy (DG TREN), for Humanitarian Aid (DG ECHO), for Justice, Freedom and Security (DG JLS), and similar structures within HEOF and ARGUS.

- Create a capability for the detection and identification of biological and chemical agents: Detection of deliberate releases of biological agents depends primarily on member states' surveillance systems for monitoring the occurrence of infectious diseases. Coordination of these surveillance systems at EU level is conducted in line with Decision 2119/98/EC of 24 September 1998 on the surveillance and control of communicable diseases. Biological agents that are likely to be used in bioterrorism have already been prioritized on the basis of certain criteria (infectiousness, virulence, persistence in the environment, ease of manipulation and dissemination, etc.). In addition, Council Regulation (EC) No 1334/2000 lays down various lists of biological and chemical agents for which provisions linked to export control arrangements apply. Laboratory capacity continues to be insufficient in many member states.
- To create a database on medicine stocks and health services as well as a stand-by facility for providing medicines and health care specialists in case of an attack. As knowledge about bioterrorism agents and corresponding diseases is limited, it is important to

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16 <http://europa.eu/scadplus/leg/en/lvb/l28003.htm> [January 2007].

identify relevant experts in the EU and list them in a directory to be shared by the authorities of the member states. The EU's EudraPharm database provides information on all medical products that have been authorized for human or veterinary use in the EU.<sup>17</sup> It was launched in 2006 by the European Medicines Agency (EMA) under the responsibility of the Directorate-General for Enterprise and Industry (DG ENTR).<sup>18</sup>

- To draw up rules and disseminate guidance on the public health response to attacks and to coordinate the EU response as well as links with third countries and international organizations.

BICHAT has also developed a set of clinical guidelines for bioterror agents that may serve as the basis of guidelines for national authorities, and may also be used directly by clinicians, general practitioners, and specialists when confronted with patients infected with a deliberately released disease. Ten clinical guidelines have been written so far on anthrax, smallpox, botulism, tularemia, plague, viral hemorrhagic fevers, viral encephalitis, Q fever, brucellosis, glanders, and melioidosis. Nearly 50 pathogens are covered in the papers that are to follow. Most of these agents have been studied or used as biological warfare agents. Historical data is available for most of them.<sup>19</sup>

#### COMMUNICATION FROM THE COMMISSION ON COOPERATION IN THE EU ON PREPAREDNESS AND RESPONSE TO BIOLOGICAL AND CHEMICAL AGENT ATTACKS

On 2 June 2003, the Commission of the European Communities released a communication to the Council and the European Parliament on "Cooperation in the European Union on Preparedness and Response

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17 <http://eudrapharm.eu/>

18 Cf. <http://www.emea.eu.int/pdfs/general/direct/pr/45611906en.pdf> [January 2007].

19 [http://ec.europa.eu/health/ph\\_threats/Bioterrorisme/clin\\_guidelines\\_en.htm](http://ec.europa.eu/health/ph_threats/Bioterrorisme/clin_guidelines_en.htm) [January 2007].

to Biological and Chemical Agent Attacks”.<sup>20</sup> This communication deals with health-related aspects of the EU’s activities to counter bioterrorism. It describes the steps that have been taken by the EU’s health ministers and the Commission to strengthen health protection against deliberate releases of biological and chemical agents and their coordination efforts at the EU level. It refers to the problems and challenges of preparedness and response facing the health sector.

The communication also reports on the initiative launched to address the issue of the availability and stockpiling of medical supplies that are indispensable for mounting an effective response to bioterrorist attacks. It describes the issues involved and presents the results of the work carried out to date, the current situation, and perspectives for further work in this area. Brief reference is also made to measures in other policy areas and in particular food and water safety which are crucial for health protection. It concludes with an outline of the main features of the initiatives for international cooperation in this area.

#### COMMUNICATION FROM THE COMMISSION ON STRENGTHENING COORDINATION ON GENERIC PREPAREDNESS PLANNING FOR PUBLIC HEALTH EMERGENCIES AT EU LEVEL

On 28 November 2005, the Commission released a communication on generic preparedness planning for public health emergencies at the EU level.<sup>21</sup> The proliferation of disease-specific plans led the EU health ministers to request the Commission at their council meetings of 6 May 2003 and 2 June 2003 to develop and prepare a rationale for generic

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20 Commission of the European Communities. Communication from the Commission to the Council and the European Parliament on Cooperation in the European Union on Preparedness and Response to Biological and Chemical Agent Attacks. Brussels, 2.6.2003, COM (2003) 320 final. [http://europa.eu/eur-lex/en/com/cnc/2003/com2003\\_0320en01.pdf](http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0320en01.pdf) [January 2007].

21 Commission of the European Communities. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on generic preparedness planning for public health emergencies at EU level. Brussels, 28 November 2005, COM (2005) 605 final. [http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005\\_0605en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0605en01.pdf) [January 2007].

response and contingency plans for all sorts of public health emergencies. Such generic plans should involve medical counter-measures, such as diagnosis, isolation and treatment of cases, and the administration of vaccines and prophylactic drugs, but also public order measures, such as restriction of movement and border controls, civil protection measures such as rescue operations, the provision of food, water, shelter, and other essential items, market and trade measures to help stopping the spread of diseases. Also, infrastructure and equipment must be available and safely stored, while the officials in charge of implementing plans must be trained and protected through appropriate personal and collective means.

The overall goal of this communication is to help member states to develop their capacities in contingency planning and to take into account the EU dimension of such measures. The communication, together with the technical guidance document, provides the backbone for developing core elements of national plans and for addressing generically different types of health threats, whether anticipated (such as a pandemic influenza) or unexpected (such as a SARS-like epidemic), and aims at improving the interoperability of such plans. The key components that are addressed in the communication are:<sup>22</sup>

- Information management;
- Communications;
- Scientific advice;
- Liaison, command, and control structures;
- Preparedness of the health sector; and
- Preparedness in all other sectors and between them.

#### COMMUNICABLE DISEASE NETWORK

Communicable diseases represent a serious risk to human health, contributing to about one third of all deaths occurring globally. Communicable

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22 Ibid.

diseases do not respect national frontiers and can spread rapidly unless action is taken to combat them. The Network on Communicable Diseases started its work on responding to these issues in 1999.<sup>23</sup> The Communicable Diseases Network is building on work done with member states and consists of two pillars:

- **Surveillance:** Commission Decision 2000/96/EC specifies the list of communicable diseases to be placed progressively under EU-wide surveillance and the criteria for their selection. The network's main task is to monitor and track developments. Within that network, disease-specific networks have been created.<sup>24</sup> Decision 2000/96/EC has been amended by Decision 2003/542/EC of 17 July 2003 as regards the operation of dedicated surveillance networks.
- **Early Warning:** The second pillar of the network is an early-warning and response system to alert public health authorities in member states and the Commission to outbreaks with greater than national dimensions, so that a coordinated EU action may be initiated (Commission Decision 2000/57/EC).

To increase the comparability of the data from the different member states, the Commission published an important decision on 19 March

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23 Decision 2119/98/EC of the European Parliament and the Council.

24 The communicable diseases networks include the following entities: Basic Surveillance Network (BSN), European Antimicrobial Resistance Surveillance System (EARSS), European Influenza Surveillance Scheme (EISS), European Laboratory Working Group on Diphtheria (ELWGD), European Network for Diagnostics of Imported Viral Diseases (ENIVD), International surveillance network for the enteric infections (ENTER-NET), European Programme for Intervention Epidemiology Training (EPIET), Scientific Evaluation on the Use of Antimicrobial Agents in Human Therapy (ESAC), European Surveillance of Sexually Transmitted Infections (ESSTI), European Union Invasive Bacterial Infections Surveillance (EU IBIS), European bulletin on communicable disease (EUROSURVEILLANCE), European Centre for the Epidemiological Monitoring of AIDS (EUROHIV), Surveillance of tuberculosis in Europe (EUROTb), Surveillance Community Network for Vaccine Preventable Infectious Diseases (EUVAC.NET), The European Working Group for Legionella Infections (EWGLI), Hospitals in Europe Link for Infection Control through Surveillance (HELICS), and Inventory of Resources for Infectious Diseases in Europe (IRIDE). Cf. [http://ec.europa.eu/health/ph\\_threats/com/comm\\_diseases\\_networks\\_en.htm](http://ec.europa.eu/health/ph_threats/com/comm_diseases_networks_en.htm) [January 2007].

2002. This document, Decision 2002/253/EC, lays down case definitions for reporting communicable diseases to the community network.<sup>25</sup>

GUIDANCE DOCUMENT ON USE OF MEDICINAL PRODUCTS FOR  
TREATMENT AND PROPHYLAXIS OF BIOLOGICAL AGENTS THAT  
MIGHT BE USED AS WEAPONS OF BIOTERRORISM

At the request of the European Commission, the Directorate-General for Enterprise and Industry (DG ENTR), its Pharmaceuticals Unit, the European Medicines Agency (EMA), and its Committee for Proprietary Medicinal Products (CPMP) produced a guidance document on the use of medical products for treatment and prophylaxis of biological agents that might be used as weapons of bioterrorism.<sup>26</sup> The first version of the guidance appeared on 16 January 2002. On 25 July 2002, the document was amended to include information on nationally authorized vaccines and immunoglobulin for the prevention or post-exposure prophylaxis of some infections. This guidance document will be updated on a regular basis as appropriate.

## RESEARCH NETWORKS

The *R&D Expert Group on Countering the Effects of Biological and Chemical Terrorism* was set up in 2001 by the European Commission, following a decision of the Council of Research Ministers of 30 October 2001. The Expert Group acts under the responsibility of the Directorate-General for Research (DG RTD). It was formed by representatives from each of the member states coming from relevant government departments, such as defense, health, research, and civil protection. Particularly, the group has the mission to:<sup>27</sup>

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25 [http://ec.europa.eu/health/ph\\_threats/com/comm\\_diseases\\_en.htm](http://ec.europa.eu/health/ph_threats/com/comm_diseases_en.htm) [January 2007].

26 EMA/CPMP/4048/01. Guidance document on use of medicinal products for treatment and prophylaxis of biological agents that might be used as weapons of bioterrorism. <http://emea.europa.eu/htms/human/bioterror/bioterror.htm> [January 2007].

27 <http://ec.europa.eu/transparency/regexpert/detail.cfm?ref=759&l=all> [January 2007].

- Prepare an inventory of the research activities for countering the effects of biological and chemical terrorism that are currently in progress in the member states and at the EU level;
- Examine how these existing research activities can best be mobilized and coordinated; and to
- Identify research gaps and additional research that is needed in the short and long term.

In 2002, the R&D Expert Group prepared a report comprising the inventory of the research activities undertaken in the member states, on the basis of which several recommendations have been formulated as regards the coordination of research activities and the need for further research initiatives. In its working paper on this report (SEC (2002) 698), the Commission presented the main findings and recommendations of the Expert Group and formulated proposals on the way forward.<sup>28</sup> It has been decided that the Expert Group should continue its work on an ad-hoc basis in order to provide the Commission with a network and mechanism for determining the research efforts needed in the EU. The Commission continues to provide secretariat support to the R&D Expert Group, namely through a restricted website that is used as a mechanism for the exchange of information between experts.<sup>29</sup>

The *Innovative Measures for Protection against CBRN Terrorism (IMPACT)*<sup>30</sup> project is a security research program under the European Sixth Framework Programme (FP6) funded by the Directorate-General

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28 Cf. Commission of the European Communities. Commission Staff Working Paper. Report of the R&D Expert Group on countering the effects of biological and chemical terrorism. Brussels, 3 July 2002. SEC (2002) 698. <http://www.sussex.ac.uk/Units/spru/hsp/2002-0703%20Expert%20Group.pdf> [January 2007].

29 Commission of the European Communities. Communication from the Commission to the Council and the European Parliament on Cooperation in the European Union on Preparedness and Response to Biological and Chemical Agent Attacks. Brussels, 2 June 2003, COM (2003) 320 final. [http://europa.eu/eur-lex/en/com/cnc/2003/com2003\\_0320en01.pdf](http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0320en01.pdf) [January 2007].

30 <http://www.impact-eu.com/>



for Enterprise and Industry (DG ENTR). The objectives of the IMPACT project are to lay the foundations for an integrated European CBRN counterterrorism research and acquisition program and to validate, assess, and demonstrate innovative technological capabilities, operational concepts, and procedures to assist in developing preventive and suppressive crisis management tools. The approach is based on the following five pillars:

- Assessing the threat;
- Preventing an event;
- Protecting against an event;
- Respond to an event; and
- Recovering from an event.

The two-year project was concluded during a symposium in Brussels on 25 October 2006. The IMPACT project generated a limited set of planning scenarios and the design of a database of likely agents, actors, means of delivery, and potential targets. This information will be applied to review, design, and evaluate aspects involving CBRN counterterrorism efforts, such as operational concepts for first responders, CBRN detection systems, physical protection, and decontamination issues.<sup>31</sup>

The *MODELREL*<sup>32</sup> project is a European Sixth Framework Programme (FP6) initiated in 2004. It aims at establishing a robust and coordinated EU capability in modeling to help counter deliberate releases of biological agents as well as natural epidemics by informing public health policy and planning ahead of time and by providing the basis for a real-time modeling capability. Modeling allows for the prediction of the geographical and temporal spread of diseases. Specifically, *MODELREL*'s objectives are to:

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 31 [http://ec.europa.eu/enterprise/security/doc/impact\\_en.pdf](http://ec.europa.eu/enterprise/security/doc/impact_en.pdf) [January 2007].

32 [http://ec.europa.eu/health/ph\\_projects/2003/action2/action2\\_2003\\_03\\_en.htm](http://ec.europa.eu/health/ph_projects/2003/action2/action2_2003_03_en.htm) [January 2007].

- Establish a network among modeling (and other) experts in the EU for the above;
- Establish a forum where the data needs, assumptions, etc. of modeling can be assessed;
- Establish a system for sharing the modeling strategies and the specialized data required for the models, both before and during outbreaks; and to
- Establish a range of modeling strategies and results relevant to deliberate release issues based on agreed lists of potential agents (e.g., smallpox, anthrax, plague, etc.) and means of initial dispersion (airborne, inanimate vehicles such as foodstuffs, drinks, mail items).

The *European Network on Mathematical Modelling (NEMO)*<sup>33</sup> is a project launched in 2006 by the European Commission's Directorate-General for Health and Consumer Protection (DG SANCO) and the Joint Research Centre (DG JRC). The aim of NEMO will be to develop and improve mathematical models that can help to predict and simulate the spread and development of infectious diseases and their effect on society, as well as to analyze intervention scenarios. These mathematical models will be employed as an additional tool for the decision-making process in the public health sector. NEMO will be composed mainly of national experts in the field of mathematical modeling of the dynamics and control of diseases.

*Anthrax-EuroNet*,<sup>34</sup> funded by the European Sixth Framework Programme (FP6) under the priority heading of Scientific Support to Policies (SSP), brings together experts in public health, education, research, and industry. The project aims to:

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33 [http://www.jrc.ec.europa.eu/download/press/releases/20060716\\_pr\\_nemo\\_en.pdf](http://www.jrc.ec.europa.eu/download/press/releases/20060716_pr_nemo_en.pdf) [January 2007].

34 <http://www.anthraxeuro.net.org/>

- Establish a research network that will accelerate the development and production of a vaccine and therapeutic countermeasures against anthrax, as a preventive measure against bioterrorism;
- Standardize and harmonize screening and testing protocols for vaccines and therapeutic measures; and to
- Create a wider network (Euro-InfectNet) to provide Europe with a means of addressing current and future needs in protecting its citizens against the threats of other high-risk agents and emerging diseases that could be used for bioterrorism.

Anthrax-EuroNet's deliverables will contribute to the development of public health policies and future research priorities through both its networking and its coordinated research activities.

*Med-Vet-Net* is the European Network of Excellence for Zoonoses research.<sup>35</sup> It aims to develop a network of excellence at the European level for the integration of veterinary, medical, and food scientists in the field of food safety in order to improve research on the prevention and control of zoonoses, including food-borne diseases. The network will also take into account the public health concerns of consumers and other stakeholders throughout the food chain. *Med-Vet-Net* is funded within the EU Sixth Framework Programme (FP6) for five years.

*Med-Vet-Net* officially started its work on 1 September 2004. It comprises 16 partners across Europe and over 300 scientists. The institutes involved consist of eight veterinary, seven public health institutes, and one learned society from ten European countries. All partner institutes have also national responsibilities in the prevention and control of zoonoses. The scientific integration activities are organized into four thematic areas: epidemiology; host-microbe interactions; detection and control; and risk research.<sup>36</sup>

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35 <http://www.medvetnet.org/>

36 <http://www.medvetnet.org/cms/templates/doc.php?id=19> [January 2007].

## EU-WIDE EXERCISES

Exercise *New Watchman* was conducted by the UK's Health Protection Agency (HPA) over a two-day period on 19 and 20 October 2005. This exercise was the first of two EU exercises commissioned by the Directorate-General for Health and Consumer Protection (DG SANCO) to evaluate the ability and capabilities of member states, the European Economic Area states, and Switzerland – with involvement of the European Commission, the ECDC, the EMEA, Europol, and the WHO – to respond to a health-related crisis. Particularly, the *New Watchman* exercise was intended to evaluate the communication, responses, and interactions during a deliberate release of smallpox, as well as the implementation of respective contingency plans by member states.

The main issues identified during the *New Watchman* exercise were the following:

- Players revealed difficulties in considering both national and international issues fully as the scenario progressed, and there was an initial tendency to focus on national responses, prior to addressing international issues;
- There were many instances of severe communications difficulties, both technical and procedural;
- The Early Warning and Response System (EWRS) and the Rapid Alert System for Biological and Chemical Agents (RAS BICHAT) were used during the exercise, which provided an opportunity to assess their effectiveness. The EWRS was used as a decision support tool during the exercise – a purpose that it was not designed for. The system should be used strictly for the purpose it is intended for;
- The exercise showed that the roles and responsibilities of the European Commission and the ECDC need to be better understood by the member states;
- Most media requests were responded to at the national level without reference to, or consultation with, others; and

- It would be highly desirable to expand and improve the capability of the European Commission to coordinate a response to such a crisis.

The overall impression after New Watchman was that communication is a vital tool in enabling effective coordination across the EU. The exercise highlighted that the currently available systems intended to facilitate connectivity across the EU in a crisis need to be improved in order to make them more effective.<sup>37</sup> Among other things, experiences gathered during the New Watchman exercise led to the establishment of the Health Emergency and Diseases Information System (HEDIS), which was later used in the Common Ground exercise.

The *Common Ground* exercise was also conducted by the UK's Health Protection Agency (HPA) over a two-day period on 23 to 24 November 2005 and aimed at the evaluation of the ability and capabilities of member states, the European Economic Area states, and Switzerland to respond to an influenza pandemic. The exercise pursued similar objectives as the New Watchman exercise.

The main issues identified during Common Ground were the following:

- It was again noted that many participants focused on national issues rather than on international affairs during the early stages of the exercise;
- The Commission should consider further developing the generic response plan, taking into account the international dimension of the national response plans;
- The roles and responsibilities of the WHO, the European Commission, and the ECDC during a crisis response need to be better understood by the member states;

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 37 For this paragraph, cf. A Smallpox Exercise for the European Union – Exercise New Watchman. Final Report March 2006. [http://ec.europa.eu/health/ph\\_threats/com/watchman.pdf](http://ec.europa.eu/health/ph_threats/com/watchman.pdf) [January 2007]. The final report includes a more detailed list of recommendations.

- The EWRS was again used as a decision support tool during the exercise, in a role that it was not designed for. The exercise also showed that HEDIS needs further enhancement, and that it needs to be extended to include adequate decision support capacity and analytical tools;
- Participating states require adequate command and control centers with good systems for liaison with other states, the Commission, and partner agencies, as well as with international organizations, in particular the WHO;
- Cooperation could be enhanced in providing common, coordinated media themes;
- Further discussion is required to clarify the impact of border closures, specifically concerning the movement of drugs and vaccines when borders are closed; and
- The exercise showed that member states appeared somewhat reluctant to share vaccines and antivirals with each other.

There was a consensus that considerable improvements had been made in the month after the earlier New Watchman exercise, reflecting the willingness of participants to act rapidly. This allowed Common Ground to flow more easily, and improved the learning outcomes for the players. Again, the overall impression left by Common Ground was that communication is a vital tool in enabling effective coordination across the EU.<sup>38</sup>

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38 For this paragraph, cf. A Pandemic Influenza Exercise for the European Union – Exercise Common Ground. Final Report 27 March 2006. [http://ec.europa.eu/health/ph\\_threats/com/common.pdf](http://ec.europa.eu/health/ph_threats/com/common.pdf) [January 2007]. The final report includes a more detailed list of recommendations.

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

### HEALTH SECURITY COMMITTEE (HSC)

On the initiative of the European Commissioner for Health and Consumer Protection, the permanent Health Security Committee (HSC) of high-level representatives of the Ministries of Health from each member state was established in 2001. The core functions of the HSC are health-related preparedness and threat management.

The HSC's mission is to contribute to the strengthening of the EU's preparedness and response capability to public health threats, focusing on health security issues. HSC has the responsibility to exchange information on health-related threats and to share information on preparedness and response plans as well as on crisis management strategies. In addition, the HSC ensures rapid communication in case of health-related crises, and coordinates emergency activities at the EU level. In 2004, the HSC's mandate was extended to include support for Community work on influenza pandemic preparedness.<sup>39</sup>

Following a proposal by the Commission, the HSC agreed on 17 December 2001 on a program for cooperation on preparedness and response to biological and chemical agent attacks (BICHAT / Health Security Programme). The overall goal of the program is to improve cooperation between the member states with the aid of the Commission and to facilitate collaboration between the different national authorities involved in public health preparedness for bioterrorism.

In November 2006, the mandate of the HSC was prolonged for a transitional period until 2008, when a general review of the structures

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39 Commission of the European Communities. Communication from the Commission to the Council, on transitional prolongation and extension of the mandate of the Health Security Committee in view of a future general revision of the structures dealing with health threats at EU level. Brussels, 16 November 2006. COM (2006) 699 final. [http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006\\_0699en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2006/com2006_0699en01.pdf) [January 2007].

in the field of health threats will be completed. Until then, the HSC has the mission to:<sup>40</sup>

- Provide a forum at the European level for high-level representatives that coordinates information on inter-sectoral approaches and health security issues towards coordinated measures on the national level; and to
- Contribute to the improvement of the management of health risks, threats, and crises by addressing multi-sectoral and interdisciplinary questions. The HSC proposes best solutions, focusing on preparedness measures for CBRN threats as well as major health threats, such as a pandemic influenza, and follows up the work on generic preparedness planning.

HEALTH EMERGENCY OPERATIONS FACILITY (HEOF) /  
HEALTH THREAT UNIT

In May 2002, a 15-member strong Task Force was established by DG SANCO, comprising nine national experts seconded from different institutions in the EU countries and six commission officials. The task force's main objective was to implement the BICHAT program. In 2003, this task force was merged with the communicable diseases unit of DG SANCO and is now called *Health Threat Unit*.

Following the implementation of the BICHAT / Health Security Programme and the constitution of the Health Threat Unit, a facility incorporating a crisis room and a communication centre was installed in Luxembourg for the management of alerts and emergencies. It was regularly used for the exchange of information, notification of alerts, and the running of communication tests, and proved to be very effective in the handling of relevant communicable-diseases events. This showed the need for an enhancement of the role of this facility, its responsibility, as well as its technical possibilities, and led to the establishment of the

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40 Ibid.



Health Emergency Operations Facility (HEOF), where the Health Threat Unit is located.

The HEOF's task is to provide the Commission with an overview of pandemic and epidemic phenomena, related data and information, measures taken, and health-related information for better situational awareness. It also facilitates communication among crisis managers in member states and other associated countries, international health organizations, and health emergency professionals.<sup>41</sup> The HEOF should enable the Commission to "play a role" in the coordination and management of large-scale health related emergencies and biochemical terrorist attacks.<sup>42</sup>

Once fully established, the HEOF's early-warning and alert systems – as described in the initiatives section – should be capable of performing the following duties:<sup>43</sup>

- Provide member states with services to support them in handling health-related crises, epidemics, and biological and chemical terrorist attacks;
- Improve the European Commission's situational awareness by supplying health-related information;
- Build and share a knowledge base across the EU on experiences and ways to handle health-related emergencies;
- Bridging the activities of the EU health emergency management community and the international health emergency community;
- Liaising and facilitating communication and experience among subject matter experts, member states' organizations, the WHO, and other international organizations; and to

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 41 The HEOF network of communication includes the EU member states, the EEA countries (Iceland, Liechtenstein, and Norway), the candidate countries (Croatia and Turkey), the Global Health Security Initiative (Canada, Japan Mexico, the US, and the WHO), other rapid alert systems run by the Commission, EU agencies (ECDC; EMEA; EUROPOL), and the Commission's central crisis structure, ARGUS. Switzerland applied for official membership in 2006. Cf. [http://ec.europa.eu/health/ph\\_threats/com/Influenza/HEOF.pdf](http://ec.europa.eu/health/ph_threats/com/Influenza/HEOF.pdf) [January 2007].

42 [http://ec.europa.eu/health/ph\\_threats/com/Influenza/HEOF.pdf](http://ec.europa.eu/health/ph_threats/com/Influenza/HEOF.pdf) [January 2007].

43 Ibid.

- Provide services for the coordination of the member states' command-and-control activities during health emergency operations at the Community level, aiming at providing a response capability for health emergencies affecting the whole Community and ensuring consistency in the measures taken by the individual states.

The HEOF links and coordinates its rapid alert systems, such as RAS BICHAT, and the other tools at its disposal with the general RAS of the Commission, with ARGUS, and with similar systems of the various Directorates-General, as well as with the Health Security Committee (HSC), the European Centre for Disease Prevention and Control (ECDC), the EU member states, the World Health Organization (WHO), and with the members of the Global Health Security Initiative (GHSI). The HEOF is thus at the center of the EU's health emergency coordination mechanism. The structure that is now in place is available on a 24/7 basis to facilitate cooperation and coordination.

#### EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL (ECDC)

In spring of 2004, the European Parliament and Council passed a decision creating the European Centre for Disease Prevention and Control (ECDC)<sup>44</sup> in order to strengthen Europe's defenses against infectious diseases.

The ECDC, located in Solna, Sweden, works in partnership with national health surveillance bodies across Europe to strengthen and develop continent-wide disease surveillance and early warning systems. By working with experts based in the national bodies, the ECDC pools Europe's health knowledge, so as to develop authoritative scientific opinions about the risks posed by new and emerging infectious diseases. The mission of the ECDC is defined as follows:<sup>45</sup>

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44 <http://www.ecdc.eu.int/>

45 <http://www.ecdc.eu.int/activities.html> [January 2007].

- In order to enhance the capacity of the Community and the member states to protect human health through the prevention and control of human disease, the ECDC shall identify, assess, and communicate current and emerging threats to human health from communicable diseases;
- In cases of other outbreaks of illness of unknown origin, which may spread within or to the Community, the ECDC shall act on its own initiative until the source of the outbreak is known. In the case of an outbreak that is clearly not caused by a communicable disease, the ECDC shall act only in cooperation with the competent authority and upon request from that authority; and
- In pursuing its mission, the ECDC shall fully take into account the responsibilities of the member states, the Commission, and other Community agencies, as well as the responsibilities of international organizations active within the field of public health, in order to ensure comprehensiveness, coherence, and complementarity of action.

The ECDC encompasses a Unit for Scientific Advice, which provides technical and scientific advice; a Unit for Surveillance & Communication, which is gradually taking over responsibility for the surveillance of communicable diseases at the EU level from the designated surveillance networks; and a Unit for Preparedness & Response, which keeps track of emerging health threats inside and outside the EU and provides rapid risk assessment.<sup>46</sup> In addition, the Advisory Forum brings together senior scientists from national public health institutes, underpinning the quality of science. The Management Board, which brings together senior health policy makers from national administrations and the European Commission as well as representatives of the European Parliament, sets the strategic priorities and approve the ECDC's budget and work program.

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46 [http://www.ecdc.eu.int/About\\_us/Organisation.html](http://www.ecdc.eu.int/About_us/Organisation.html) [January 2007].

The ECDC regularly issues a communicable disease threats report (CDTR), which is a tool for European epidemiologists in charge of gathering intelligence on epidemics in their national surveillance center. It includes information gathered from multiple sources regarding potential communicable disease threats that may affect the EU.<sup>47</sup>

### EUROPEAN MEDICINES AGENCY (EMA)

The European Medicines Agency (EMA)<sup>48</sup> is a decentralized body of the EU with headquarters in London. Its main responsibility is the protection and promotion of public and animal health through the evaluation and supervision of medicines for human and veterinary use, and the coordination of such activities throughout the EU.

The EMA's Committee for Medicinal Products for Human Use (CHMP) is responsible for preparing the agency's opinions on all questions concerning medicinal products for human use, in accordance with Regulation (EC) No 726/2004. Its Biologics Working Party (BWP) provides recommendations to the EMA scientific committees on all quality and safety aspects that are directly or indirectly related to biological and biotechnological medicinal products. The Vaccine Working Party (VWP) issues recommendations to the CHMP on all matters relating directly or indirectly to vaccines. In 2006, the VWP produced or revised guidance documents on the development or authorization of vaccines against pandemic influenza, smallpox, and (re-) emerging diseases such as SARS, as well as pathogens likely to be used in bioterrorism, and others.<sup>49</sup>

The EMA contributes to the EU's public health strategies. In 2005, it released for consultation the "EMA pandemic influenza crisis management plan for the evaluation and maintenance of pandemic influenza vaccines and antivirals", which encourages companies to de-

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47 [http://www.ecdc.eu.int/Activities/Epidemic\\_Intelligence.html](http://www.ecdc.eu.int/Activities/Epidemic_Intelligence.html) [January 2007].

48 <http://www.emea.eu.int/>

49 <http://www.emea.eu.int/pdfs/human/vwp/35525205en.pdf> [January 2007].

velop a pandemic influenza vaccine and facilitates the evaluation and approval process.<sup>50</sup>

In 2003, the EMEA produced a “Guidance Document on the Use of Medicinal Products for the Treatment of Patients Exposed to Terrorist Attacks with Chemical Agents” on behalf of the Directorate-General for Enterprise and Industry (DG ENTR). The document includes information on treatment and prophylaxis for selected chemical warfare agents and toxins as well as on decontamination issues.<sup>51</sup>

### EUROPEAN FOOD SAFETY AUTHORITY (EFSA)

The European Food Safety Authority (EFSA)<sup>52</sup> was established by the European Parliament in 2002 following a series of food scares in the 1990s. It is tasked with assessing and communicating risks regarding the safety of food and animal feed. EFSA’s Scientific Committee, its scientific expert panels, and other expert groups provide risk assessments on all matters linked to food and feed safety, including animal health and welfare and plant protection.<sup>53</sup>

Specifically, the Expert Panel on Biological Hazards deals with questions on biological hazards relating to food safety and food-borne diseases, including food-borne zoonoses and transmissible spongiform encephalopathy, microbiology, food hygiene, and waste management. The Panel on Animal Health and Welfare deals with all aspects of animal health and animal welfare, primarily relating to food production. The Panel on Contaminants in the Food Chain deals with contaminants in food and animal feed and associated areas, and undesirable substances. The Panel on Genetically Modified Organisms deals with questions

50 EMEA (2006): Annual Report 2005. 9 March 2006. <http://www.emea.eu.int/pdfs/general/direct/emeaar/AnnualReport2005.pdf> [January 2007].

51 EMEA (2003): Guidance Document on the Use of Medicinal Products for the Treatment of Patients Exposed to Terrorist Attacks with Chemical Agents. London, 25 April 2003. <http://www.emea.europa.eu/pdfs/human/chemicalterrorism/125503en.pdf> [January 2007].

52 <http://www.efsa.europa.eu/>

53 [http://www.efsa.europa.eu/en/about\\_efsa.html](http://www.efsa.europa.eu/en/about_efsa.html) [January 2007].

related to genetically modified organisms that are deliberately released into the environment, and with genetically modified food and feed, including derived products.<sup>54</sup>

EUROPEAN AGENCY FOR SAFETY AND HEALTH AT WORK  
(EU-OSHA)

The European Agency for Safety and Health at Work (EU-OSHA)<sup>55</sup> was set up in 1996 in order to collect, analyze, and promote occupational safety and health related information. The agency's mission is to make Europe's workplaces safer, healthier, and more productive, and in particular to promote an effective workplace prevention culture.

As such, it is responsible – in close collaboration with national focal points – for the safety of workplaces involving dangerous substances and for best practices in the field of biosafety. This includes work in biotechnological establishments, in laboratories, and in the health care sector in general, as well as research activities on biological and other agents. Of particular importance in this respect is Directive 2000/54/EC of the European Parliament and the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work.<sup>56</sup>

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54 Cf. <http://www.efsa.europa.eu/en/science.html> [January 2007].

55 <http://osha.europa.eu/>

56 Cf. [http://europa.eu.int/smartapi/cgi/sga\\_doc?smartapi!celexapi!prod!CELEXnumdoc&clg=EN&numdoc=300L0054&model=guichett](http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&clg=EN&numdoc=300L0054&model=guichett) [January 2007].







# NORTH ATLANTIC TREATY ORGANISATION (NATO)<sup>1</sup>

## NATO'S APPROACH TO THE BIOLOGICAL THREAT

The proliferation of chemical, biological, radiological, and nuclear (CBRN) weapons and their means of delivery are a matter of serious concern for NATO and widely recognized as a growing international security problem, both in terms of the implications for interstate conflict and with respect to the potential use of such weapons by terrorist groups. As part of their broad approach to security, NATO allies support non-proliferation regimes, both conventional and non-conventional, and are thus pursuing a two-pronged political and defense-related approach against the proliferation of CBRN weapons and their delivery platforms. Despite welcome progress in strengthening international non-proliferation regimes, major challenges remain with respect to proliferation. The alliance recognizes that proliferation can occur despite efforts to prevent it and can pose a direct military threat to the populations, territory, and forces of alliance members.

Some states, including some on NATO's periphery and in other regions, sell, have acquired, or are trying to acquire CBRN weapons and delivery platforms. Other, non-state actors have also shown the potential to create and use some of these weapons. Alliance strategy and force structure do not include a chemical or biological warfare capability. Allies support universal adherence to the relevant disarmament regimes.<sup>2</sup>

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1 The survey on NATO was written by Isabelle Abele-Wigert, Center for Security Studies (CSS); with contributions by Sergio Bonin. It was reviewed by Ted Whiteside and Andie da Ponte, NATO WMD Centre.

2 NATO Handbook, updated 17 June 2004. <http://www.nato.int/docu/handbook/2001/hb0601.htm> [January 2007].

## PAST AND PRESENT INITIATIVES AND POLICIES

### NATO'S NUCLEAR, BIOLOGICAL AND CHEMICAL DEFENCE INITIATIVES

The NATO Nuclear, Biological and Chemical Defence Initiatives were developed by NATO's Senior Defence Group on Proliferation (DGP) and endorsed by defense ministers in June 2002.<sup>3</sup> To improve its defense against a CBRN threat, NATO has completed the preparation of five nuclear, biological, and chemical (NBC) defense initiatives, which were presented to heads of state and government at the Prague summit in November 2002. These initiatives were designed to serve as a first step in addressing the most critical deficiencies in NATO's CBRN defenses. These initiatives will be developed over the next years and will emphasize multinational participation and the rapid fielding of enhanced capabilities. The initiatives include:

- A nuclear, biological, and chemical event response team;
- A deployable analytical laboratory;
- A biological and chemical defense stockpile;
- Enhanced nuclear, biological, and chemical training; and
- A disease surveillance system.

### PREPARING FOR OPERATIONS IN A CBRN ENVIRONMENT

NATO continues to create and improve standard agreements that will govern NATO's operations in a CBRN environment. These agreements guide all aspects of preparation, ranging from standards for disease surveillance to rules for restricting troop movements after an attack with biological weapons. Such standards are linked to national force goals regarding protective and detection equipment, thereby ensuring interoperability between NATO forces. In addition, the alliance conducts

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3 <http://www.nato.int/docu/comm/2002/0211-prague/exhibition/nmbcdi.pdf> [January 2007].

many training exercises and senior-level seminars that are designed to test interoperability and prepare NATO leaders and forces for operations in an environment involving CBRN weapons.

The alliance is actively engaged in planning for medical emergencies. In the event of a CBRN attack, national medical services would react alongside civil emergency planners to quickly evacuate and attend to casualties.<sup>4</sup>

### SCIENCE PROGRAMS

Many NATO science programs focus on the civilian side of NBC technology. Working alongside partners, areas of research include the decommissioning and disposal of mass casualty weapons and their components, the safe handling of materials, techniques for arms control implementation, and the detection of agents. In addition, these programs seek to contribute to a better awareness of CBRN issues. A NATO-Russia workshop on the social and psychological consequences of CBRN terrorism was conducted in 2002; other relevant workshops are planned. A joint NATO-Russia Advisory Group has been established to assess the potential impact of CBRN terrorism.<sup>5</sup>

## ORGANIZATIONAL OVERVIEW – ROLES AND RESPONSIBILITIES

### NATO'S MULTINATIONAL CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR DEFENCE BATTALION

The NATO Multinational Chemical, Biological, Radiological and Nuclear Defence Battalion will be a high readiness, multi-national, multi-functional battalion that is able to deploy quickly to participate

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4 <http://www.nato.int/issues/wmd/index.html> [January 2007].

5 Ibid.

in the full spectrum of NATO missions wherever NATO requires. At the Prague summit in November 2002, NATO heads of state and government endorsed the implementation of five CBRN initiatives to enhance the alliance's defense capabilities against mass casualty weapons. The North Atlantic Council, in June 2003, decided to further enhance and take forward these initiatives by forming a Multinational CBRN Defence Battalion.

The mission of the CBRN Defence Battalion is to provide a credible counter-CBRN capability, primarily to deployed NATO joint forces and commands. The CBRN Defence Battalion will be capable of conducting the following tasks:

- CBRN reconnaissance operations;
- Identification of CBRN substances;
- Biological detection and monitoring operations;
- Providing CBRN assessments and advice to NATO commanders;
- CBRN decontamination operations.<sup>6</sup>

#### GROUPS ON PROLIFERATION WITHIN NATO

The alliance's objectives in the area of non-proliferation efforts are shaped by two major committees at NATO Headquarters. The Senior Politico-Military Group on Proliferation (SGP) addresses the political questions related to the spread of CBRN weapons; the Senior Defence Group on Proliferation (DGP) focuses on the defense aspects of proliferation. The Joint Committee on Proliferation provides coordinated reports to NATO leaders on the politico-military and defense aspects of proliferation.<sup>7</sup>

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6 <http://www.nato.int/shape/issues/cbrndb/index.htm> [January 2007].

7 <http://www.nato.int/issues/wmd/index.html> [January 2007].

## WEAPONS OF MASS DESTRUCTION CENTRE

The Weapons of Mass Destruction Centre is the focal point of the alliance's expertise and efforts to combat the proliferation of CBRN weapons and their means of delivery. Opened in May 2000, it comprises an interdisciplinary team with expertise in chemical weapons, biological agents, ballistic missiles, force protection, intelligence, and political aspects of arms control and non-proliferation regimes. The WMD Centre supports the work of the DGP, the SPG, and the Joint Committee on Proliferation. Overall, the center is responsible for integrating and overseeing all aspects of NATO's efforts on CBRN weapons.<sup>8</sup>

EURO-ATLANTIC DISASTER RESPONSE COORDINATION CENTRE  
(EADRCC)

The Euro-Atlantic Disaster Response Coordination Centre (EADRCC)<sup>9</sup> was created in 1998 for coordinating the disaster relief efforts of the member countries of the Euro-Atlantic Partnership Council (EAPC) in case of natural or technological disasters in the EAPC geographical area. In NATO's "Ministerial Guidance for Civil Emergency Planning 2005–2006", the priorities of the EADRCC are described as follows: To maintain the ability to deal with natural and technological disasters; to continuously improve its ability to respond rapidly to national requests for assistance; and to help protect against and deal with the consequences of a terrorist incident, including attacks involving CBRN weapons.<sup>10</sup>

In October 2005, a CBRN consequence management field exercise was organized by the EADRCC in Ukraine, in cooperation with the Organisation for the Prohibition of Chemical Weapons (OPCW) and the Security Service of Ukraine.<sup>11</sup>

8 <http://nids.hq.nato.int/docu/facts/2000/wmd.htm> [December 2006].

9 <http://www.nato.int/eadrcc/home.htm> [December 2006].

10 NATO/EAPC Unclassified. Ministerial Guidance for Civil Emergency Planning 2005–2006, 17 January 2005.

11 <http://www.nato.int/eadrcc/2005/ukraine/index.html> [December 2006].



# THE INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC)<sup>1</sup>

## THE ICRC'S APPROACH TO THE BIOLOGICAL THREAT

The ICRC<sup>2</sup> has undertaken a number of activities around the world as part of its initiative on “Biotechnology, Weapons and Humanity”. This involves dialog centered on the following topics: First of all, the risks associated with the potential for hostile use of advances in life sciences and biotechnology; second, the pertinent rules of international and national laws prohibiting and preventing poisoning and the deliberate spread of diseases; and third, the responsibilities of the many different players to reduce the risks to a minimum. The initiative is based on the assumption that in an increasingly interconnected world, awareness and preventive action are required at every level of society to help reduce the risk of technology developed to benefit humanity being used for hostile purposes.

## PAST AND PRESENT INITIATIVES AND POLICIES

### INITIATIVE ON BIOTECHNOLOGY, WEAPONS AND HUMANITY

The ICRC initiative on “Biotechnology, Weapons and Humanity” was prompted by the need to reduce the risk of biotechnology being used to the detriment of humanity. The core of the ICRC initiative is an appeal to governments, the scientific community, the military, industry,

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1 The survey on the ICRC was written by Isabelle Abele-Wigert, Center for Security Studies (CSS); with contributions by Sergio Bonin. It was reviewed by Robin Michael Coupland, International Committee of the Red Cross (ICRC).

2 <http://www.icrc.org/>

and civil society that was launched on 25 September 2002. Prior to the public launch of this appeal, government and independent experts met in Montreux, Switzerland, to discuss issues in the fields of biotechnology, biological weapons, international law, ethics, and social responsibility.<sup>3</sup> A Declaration on Biotechnology, Weapons and Humanity was also sent to governments together with proposals on a range of measures that could reduce the potential for biotechnology to be put to hostile uses.<sup>4</sup>

Since the launch of the appeal, the ICRC has been working with actors in the life sciences to promote awareness of the norms against poison and the deliberate spread of disease and the need for preventive action, in conjunction with their responsibilities.<sup>5</sup> The ICRC has found that actors in many medical and scientific institutions, whether academic or in industry, generally lack awareness of the risks of hostile use, or of existing rules that prohibit such use. However, these are the very actors that have primary legal and ethical responsibilities to minimize such risks. This situation was a factor in the ICRC's decision to launch its public appeal in September 2002.<sup>6</sup>

### THE SUBSTANCE OF THE APPEAL ON BIOTECHNOLOGY, WEAPONS AND HUMANITY

On 25 September 2002, as a result of the meeting of governments and independent experts in Montreux, Switzerland, the ICRC released its appeal to all political and military authorities to:<sup>7</sup>

- .....
- 3 On 23 and 24 September 2002, the ICRC convened a meeting in Montreux, Switzerland, on "Biotechnology, Weapons and Humanity." This meeting brought together government and independent experts to discuss concerns related to the fields of biotechnology, biological weapons, disarmament law, international humanitarian law, ethics, and social responsibility. <http://www.icrc.org/web/eng/siteeng0.nsf/html/5TFGZZ?OpenDocument> [December 2006].
  - 4 ICRC. *Biotechnology, Weapons and Humanity. An informal meeting of government and independent experts. Montreux, Switzerland / 23-24 September 2002. Summary Report.* <http://www.icrc.org/Web/eng/siteeng0.nsf/html/5VDJ7S> [January 2007].
  - 6 <http://www.icrc.org/Web/eng/siteeng0.nsf/html/5VDJAF?OpenDocument> [December 2006].
  - 7 <http://www.icrc.org/Web/eng/siteeng0.nsf/htmlall/5EAMTT> [January 2007].



- Become parties to the 1925 Geneva Protocol and the 1972 Biological Weapons Convention, if they have not already done so; to encourage non-party states to join these treaties, and to lift reservations on use to the 1925 Geneva Protocol;
- Resume with determination efforts to ensure faithful implementation of these treaties and develop appropriate mechanisms to maintain their relevance in the face of scientific developments;
- Adopt stringent national legislation, where it does not yet exist, for implementation of the 1925 Geneva Protocol and the 1972 Biological Weapons Convention, and to enact effective controls on biological agents with potential for abuse;
- Ensure that any person who commits acts prohibited by the above instruments is prosecuted;
- Undertake actions to ensure that the legal norms prohibiting biological warfare are known and respected by members of armed forces;
- Encourage the development of effective codes of conduct by scientific and medical associations and by industry to govern activities and biological agents with potential for abuse; and to
- Enhance international cooperation, including through the development of greater international capacity to monitor and respond to outbreaks of infectious disease.

Moreover, the ICRC appeals to the scientific and medical communities and to the biotechnology and pharmaceutical industries to:

- Scrutinize all research with potentially dangerous consequences and to ensure it is submitted to rigorous and independent peer review;
- Adopt professional and industrial codes of conduct aimed at preventing the abuse of biological agents;
- Ensure effective regulation of research programs, facilities, and biological agents that may lend themselves to misuse, as well as supervision of individuals with access to sensitive technologies; and to

- Support enhanced national and international programs to prevent and respond to the spread of infectious diseases.

In 2002, the ICRC also urged states to adopt at a high political level an international “Declaration on Biotechnology, Weapons and Humanity” containing a renewed commitment to existing norms and specific commitments to future preventive action.<sup>8</sup> Initial discussions with states in 2004 showed that there was no consensus about the best timing of such an initiative at the international level, and therefore it has not been further pursued.

#### THE INTERNATIONAL MOVEMENT OF THE RED CROSS AND RED CRESCENT ON BIOTECHNOLOGY, WEAPONS AND HUMANITY

The Council of Delegates of the International Red Cross and Red Crescent Movement met in Geneva from 20 November to 2 December 2003. In preparation for the 28th International Conference of the Red Cross and Red Crescent and as part of the proposed Agenda for Humanitarian Action, National Red Cross and Red Crescent Societies were also urged to promote the objectives of the Appeal on Biotechnology, Weapons and Humanity by promoting it on a national level with key target groups.<sup>9</sup>

#### OUTREACH TO THE SCIENTIFIC COMMUNITY

Through specific roundtables organized in London, Moscow, and Kuala Lumpur, scientific institutions have been engaged in dialog about scientists’ responsibilities to prevent the hostile use of advances in life sciences and biotechnology. The ICRC has published a document aimed at all stakeholders in the life sciences on “Preventing Hostile Use of the Life Sciences: from Ethics and Law to Best Practice”.<sup>10</sup> The objective

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8 <http://www.icrc.org/Web/eng/siteeng0.nsf/html/5EAMTT?OpenDocument> [January 2007].

9 <http://www.icrc.org/web/eng/siteeng0.nsf/htmlall/5wzktk?opendocument> [January 2007].

10 <http://www.icrc.org/web/eng/siteeng0.nsf/htmlall/bwh/> [January 2007].

is to build a bridge from pertinent ethics and laws intended to prevent poisoning and deliberate spread of infectious disease to best practices within the life science community.

A MODEL LAW: THE BIOLOGICAL AND TOXIN WEAPONS  
CRIMES ACT

In September 2005, the ICRC drafted model legislation<sup>11</sup> in view of the fact that domestic implementation of the Biological and Toxin Weapons Convention (BTWC) has been relatively weak, and in response to a growing number of requests by state parties to the International Committee of the Red Cross (ICRC) for assistance in fulfilling their obligations under the BTWC. The proposed model law is intended for states with a common law legal tradition, although states with other legal traditions will also likely find it of interest. In this model law, the main emphasis is on the prohibition, backed up by penal sanctions, of the weapons and acts defined in the 1972 BTWC and the 1925 Geneva Protocol.

The legislation was drawn up jointly by the ICRC and the Verification Research, Training and Information Centre (VERTIC).<sup>12</sup>

.....  
11 <http://www.icrc.org/Web/eng/siteeng0.nsf/html/review-859-p573/> [January 2007].

12 <http://www.vertic.org/>



# THE G8 GROUP<sup>1</sup>

## PAST AND PRESENT INITIATIVES AND POLICIES

### GLOBAL HEALTH SECURITY INITIATIVE (GHSI) / OTTAWA INITIATIVE

A meeting held in Ottawa on 7 November 2001 brought together the health ministers from the G7 group of countries, the health minister of Mexico, and the European Commission's representative with responsibility for Health and Consumer Protection. The attendees at the meeting agreed on a concerted global action initiative to strengthen the public health response to the threat of international terrorism using non-conventional weapons.

The Global Health Security Initiative (GHSI)<sup>2</sup> is an informal, international partnership of like-minded countries to strengthen health preparedness and the global response to threats of biological, chemical, radiological, and nuclear terrorism (CBRN) as well as pandemic influenza. The World Health Organization (WHO) is a technical advisor to the GHSI. The GHSI is not intended to replace, overlap, or duplicate existing fora or networks.

Ministers called for concerted global action to strengthen public health preparedness and the response to the threat of international CBRN terrorism. They agreed to forge a partnership for the global protection of public health and security, and to work together in the following areas:<sup>3</sup>

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1 The survey on the G8 Group was written by Isabelle Abele-Wigert, Center for Security Studies (CSS); with contributions by Sergio Bonin.

2 <http://www.ghsi.ca/>

3 <http://www.ghsi.ca/english/background.asp> [January 2007].

- To explore joint cooperation in procuring vaccines and antibiotics;
- To engage in a constructive dialog regarding the development of rapid testing and research into variations of vaccines;
- To further support the World Health Organization's (WHO) disease surveillance network as well as the WHO's efforts to develop a coordinated strategy for containing disease outbreaks;
- To share emergency preparedness and response plans, including contact lists, and consider joint training and planning;
- To agree on a process for international collaboration on risk assessment and management and a common language for risk communication;
- To improve linkages among laboratories, including level-four laboratories, in those countries that have them;
- To undertake close cooperation on preparedness and response to radiological, nuclear, and chemical events; and
- To share surveillance data from national public health laboratories and information on actual or imminent contamination of food and water supplies.

The ministers established a Global Health Security Action Group (GHSAG) of senior officials to develop and implement concrete actions to improve global health security. The GHSAG also serves as a rapid communications and response network in the event of a crisis. The current GHSI Working Groups/Networks are:<sup>4</sup>

- The Risk Management and Coordination Working Group;
- The Pandemic Influenza Working Group;
- The Working Group on Chemical Events; and
- The Global Health Security Laboratory Network.

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4 Ibid.

In addition, projects are under way in the following areas:

- Field Epidemiology and Outbreak Investigation;
- Public Health Aspects of Radiological and Nuclear Threats;
- Research Collaboration; and
- Capacity Building and Training for Emerging Infectious Diseases.

#### G8 GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION (2002)

At the G8 Summit of 2002 in Kananaskis, Canada, the G8 leaders agreed on a series of principles and priorities in the fight against terrorism. In their “G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction” they call on all countries to join them in commitment to principles to prevent terrorists or those that harbor them from acquiring or developing nuclear, chemical, radiological, or biological weapons, as well as missiles and related materials, equipment, and technology.<sup>5</sup>

#### G8 ACTION PLAN ON NONPROLIFERATION (2004)

Participants at the 2004 summit of the G8 at Sea Island announced a wide-ranging Action Plan on Non-Proliferation. It highlights a wide range of areas of work for the G8. One chapter deals with “Defending Against Bioterrorism”: The G8 Group commits itself to the adoption of concrete national and international steps designed to expand or, where necessary, initiate new bio-surveillance capabilities to detect bioterror attacks against humans, animals, and crops; to improve their prevention and response capabilities; to increase the protection of the global food supply; and to respond to, investigate, and mitigate the effects of alleged uses of biological weapons or suspicious outbreaks of disease. Members also seek to make good on the commitments they made at

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5 <http://www.g8.gc.ca/2002Kananaskis/globpart-en.asp> [January 2007].

the 5th Review Conference of the BTWC. Its provisions are to be fully implemented, including enactment of criminal legislation. The G8 group strongly urges all non-parties to join the BTWC promptly.<sup>6</sup>

#### GLENEAGLES STATEMENT ON NON-PROLIFERATION (2005)

At the summit at Gleneagles in 2005, the G8 discussed counter-proliferation and issued a statement in which they:<sup>7</sup>

- Asserted that the proliferation of mass casualty weapons and their delivery systems, together with international terrorism, remained the greatest threats to international peace and security;
- Reaffirmed their commitments and asked all states to fully uphold their obligations to international arms control, disarmament, and non-proliferation norms; and
- Emphasized their determination to meet proliferation challenges decisively through national efforts and effective multilateralism.

Addressing biological threats specifically, the signatories:<sup>8</sup>

- Reaffirmed their commitment to strengthening their defenses against biological threats. They pledged to continue efforts to address biological threats and support the work of other relevant international groups;
- Encouraged state parties to participate wholeheartedly in the ongoing work program that will discuss the content, promulgation, and adoption of codes of conduct for scientists; and

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6 G8 Action Plan on Nonproliferation, 2004. <http://www.fco.gov.uk/Files/kfile/Art%2016%20Non-Proliferation,0.pdf> [January 2007].

7 <http://www.g8.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&cc=Page&cid=1097073665785> [January 2007].

8 Gleneagles Statement on Non-Proliferation, 2005. [http://www.fco.gov.uk/Files/kfile/PostG8\\_Gleneagles\\_CounterProliferation.pdf](http://www.fco.gov.uk/Files/kfile/PostG8_Gleneagles_CounterProliferation.pdf) [January 2007].



- Emphasized the continuing vital relevance of the 1925 Geneva Protocol, which prohibits the use of chemical and biological weapons in war.

#### ST PETERSBURG STATEMENT OF G8 HEALTH MINISTERS (2006)

The G8 countries made the campaign against infectious diseases a priority of the 2006 summit in St Petersburg, and adopted a statement on a number of important measures against epidemics, in which they stated that:<sup>9</sup>

- In terms of global public health, it is extremely important to strengthen communicable disease global surveillance, detection, and identification;
- Efforts should focus on the early detection and control of the H<sub>5</sub>N<sub>1</sub> strain of avian influenza at its source, as well as on prevention of and preparedness for a potential human influenza pandemic;
- Capacities for early detection and containment of an outbreak of human-to-human infection should be developed at the national, cross-border, regional, and international levels;
- The revised International Health Regulations (IHR 2005) are an important instrument for fostering the development of core capacities, the exchange of epidemiologic information, quick mutual response, and consultations to prevent the pandemic;
- Preparedness for a pandemic should continue, including risk communication strategies, medical and public health services, and research and development of new technologies, including vaccines and new means of treatment;
- HIV/AIDS, tuberculosis, and malaria remain major threats to global progress, development, and security;
- The impact of infectious diseases can be mitigated significantly by improving coordination between institutions and organizations

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 9 Statement of G8 Health Ministers, 28 April 2006. <http://en.g8russia.ru/news/20060428/1148826.html> [January 2007].

that work for the health components of international relief efforts;  
and that

- Problems caused by communicable diseases cannot be solved only in individual countries or regions. To amend shortcomings in terms of capacity in all countries – for example, in the areas of research, human resources, and the development of health systems – is an important element in ensuring substantial progress in the control of communicable diseases worldwide.





## **PART THREE**

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### **CIVIL SOCIETY INITIATIVES**



# THE BIOWEAPONS PREVENTION PROJECT (BWPP)

The BioWeapons Prevention Project (BWPP)<sup>1</sup> is a global civil society initiative based in Geneva that aims at strengthening the norm against using disease as a weapon and at increasing openness and transparency in all matters relating to biological weapons. It was initiated in November 2002 by a group of non-governmental organizations concerned with the failure of governments to act, especially in the light of the failure of the 5<sup>th</sup> Review Conference of the Biological and Toxin Weapons Convention (BTWC) in 2001.<sup>2</sup>

The founding organizations identified three main areas of activities:<sup>3</sup>

1. *Monitoring:* The BWPP monitors political, societal, scientific, and technological developments with respect to biological weapons, as well as the implementation of the legal and political obligations of state parties under the BTWC and other relevant international agreements. It also tracks efforts by governments and other entities to reduce the bioweapons threat and to suppress the exploitation of biotechnology for hostile purposes.
2. *Reporting:* As part of the effort to increase transparency and openness, the BWPP publishes its findings in the BioWeapons Monitor, in the BioWeapons Report, and in annual reports and occasional papers, as well as through its website.
3. *Networking:* The BWPP supports and is supported by a global network of partners, who provide the thematic, regional, or country-

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1 <http://www.bwpp.org/>  
2 BioWeapons Prevention Project (2004): The BWPP strategic work plan 2004-06. 2 January 2004. <http://www.bwpp.org/documents/2004-06BWPPstrategicprogramme.pdf> [January 2007].  
3 BioWeapons Prevention Project: Annual Report 2003. <http://www.bwpp.org/Annual%20Reports/documents/2003BWPPannualreport.pdf> [January 2007].

specific expertise that is necessary for the collection and analysis of relevant data. Network partners come from the arms control and disarmament community, as well as from related fields, such as the biological sciences and biotechnology, health and safety, environment, ethics, and human rights, etc.

### BIOWEAPONS MONITOR

The BioWeapons Monitor<sup>4</sup> is an online database for tracking the compliance of governments and other entities with the BTWC and other international treaties that codify the norm against biological weapons. The database lists relevant scientific and technological developments, as well as measures undertaken by governments and relevant organizations to increase openness and transparency. Specifically, the BioWeapons Monitor contains open-source information on topics such as:<sup>5</sup>

- International accords controlling biological weapons;
- Compliance with the prohibitions contained in the 1972 BTWC and the 1925 Geneva Protocol;
- Compliance with obligations to increase openness, such as confidence-building measures (CBM) under the BTWC;
- Relevant developments in specific regions or countries;
- Policies by governments and other entities to reinforce the norm against the weaponization of diseases;
- Scientific and technological developments related to the threat of biological weapons;
- Openness and transparency in dual-use capabilities; and
- Initiatives by non-governmental organizations to strengthen the norm against biological weapons.

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4 <http://www.bwpp.org/bwm/>

5 Ibid.



## BIOWEAPONS REPORT

The BioWeapons Report is an annual publication focusing on the analysis of trends that emerge from the BioWeapons Monitor. The first edition of the BioWeapons Report was launched in December 2004 and covered the following topics:<sup>6</sup>

- The role of civil society in monitoring and verifying the BTWC;
- Transparency, confidence-building, and national legislation;
- Investigations of alleged non-compliance with the BTWC;
- New developments in science and technology; and
- Responsibilities of scientists, industry, and codes of conduct.

### CATALYSING CHANGE: AVOIDING FAILURE IN 2006

“Catalysing Change” was a major three-year activity program of the BWPP designed to establish a strong civil society base across the world that would attempt to present to the 2006 BTWC Review Conference a global agenda for strengthening the norms against the weaponization of diseases. The program involved the establishment of BWPP Network members in all parts of the world, the organization of regional events and the presentation of the network findings to the delegates in Geneva. The goals of “Catalysing Change” are:<sup>7</sup>

- To present the international community with an agenda to strengthen the BTWC, based on insights from all parts of the world;
- The development of world-wide commitments to the strengthening of the norms against the weaponization of diseases through local security interests;

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6 BioWeapons Prevention Project: BioWeapons Report 2004. [http://www.bwpp.org/documents/2004BWRFinal\\_000.pdf](http://www.bwpp.org/documents/2004BWRFinal_000.pdf) [January 2007].

7 BioWeapons Prevention Project (2004): The BWPP strategic work plan 2004–06. 2 January 2004. <http://www.bwpp.org/documents/2004-06BWPPstrategicprogramme.pdf> [January 2007]; see also BioWeapons Prevention Project: Annual Report 2004. <http://www.bwpp.org/Annual%20Reports/documents/2004BWPPannualreport.pdf> [January 2007].

- The stimulation of active participation in the Geneva process by governments from all parts of the world through local constituents demonstrating an interest in the relevant issues; and
- To identify a way forward for the BTWC after the 2006 Review Conference, based on global insights.

During the process leading up to the 6<sup>th</sup> Review Conference of the BTWC from 2003 to 2006, the BWPP issued a number of so-called NGO statements to state parties and expert meetings of the BTWC, urging them to strengthen the convention.<sup>8</sup>

Furthermore, the BWPP maintains a 6<sup>th</sup> Review Conference resource page on its website in order to present regular updates on the proceedings of the Review Conference, as well as links to key documents relating to the BTWC and background analysis prepared by the BWPP Network members and other sources.<sup>9</sup>

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8 Cf. [http://www.unog.ch/unog/website/disarmament.nsf/\(httpPages\)/2CC9710E5E9BF372C125719C003884E0](http://www.unog.ch/unog/website/disarmament.nsf/(httpPages)/2CC9710E5E9BF372C125719C003884E0) [January 2007].

9 Cf. <http://www.bwpp.org/6RevCon/6thRevConResources.html> [January 2007].





# THE SUNSHINE PROJECT<sup>1</sup>

The Sunshine Project was founded in 1999 by a Colombian lawyer, a US political scientist, and a German biologist determined to bring facts about biological weapons to light. It is an international non-profit organization with offices in Hamburg, Germany, and Austin, Texas, US, working against the hostile use of biotechnology in the post-Cold War era. The activities of the Sunshine Project focus on research and publications to strengthen the global consensus against biological warfare and to ensure that international treaties effectively prevent the development and use of biological weapons.

The Sunshine Project is entirely funded through contributions from private donors and grants from philanthropic foundations. Information on the Sunshine Project and its activities are published on a trilingual (English, Spanish, and German) website.<sup>2</sup>

Currently, the Sunshine Project is engaged in the following projects:

## TRANSPARENCY AND PUBLIC ACCOUNTABILITY IN BIODEFENSE

Since the late 1990s, US spending on bioweapons agent research has increased roughly tenfold. As of early 2006, more than 16,000 persons were registered to handle biological weapons agents (“select agents”) in the US, and hundreds of facilities were conducting biodefense projects. The trend indicates a continuing increase in the number of people and places conducting experiments with bioweapons agents. Although the growth of research in the US is greater than that of other countries, on a global scale, the number of high-containment laboratories and extent of research into bioweapons agents is also growing. This expan-

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1 The description of the Sunshine Project was written by Jan van Aken, Sunshine Project Germany.  
2 <http://www.sunshine-project.org/>; <http://www.sunshine-project.de/>

sion has implications for safety and security at the local, national, and international levels.

Due to the fact that much research on biological agents is dual-use (that is, it could be used for both offensive and defensive purposes), transparency in biodefense laboratories is critical for gaining public confidence and for convincing other countries of the peaceful intent of biodefense research. This is especially true in the case of experiments using genetic engineering and related new technologies. However, as many of these activities are still conducted in secrecy, the resulting mistrust may suffice for some countries to convince themselves of a need to engage in offensive biological research programs of their own.

To combat secrecy, the Sunshine Project files requests under open-records laws, such as the Freedom of Information Act and equivalent laws in US states and other countries, in order to obtain and disseminate information on biodefense research and systems to ensure safety and accountability. In an average year, the Sunshine Project files about 300 such open-records and declassification requests, frequently in collaboration with other nonprofit partners. By exercising the right to obtain and publicize information on biodefense projects, the Sunshine Project seeks to increase transparency and, thereby, safety and security.

Besides its work in the US, the Sunshine Project has conducted in-depth research on biodefense activities in other countries and published country reports, for example, on Germany and France. Based entirely on publicly available information, the country studies provide detailed overviews on biodefense activities in these countries and are an important tool for increasing transparency.

#### “NON-LETHAL” BIOLOGICAL AND CHEMICAL WEAPONS

Some medical anesthetics and painkillers can also be used as weapons. Long-standing fears about (secret) military interest in such weapons were dramatically confirmed in the hostage crisis at the Dubrovka Theater in Moscow in 2002, when more than 100 hostages and rebels were killed by

a “non-lethal” agent pumped into the theater by Russian Special Forces. Such biochemical weapons could also be deployed against enemy troops, rioting mobs, militants, political protesters, and even prisoners. The development of these weapons presents a threat to both the Biological and the Chemical Weapons Conventions, which frequently overlap in this area.

Since 2000, the Sunshine Project has been a leading source of information on often-classified programs to develop so-called non-lethal biochemical weapons. The organization has worked to document the interest of countries such as France, the UK, and the US in such weapons. The Sunshine Project’s Freedom of Information Act discoveries about these weapons have repeatedly made international headlines. In addition to obtaining and publicizing information on these programs, the Sunshine Project is seeking ways to ensure that treaty obligations are upheld with respect to these weapons.

### SMALLPOX VIRUS STOCKS

Although natural occurrences of the smallpox virus were eliminated in the late 1970s, the initial goal of eradicating this virus entirely was never met. Hundreds of viable samples (collectively called “stocks”) of the smallpox virus, one of the most deadly diseases known to humankind, remain in storage at laboratories in Atlanta, US, and near Novosibirsk, Russia. Although the world’s governments have repeatedly decided to destroy all remaining smallpox stocks, the US and Russia have failed to do so. In fact, they have recently expanded their activities with the virus, including proposals to genetically engineer it, as well as unauthorized transfers of smallpox DNA.

In collaboration with the Third World Network,<sup>3</sup> the Sunshine Project is working to oppose the expansion of dangerous research involv-

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3 The Third World Network is an independent non-profit network of organizations and individuals involved in issues relating to development, the Third World, and North-South issues. Cf. <http://www.twinside.org.sg/>

ing the smallpox virus and to achieve the destruction of all remaining stocks.

AGENT GREEN – THE USE OF BIOLOGICAL AGENTS IN THE DRUG WAR

Biological agents have been developed to destroy illicit crops of coca, opium poppy, and cannabis in forcible programs of crop eradication. The pathogenic fungi were developed principally by the US for use in narcotics-producing areas around the world, but especially in Asia and South America. These agents may lead to the legitimization of agricultural biowarfare, are environmentally unsafe, and threaten wild plants, animals, and agriculture in fragile and biologically diverse ecosystems. They also endanger human health and constitute a violation of the global ban on biological weapons. Through a focused campaign in 2000, the Sunshine Project was able to block further field testing of these agents in Colombia, but interest remains high in the US to test and use these weapons.







**ANALYSIS  
AND  
CONCLUSIONS**

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## CONCLUSIONS

As this Handbook illustrates, biodefense is an extremely complex task affecting many distinct policy sectors and government entities that need to be linked and coordinated. The threefold nature of the threat – originating from states, non-state actors, and natural developments – requires the integration or coordination of previously unrelated disciplines, which is most apparent in the intensified get-together of public health and security policy. In particular, the US perception of the bioterrorism threat and its strategic response has had global repercussions on the perception of the alleged threat as well as on the implementation of states' responses to biological risks in general. Moreover, the emphasis placed on the different threat sources and resources provided to cope with these has changed considerably since autumn 2001, clearly favoring the terrorist dimension of the threat. As further outlined below, this development is not unproblematic. However, the globally intensified preparations against the approaching influenza pandemic may provide a window of opportunity to put things into perspective again.

The aim of the International Biodefense Handbook is to provide an overview of structures and issues of high importance in the field of biosecurity. The governmental protection policies discussed therein offer a wealth of empirical material from which a variety of lessons can be distilled for the benefit of the international community.

In the following, we will wrap up the key issues raised in the Handbook: After describing a typical national biodefense program, we will outline country-specific findings as regards the political background, the perceptions of each threat source, the organizational overview and main initiatives, as well as legal issues. This is followed by an overview of the activities of the five international and supra-national organizations examined in the Handbook. Finally, we shall discuss the problems

associated with an overly narrow focus on bioterrorism issues, and the challenging convergence of public health and national security.

### **AN IDEAL-TYPE NATIONAL BIODEFENSE PROGRAM**

We have shown that formulating and implementing policies to protect a population against the threat of biological agents is a multifaceted challenge for policy-makers at the local, federal, and international levels. Among the key challenges for policy-makers are the framing of the threat and defining the trade-offs between various policy-relevant issues; striking the right balance between secrecy and transparency as a precondition of an informed public policy debate; developing standards and procedures for institutional oversight and accountability for the global governance of new technologies; assuring that crisis management structures are built in an open way from the bottom up to allow for the necessary level of communication and coordination between a wide range of actors and across a large number of policy fields; and strengthening the legal and moral norms against the use of biological weapons at the international level.

In general, national biodefense programs share various typical features. In most countries, the existing public health sector plays a crucial role in the response to biological risks, irrespective of their origin. This is certainly a logical development as the health community disposes of huge expertise and experiences with infectious diseases control. As we tried to show, the centrality of the health sector is also reasonable because the initial response to an infectious disease outbreak is the same whatever the nature of the hazard. Other institutions involved in biosafety that do also belong to the public health sector include agencies concerned with food and occupational safety, which perform important monitoring activities on a regular basis by tracking the occurrence of pathogens in foodstuffs and the safe handling of microorganisms in the workplace.

Ideally, the whole national security apparatus is only required before an outbreak in order to assess and avert the intentions of extremist groups and states, as well as in the aftermath of a biological incident believed to have a terrorist background.

The civil protection and emergency management system of a country plays an important role in the preparation for and response to biological incidents, especially as regards training and education, mass-casualty care, geographic containment, and communication issues.

The military is primarily concerned with the CBRN protection of its troops, but is usually able to provide substantial support to civil authorities on request, mainly in the fields of detection and identification, mass-casualty care, containment, and decontamination.

Research activities and laboratory networks are crucial in order to develop (medical) countermeasures as well as for the identification of biological agents and their epidemiology. While some establishments are entirely devoted to research, such activities are usually also conducted in the public health sector, and by emergency management agencies, the military, as well as by veterinary and environmental agencies.

Export control agencies monitor the traffic of goods out of and into a country, with a special focus on proliferation issues, which is particularly difficult in the biological weapons field because of the extensive dual-use problem and the blurry “general purpose criterion”. These tasks are usually performed in close collaboration with customs offices and intelligence services.

Veterinary offices monitor the state of health in animals and, in close collaboration with the public health sector, register the occurrence of zoonoses, such as the H<sub>5</sub>N<sub>1</sub> virus. These responsibilities usually include research activities, as well as containment duties in case of an outbreak.

Finally, environmental protection agencies are typically concerned with plant health and landscape protection, especially as regards genetically-modified organisms, but also with respect to the decontamination of large areas following the release of a noxious substance. In some countries,

environmental and/or veterinary agencies are also concerned with the threat from agro-terrorism, i.e., the malicious use of plant or animal pathogens to cause devastating diseases in the agricultural sector.

## FINDINGS FROM THE COUNTRY-SURVEYS

In Part I of the Handbook, we provided an overview of bio-defensive practices at the national level in France, Germany, Russia, Sweden, Switzerland, the UK, and the US. Each of the country surveys followed the same structure. We outlined each country's approach to and perception of the biological threat, we provided an organizational overview, and looked at initiatives, policies, and legislation. In the following, we will briefly review each of these sections.

### POLITICAL BACKGROUND

All of the seven countries covered in the Handbook ratified the 1925 Geneva Protocol and the 1972 Biological and Toxin Weapons Convention (BTWC), and are therefore not allowed to maintain an offensive biological weapons program. Most of the countries do also adhere to the export control measures agreed upon within the framework of the Wassenaar Arrangement and the Australia Group, except for Russia, which is not a formal member of the latter.

Concerning the strengthening of the BTWC, the five European countries listed in the Handbook are strongly committed to the establishment of a verification mechanism and have expressed their deep concern over the failure of the 5<sup>th</sup> Review Conference in 2001/2002, while the US and Russia are somewhat hesitant in this respect. Especially in the US, some representatives are opposed to a multilateral bioweapons control regime, as the resulting transparency "runs the risk of providing a proliferator or terrorist with a roadmap to exploit our vulnerabilities [...] [and] would endanger not only the [US biotechnology] industry,



but the benefits that industry provides to the entire world.”<sup>1</sup> In contrast, the Foreign Affairs Committee of the British House of Commons notes that “the threat from biological weapons is a global problem, which – contrary to the view of parts of the US administration – cannot be addressed through national measures alone.”<sup>2</sup> And the European Union (EU) states that it “considers the BTWC to be the cornerstone of [its] efforts to prevent biological agents and toxins from ever being developed and used as weapons. [...] The EU is committed to the full implementation of all the Convention’s provisions. [...] We furthermore attach high priority to the reinforcement of the Convention and remain committed to developing measures to verify compliance with the BTWC.”<sup>3</sup> Russia is also not opposed to the establishment of a compliance regime to the BTWC, but some Western officials worry that although the biological weapons agent stockpiles of the former Soviet Union have been destroyed, the Russian Ministry of Defense may continue to pursue activities at its biological facilities that are in contravention of the BTWC.<sup>4</sup> According to unconfirmed intelligence and press reports, however, the same may be true for other countries covered in this Handbook.

Contrary to the experiences of the 5<sup>th</sup> Review Conference, the 6<sup>th</sup> Review Conference of the BTWC in autumn 2006 ended in modest success as state parties reaffirmed the importance of international cooperation for confronting the biological weapons threat. In particular, members agreed on a number of small steps to strengthen the convention, such as the establishment of a temporary secretariat, the Implementation Support Unit (ISU), and the convocation of annual meetings between

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- 1 Testimony of Ambassador Donald A. Mahley, Special Negotiator for Chemical and Biological Arms Control, US Department of State; Before the House Government Reform Committee, Subcommittee on National Security, Veterans Affairs and International Relations; The Biological Weapons Convention: Status and Implications; July 10, 2001. <http://www.arm-scontrolcenter.org/cbw/congressional/testimony/071001mahley.htm> [January 2007].
  - 2 Foreign Affairs Committee (2002): The Biological Weapons Green Paper. <http://www.publications.parliament.uk/pa/cm200203/cmslect/cmfaff/150/150.pdf> [January 2007].
  - 3 Declaration of the EU on the occasion of the 30th anniversary of the Biological and Toxins Weapons Convention (BTWC), 26 March 2005. <http://www.eu2005.lu/en/actualites/pesc/2005/03/26ciab/index.html> [January 2007].
  - 4 Cf. [http://www.nti.org/e\\_research/profiles/Russia/Biological/index.html](http://www.nti.org/e_research/profiles/Russia/Biological/index.html) [January 2007].

the Review Conferences.<sup>5</sup> Nevertheless, the international community is still far from having achieved a multilateral verification mechanism in the biological weapons field.

### THREAT PERCEPTION

The great level of uncertainty, especially with regard to the terrorist dimension of the biological threat, largely accounts for the differing and ambiguous threat perceptions between and within countries. Accordingly, policy-makers and experts struggle with the assessment of biological risks and compete for the allocation of scarce resources. There is a wide range of opinions concerning the potential impact and severity of the different threat sources, and various actors emphasize varying problems associated with biological risks:

*"It will absolutely shut down international trade, and it will make 9/11 look like a cakewalk. Smallpox can bring the world to its knees."*<sup>6</sup>

*"It is true that pandemic flu is important, and we're not doing nearly enough, but I don't think pandemic flu could take down the United States of America. A campaign of moderate biological attacks could."*<sup>7</sup>

*"A flu pandemic is the most dangerous threat the United States faces today. It's a bigger threat than terrorism. In fact it's bigger than anything I dealt with when I was in government."*<sup>8</sup>

5 Cf. Sixth Review Conference of States Parties to the BTWC, Final Document. BWC/CONF. VI/6. Geneva, 2006. <http://daccessdds.un.org/doc/UNDOC/GEN/G07/600/30/PDF/G0760030.pdf> [January 2007].

6 Quoted in: Richard Preston (2002): *The Demon in the Freezer*. New York: Random House; p. 213.

7 Tara O'Toole, Director of the Center for Biosecurity, University of Pittsburgh. Quoted in: *Custom-Built Pathogens Raise Bioterror Fears*, by Joby Warrick. *Washington Post*, July 31, 2006. [http://www.washingtonpost.com/wp-dyn/content/article/2006/07/30/AR2006073000580\\_pf.html](http://www.washingtonpost.com/wp-dyn/content/article/2006/07/30/AR2006073000580_pf.html) [January 2007].

8 Richard Falkenrath, former homeland security policy adviser to the president (2001-2003) and deputy homeland security adviser with the Department of Homeland Security (2003-2004). Quoted in: *A Threat Worse Than Terror*, by Fareed Zakaria. *Newsweek*, October 31, 2005. <http://www.msnbc.msn.com/id/9787690/site/newsweek/> [January 2007].

These diverging statements are at best confusing and point to a fight for resources, with the public health sector suddenly being forced to compete in the national security arena. However, such fairly common threat rankings are probably not overly useful, anyway, and would surely be obsolete if a more integrated approach to biological risks was pursued.

*Bioterrorism.* Any assessment of the bioterrorism threat should be based on the recognition that the diffusion of bioweapons is directly affected by the policies of Western states, in general, and of the US, in particular. The integration of national security and the life sciences in US policy has had an important worldwide impact on the dominant threat frame and on the correlative policy response elsewhere. Since the attacks of 9/11 and the 2001 anthrax letters, bioterrorism has been perceived as a major national security issue in the US, and thus it should be seen in the larger context of the current administration's so-called "war on terrorism", whose impact on bioterrorism is as yet unclear. On the one hand, it is possible that the war on terrorism will prevent terrorist groups from gaining access to bioweapons capabilities. On the other, however, the motivation of such groups to acquire and use bioweapons or other weapons of mass destruction might increase as a result of the additional pressure and repression caused by the "war on terrorism". In short, the way in which policy is written when there is a high level of uncertainty is likely to affect the probability of future bioterrorism events.

Accordingly, assessments of the bioterrorist threat are ambivalent, and there is a clear difference between the US and the European countries examined in the Handbook. All countries are very much concerned about the general threat of terrorism, but the European countries seem to be more cautious than the US in postulating a bioterrorism threat in particular, though this possibility is taken very seriously.

Given its experiences, the US obviously considers this threat highly probable, and unprecedented efforts and resources are committed to the biodefense program with its heavy focus on terrorism. But many measures taken in the US also seem to be based on the assumption that

the problem might become much graver in the future, given the advances in the life sciences. What is lacking in official policy is the awareness that these heavy investments themselves may be contributing to the very development they aim to prevent.

The UK government regards the general terror threat as extremely serious and, like the US, feels immediately threatened. In this context, bioterrorism is also of great concern, but is not considered to be so imminent as to require spending billions of pounds for a civilian biodefense complex. Rather, the UK still believes in multilateral cooperation in order to impede terrorist access to deadly pathogens, and bioterrorism-related research is largely conducted at existing military facilities.

France and Germany have experienced many terrorist incidents in the past and consider the fight against terrorism a top priority. But the threat is believed to be lower than that faced by the countries directly involved in the military occupation of Iraq. Nevertheless, there is an awareness that this assessment may change quickly. Like the UK, both France and Germany address the bioterrorism threat in the broader context of biological risks, and consider the risk of an accidental or natural release of pathogenic microorganisms to be more imminent.

Sweden and Switzerland do not consider themselves to be primary targets of international terrorist activities. Rather, domestic militant activities are believed to be limited to logistical and financial support for groups abroad. Both countries fear that they could be used as a base by terrorist groups to threaten foreign interests using biological agents. In addition, Sweden emphasizes the CBRN threat as regards its participation in peace support operations, and Switzerland assumes that the presence of international organizations in Geneva, the annual meeting of the World Economic Forum (WEF) in Davos, as well as the 2008 UEFA European Football Championships could attract terrorists.

Because of a lack of official information, Russia's threat perception concerning bioweapons is hard to assess and does not receive large public attention. However, the experience of the accidental release of anthrax in Sverdlovsk in 1979, as well as the high priority given to infectious

diseases prevention during the Russian G8 presidency in 2006, suggest that the Russian authorities are well aware of the threat posed by biological weapons and infectious diseases.

*State Use of Bioweapons.* As far as the threat level emanating from states is concerned, most experts agree that it is rather unlikely that advanced industrial states will resort to using bioweapons. International legal and moral norms strongly condemn the use of bioweapons, and a major military conflict between the great powers seems unlikely. It is assumed that authoritarian states with a preexisting military-industrial complex that feel exposed to an existential threat are most likely to be motivated to develop secret biological weapons programs. But even in this group of states, there are no indications of an increasing trend in favor of biological warfare. Furthermore, there is no evidence of state assistance to terrorist groups in acquiring biological weapons.<sup>9</sup>

In general, there seem to be no major discrepancies in the assessment of the threat level emanating from states among the countries covered in the Handbook. Most of these countries are concerned as regards proliferation issues, and their intelligence services and export control organizations closely monitor procurement activities, but none of these countries assumes the existence of a direct and imminent biological weapons threat emanating from a particular state. After all, intelligence reports on such matters are handled warily, not least because the biological weapons program of the former Soviet Union was highly underestimated, while the Iraqi program was overestimated.

*Pandemics.* There is no doubt among the countries covered in the Handbook that another influenza pandemic is sure to occur sooner or later. The remaining elements of uncertainty are the time and impact. The World Health Organization (WHO) points out that since 1968, the risk of an outbreak has never been as high as its current level. With

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9 Andreas Wenger and Reto Wollenmann (eds., 2007): *Bioterrorism: Confronting a Complex Threat*. Boulder: Lynne Rienner.

the arrival of the influenza subtype H<sub>5</sub>N<sub>1</sub>, all the prerequisites for the beginning of a pandemic have been met, except for an efficient human-to-human transmission. In the light of the emerging H<sub>5</sub>N<sub>1</sub> virus, all the countries in the Handbook have elaborated some kind of influenza pandemic preparedness plan and are in the course of acquiring vaccines and antiviral drugs. However, the WHO warns that further action is needed, especially as regards detection and early-warning systems, the international elaboration and coordination of preparedness and response activities, and support for developing countries.<sup>10</sup>

### ORGANIZATIONAL OVERVIEW AND MAIN INITIATIVES

In all the countries examined in the Handbook, responsibility for biodefense and biosecurity issues lies with multiple authorities and organizations in different governmental departments. In addition, some countries rely heavily upon local or regional actors, especially in the initial emergency response, whereas other countries depend on federal assistance. Accordingly, biodefense involves many different players from different communities, thus requiring significant coordination and communication efforts.

Only a few countries have created specialized agencies to deal with certain aspects of the problem. More often, responsibility for biodefense/biosecurity is given to well-established agencies that appear suitable for the task. The establishment of these organizational units and their location within the government structures are influenced by various country-specific factors such as constitutional characteristics, the civil defense tradition, the allocation of resources, historical experiences, and the general threat perception of key actors in the policy domain.

The following is a short overview of country-specific findings as regards the organizational structure and guiding policies of biodefense:

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10 World Health Organization (2005): Responding to the avian influenza pandemic threat – Recommended strategic actions. [http://www.who.int/csr/resources/publications/influenza/WHO\\_CDS\\_CSR\\_GIP\\_05\\_8-EN.pdf](http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_05_8-EN.pdf) [January 2007].

- In *France*, the political system is characterized by a strong centralistic approach and a constitution that gives the administration in Paris wide-ranging authorities. The overall strategy to counter acts of biological terrorism is outlined in the classified “Biotox” plan, which features contingency plans for specific agents and outlines the responsibilities of various actors. National biodefense activities are coordinated by the General Secretariat of National Defense (SGDN), which presides over inter-ministerial cooperation in the fight against CBRN terrorism and has a strong coordinating role. The Biotox plan as well as plans to fight an influenza pandemic were elaborated by SGDN, in close collaboration with the General Directorate of Health (DGS). The DGS has the strategic lead in the health sector and features a Biotox coordinator who is responsible for the coordinated implementation of the plan. Other important actors on the national level include the National Institute for Public Health Surveillance (InVS), the Directorate of Civil Defense and Security (DDSC), the Urgent Medical Services (SAMU), the national security institutions, the armed forces, the Pasteur Institute, and others. Among the special features of the French system are the High Functionaries of Defense (HFD), who work in every ministry to ensure the intra- and inter-ministerial coordination of issues concerning national security.
- In *Germany*, the Länder have far-reaching responsibilities both in public health and emergency management. The concept of the New Strategy for Protecting the People of Germany implies that the federal and state levels must coordinate their approach to disaster management with respect to threats of national significance, such as major industrial hazards, large-scale outbreaks of diseases, and terrorist attacks. On the national level, the Robert Koch Institute (RKI) is the central federal institution responsible for disease research, control, and prevention. The RKI has elaborated various contingency plans with respect to influenza pandemics and likely bioterror agents. Following 9/11, the Centre for Biological Safety (ZBS) was established at the RKI in order to facilitate measures

required to detect and respond to bioterrorist attacks. The ZBS's Federal Information Centre for Biological Safety (IBBS) has informational and coordination duties, and develops strategies for managing bioterrorist incidents.

As a consequence of the new strategy, the Federal Office of Civil Protection and Disaster Assistance (BBK) was set up as an information, knowledge, and service platform in the civil protection sector in support of the Länder and the federal government. The BBK is involved in emergency preparedness and planning, education and training, and disaster medicine, and conducts research into CBRN protection. In addition, it has various technical systems for crisis communication and response coordination at its disposal.

Other important actors on the national level include the Bundeswehr, the national security services, the Federal Agency for Technical Relief (THW), the Paul Ehrlich Institute (PEI), the Bernhard Nocht Institute (BNI), the Friedrich Loeffler Institute (FLI), and others.

- In *Russia*, the Ministry of Public Health controls the activities of institutes and enterprises dealing with pathogens that are dangerous to human beings. It has the main responsibility for biosecurity in Russia and coordinates the interaction of federal agencies in this area. The Federal Medical-Biological Agency and its Sanitary Epidemiological Service (SES) provide sanitary control services and are responsible for the monitoring and prevention of infectious diseases as well as for timely responses to emergencies involving biological agents. Biodefense research is mainly conducted at facilities belonging to the Biopreparat agency, which also comes under the responsibility of the Ministry of Public Health. The Ministry of Agriculture deals with pathogens that are dangerous for plants and animals. The Ministry of Emergencies (EMERCOM) is responsible for the development and implementation of state policy in the field of civil defense and for the protection of the population from extraordinary situations, including responses to medical-biological threats.



Government Resolution No. 303 outlines the responsibilities of governmental agencies in the area of biosecurity and includes 27 entities. Apart from the aforementioned agencies, the most important of these include the Ministry of Internal Affairs, the Ministry of Defense, the Ministry of Industry and Energy, and the Federal Security Service (FSB). In addition, the 2004 Act on “Foundations of State Policy in the Area of Chemical and Biological Security in the RF for the Period until 2010 and Future Perspective” defines major goals and principles of Russia’s biological security policy.

- In *Sweden*, administrative decisions are generally taken not by the ministries, but by agencies subordinated to the respective ministry. The National Board of Health and Welfare (SoS) has the responsibility, in collaboration with county councils and municipalities, to monitor the infectious diseases situation and ensure the preparedness of the public health sector to cope with incidents involving biological substances. This includes the elaboration of response plans and other guidelines. The operational responsibility remains with the counties and municipalities. The Swedish Institute for Infectious Disease Control (SMI) is the expert authority that monitors the epidemiology of infectious diseases on a regular basis and promotes control and prevention of these diseases. The Centre for Microbiological Preparedness (KCB), located at the SMI, has the mission to build up knowledge and diagnostic capacities regarding microorganisms that cause rare infections or may be used by terrorists.

The Swedish Emergency Management Agency (SEMA) coordinates and evaluates preparedness activities to manage biological incidents. Therefore, SEMA is also responsible for presenting proposals to the government on the allocation of resources, and then distributes funds to the agencies active in emergency management. The Swedish Rescue Services Agency (SRSA) is responsible for response measures, maintains the rescue services, and is also involved in emergency planning. The Swedish Defence Research Agency (FOI) performs research in the fields of biological weapons detec-

tion and diagnostics, medical countermeasures, human protection, and CBRN threat assessment.

Other important actors on the national level include the Swedish Security Service (SÄPO), the Swedish Armed Forces, the National Inspectorate of Strategic Products (ISP), the Swedish Board of Agriculture (SJV), the National Veterinary Institute (SVA), and others.

- In *Switzerland*, the constitutional tradition is based on a strong delimitation between federal and cantonal responsibilities. The cantons are responsible for emergency management with the possibility of federal assistance. In the area of infectious diseases, including surveillance and control, risk assessment, and food safety, the Swiss Federal Office of Public Health (FOPH) has the lead. The FOPH also heads the B-section of the Federal Commission for NBC Protection (ComNBC), which is the competent strategic advisory body for biological issues. It proposes measures, assigns responsibilities in order to detect, manage, and recover from emergencies involving the deliberate or accidental release of hazardous microorganisms, and develops response plans. The ComNBC has elaborated a comprehensive concept on national NBC protection and has issued a number of recommendations, including several structural adjustments that are currently being implemented. The Federal Office for Civil Protection (FOCP), which is responsible for and also forms part of the ComNBC, assists the cantons in emergency planning, ensures cooperation between the different partners, and has operational responsibility during an emergency of national significance. The FOCP's National Emergency Operations Centre (NEOC) is a nation-wide information, coordination, warning, and alert center for all kinds of emergency situations. The Spiez Laboratory (LS), a division of the FOCP, is the Swiss research and training institute for the protection against nuclear, biological, and chemical incidents. In case of an emergency, the efforts of the federal, cantonal, and military health services would be

harmonized by the Armed Forces' Coordinated Medical Services (CMS) in order to ensure medical services and supplies.

Other important actors at the national level include the Federal Veterinary Office (FVO), the Federal Office for National Economic Supply (FONES), the Swiss armed forces, the Service for Analysis and Prevention (SAP), and others.

- In the *UK*, the Home Office holds the lead responsibility for coordinating the response to a terrorist threat within the *UK*, whereas the Cabinet Office is responsible for overall emergency planning and oversees the cross-departmental Capabilities Program. The CBRN Resilience Program, which is part of the Capabilities Program and led by the Home Office, brings together expertise on CBRN terrorism from across government and partner agencies in order to elaborate emergency concepts and ensure a quick and coordinated response in case of an attack. The danger from infectious diseases in humans, animals, and plants is also addressed in the framework of the Capabilities Program.

In collaboration with the Home and Cabinet Office, the Department of Health (DH) is responsible for the coordination of contingency planning with respect to major incidents involving infectious diseases, and prepares national guidance and policies. As a unique feature of the British system, the Health Protection Agency (HPA) combines all the expertise needed to effectively respond to public health emergencies by linking infectious diseases surveillance, control, and research with emergency preparedness and response planning. The HPA provides a comprehensive service in support of health protection for all types of emergencies; whether natural, accidental, deliberate, conventional, or involving a release of CBRN substances.

The Civil Contingencies Secretariat (CCS) evaluates potential and evolving threats, develops and reviews departmental continuity and contingency plans, and supports the Cabinet Secretariat in emergency management. The Fire and Resilience Directorate (FRD) contributes to the Capabilities and CBRN Resilience

Program by developing guidance on counteracting the effects of CBRN incidents on humans and infrastructures and by improving capabilities such as public mass decontamination as well as urban search and rescue.

The Defence Science and Technology Laboratory (DSTL) supports response units at all levels, from the scene of the incident to policy decision-makers in government. It provides research and advice on surveillance, detection, and medical countermeasures, as well as testing services of suspected biological weapon materials.

Other important actors at the national level include the Department for Environment, Food and Rural Affairs (Defra), the Health and Safety Executive (HSE), the national security institutions, the British armed forces, and the Export Control and Non-Proliferation Directorate (XNP).

- In the US, Homeland Security Presidential Directive 10 (HSPD-10) details the entire federal government's biodefense strategy and the duties and roles of each federal agency involved in biodefense. The Department of Health and Human Services (HHS) is the lead coordinating agency for the response to a biological incident, and the Department of Homeland Security (DHS) is the lead agency for crisis and consequence management of such an incident. The Federal Bureau of Investigation (FBI) with its Weapons of Mass Destruction Operations Unit (WMDOU) coordinates the US government's response to a WMD threat as the lead agency. The HHS' Centers for Disease Control and Prevention (CDC) provides a system of health surveillance for monitoring and preventing disease outbreaks, including bioterrorism, and for implementing disease prevention strategies. Together with the Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), which is responsible for protecting US agriculture and the environment from diseases, the CDC maintains the Select Agent Program (SAP) that oversees and registers the possession of biological agents and toxins. The CDC's Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER)

provides strategic direction for the CDC to support terrorism preparedness and emergency response efforts.

The DHS' Office of the Chief Medical Officer has primary responsibility for working with other federal agencies in completing comprehensive plans for executing DHS responsibilities to prevent and mitigate biologically based attacks. Its Office of Grants and Training (G&T) is responsible for preparing the US against terrorism by assisting states, local and tribal jurisdictions, and regional authorities as they prevent, deter, and respond to terrorist acts. Furthermore, the National Biodefense Analysis and Countermeasures Center (NBACC) of the DHS, which should be completed in 2008, is charged with defining the characteristics of biological agents, facilitating the technical forensic analysis and interpretation of materials recovered following a biological attack, and conducting biodefense risk assessments in order to guide national biodefense research, development, and acquisition efforts, and to provide scientific support to the intelligence community and other federal agencies.

The National Institute of Allergy and Infectious Diseases (NIAID) conducts and supports research into the causes of infectious diseases, in order to develop better means of preventing, diagnosing, and treating these illnesses, including the development of medical tools against potential bioterrorism agents.

Other important actors at the national level include the Food and Drug Administration (FDA), the Homeland Security Council (HSC), the national security services, the Military, the Environmental Protection Agency (EPA), and others.

Despite all the efforts undertaken by the countries examined in the Handbook to address the threat from biological risks, there is the inherent danger of creating a false sense of security with respect to the true state of preparedness. Some observers point out that we are experiencing a

“plandemic” or proliferation of preparedness plans, instead of shifting the attention from plans to concrete planning and execution.<sup>11</sup>

Compared to the European countries covered in the Handbook, the US maintains a striking and unparalleled focus on terror issues across all the sectors examined in the country surveys. In Europe, investments in civilian bioterrorism defense are negligible in comparison, and the respective research activities are largely conducted at existing military facilities. However, this does not mean that Europe is pursuing an integrated approach to biological risks; rather, in Europe, the bioterrorism threat seems to be assessed more cautiously, and the level of preparedness seems to be lower in this specific field of biodefense.

#### LEGAL ISSUES

As the sections on laws and legislation contained in each country survey are intended to provide an overview, and were not compiled or analyzed by legal experts, we will not provide an in-depth analysis of legal issues here.

In general, Article 4 of the Biological and Toxin Weapons Convention (BTWC) obliges state parties to undertake national measures to implement the treaty, which implies the adoption of related legislation. Apart from BTWC obligations, legal provisions are required to control infectious diseases, pathogens, and relevant dual-use items. Some countries examined in the Handbook have preferred to amend their existing legislation, whereas others have passed specific laws dealing with biosecurity or bioterrorism in particular. The following is a rough overview of important legal issues with respect to biodefense/biosecurity:

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11 Cf. *Bioterrorism and Pandemic Influenza: Are We Prepared?* Testimony of Frank J. Cilluffo, Director, Homeland Security Policy Institute, George Washington University, before the Homeland Security Subcommittee of the Senate Committee on Appropriations, May 23, 2006. [http://homelandsecurity.gwu.edu/congress/may23\\_06.htm](http://homelandsecurity.gwu.edu/congress/may23_06.htm) [January 2007].

- Control of infectious diseases, including provisions for infectious disease surveillance and response in order to cope with public health emergencies;
- Penal legislation that criminalizes terrorist offences and the use of bioweapons in order to deter individuals, groups, and states from developing and using bioweapons;
- Pathogen security regulations and protection of laboratories and other facilities to prevent unauthorized access to biological agents;
- Control lists for materials relating to biological agents, including export and import control regulations, and registration of facilities and people working with certain pathogens; and
- Regulations to prevent an accidental release of pathogens, including provisions for work safety, transport of hazardous substances, contained use of organisms, and scientific codes of conduct.

Although required to do so under Article 4 of the BTWC, many state parties have passed no legislation or have implemented such legislation insufficiently, and are therefore in non-compliance with their legal obligations under the treaty, as others have pointed out.<sup>12</sup>

## INTERNATIONAL AND SUPRA-NATIONAL ORGANIZATIONS

The global nature of both the infectious diseases and the terrorist threat necessitates active international cooperation at all policy levels in order to successfully prevent or deal with biological incidents. Accordingly, international organizations play a significant role in global biodefense/

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12 Cf. Verification Research, Training and Information Centre VERTIC (2003): Time to lay down the law – National legislation to enforce the BWC. <http://www.vertic.org/assets/Ti me%20to%20lay%20down%20the%20law%20-%20final%20report.PDF> [January 2007]; see also Andreas Persbo and Angela Woodward (2005): National measures to implement WMD treaties and norms: The need for international standards and technical assistance. WMD Commission Study No. 32. <http://www.wmdcommission.org/files/No32.pdf> [January 2007].

biosecurity efforts and have undertaken a number of important initiatives in recent years. The following is a short overview of such measures:

- The *World Health Organization (WHO)* provides an integrated global alert and response system for epidemics and other public health emergencies, based on national public health systems and capacities and an effective international mechanism for a coordinated response. The revised International Health Regulations (IHR 2005) serve to prevent, control, and provide a public health response to the international spread of diseases, while avoiding unnecessary interference with international traffic and trade. The IHR requires states parties to submit notification of all events that may constitute a public health emergency of international concern (PHEIC). The Global Outbreak Alert and Response Network (GOARN) is a technical collaborative effort between existing institutions and networks that pool human and technical resources for the rapid identification, confirmation, and response to disease outbreaks of international importance.
- The *European Union (EU)* responded rapidly to 9/11 and the subsequent anthrax letters by releasing the “Programme of Cooperation on Preparedness and Response to Biological and Chemical Agent Attacks” (BICHAT or Health Security Programme), with the overall aim of coordinating and supporting the public health preparedness as well as the response capacity and planning of the member states against biological and chemical attacks. The program resulted in the establishment of the Health Emergency Operations Facility (HEOF) that coordinates various early-warning systems, such as the Early Warning and Response System (EWRS) and RAS BICHAT, as well as other coordination and information-sharing tools. Within the European Sixth Framework Programme (FP6), the EU funded several research projects related to biodefense/biosecurity. In addition, various EU sub-organizations assist member states in their biosecurity efforts, among them the European Centre for Disease Prevention and Control



(ECDC), the European Medicines Agency (EMA), the European Food Safety Authority (EFSA), and the European Agency for Safety and Health at Work (EU-OSHA).

- The *North Atlantic Treaty Organization (NATO)* has launched a number of nuclear, biological, and chemical defense initiatives designed to address the most critical deficiencies in NATO's NBC defenses, including response teams, laboratory capacities, and training, which, among other things, led to the establishment of the CBRN Defence Battalion. NATO's Weapons of Mass Destruction Centre coordinates activities on force protection, counterterrorism, and counter-proliferation. The Euro-Atlantic Disaster Response Coordination Centre (EADRCC) coordinates disaster relief efforts for the member countries of the Euro-Atlantic Partnership Council (EAPC) in case of a natural or technological disaster in the EAPC geographical area.
- The *International Committee of the Red Cross (ICRC)* has undertaken a number of activities around the world as part of its initiative on Biotechnology, Weapons and Humanity. This involves issues such as the risks associated with the hostile use of advances in life sciences and biotechnology; international and national laws prohibiting and preventing poisoning and the deliberate spread of disease; and the responsibilities of the many different players to reduce the risks to a minimum. The core of the ICRC initiative is an appeal to governments, the scientific community, the military, industry, and civil society that calls for norms against the deliberate spread of disease and affirms the need for preventive action.
- The *G8 Group* has launched a number of initiatives on non-proliferation and infectious diseases prevention. The Global Health Security Initiative (GHSI) is an informal, international partnership to strengthen health preparedness and response to threats of CBRN terrorism and pandemic influenza. Its Global Health Security Action Group (GHSAG) develops and implements concrete activities to improve global health security.

**CONCLUDING REMARK:  
“HEALTHIFICATION” INSTEAD OF “SECURITIZATION”**

To a large extent, bioterrorism is a hypothetical threat. Differentiating between bioterror, biocrimes, and state use, W. Seth Carus points out that there were no deaths from bioterrorism in the time between 1900 and early 2001, leaving the five people killed by the anthrax letters in fall 2001 as the only victims of a lethal bioterrorist attack in the last 100 years.<sup>13</sup> Contrasted against the millions of deaths from often preventable infectious diseases annually, there is a clear and historically unprecedented imbalance between resources committed and the actual manifestations of the different threat sources, especially in the case of the US with its huge civilian and heavily terror-focused biodefense complex. While some argue that preparations for a bioterrorist attack serve the “dual use” of enhancing other public health activities, others warn that a terror-focused biodefense program diverts time, attention, and resources away from more pressing public health problems.<sup>14</sup>

At present, the biodefense agenda seems to be largely dominated by the concerns of foreign and security policy, and not of global public health.<sup>15</sup> The “securitization”<sup>16</sup> of the health sector – that is, the trend towards dealing with health issues using the vocabulary and the means of national security, and thereby justifying extraordinary state interventions – is a problematic development. An exaggerated threat perception can lead to questionable political prioritization. Preparedness for an

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- 13 There have been some unconfirmed cases. W. Seth Carus (1998 / revised 2001): *Bioterrorism and Biocrimes – The Illicit Use of Biological Agents Since 1900*. Washington, D.C.: Center for Counterproliferation Research, National Defense University; p. 21.
  - 14 Cf. Nicholas B. King (2005): *The Ethics of Biodefense*. In: *Bioethics*, Vol. 19, No. 4; pp. 432–46.
  - 15 Cf. Colin McInnes and Kelley Lee (2006): *Health, security, and foreign policy*. In: *Review of International Studies* 32/2006; pp. 5–23.
  - 16 The concept of ‘securitization’ is an analytical framework developed by Ole Wæver and others. Cf. Ole Wæver (1995): *Securitization and Desecuritization*. In: Ronnie D. Lipschutz (ed.): *On Security*. New York: Columbia University Press, pp. 46–86; and, Barry Buzan, Ole Wæver, and Jaap de Wilde (1998): *Security – A New Framework for Analysis*. London: Lynne Rienner.

uncertain bioterror risk may jeopardize a country's capacity to respond to other well-known, immediate, and measurable risks. Another danger is that expertise and funding may be provided for national security purposes, at the expense of the health sector and to the detriment of research into natural infectious diseases and their respective vaccines. The emergency response, too, may be jeopardized by a narrow focus on bioterrorism, as the WHO outlines: "Every outbreak should be treated as a natural outbreak until demonstrated otherwise. Such an approach frees the health system to concentrate on the first priority: the reduction of morbidity and mortality and prevention of further spread. For all outbreaks, whatever the cause, the window of opportunity for effective intervention closes quickly. [...] [P]ublic health workers, including nurses, physicians, and hospital accident and emergency personnel, will be the first to respond to a deliberately caused outbreak."<sup>17</sup> Accordingly, public health personnel involved in the first response should not be concerned with questions of national security or law enforcement.

The US example demonstrates the unintended side-effects arising from a one-sided focus of national biodefense on unlikely catastrophic bioterrorism scenarios. Since 9/11, the US has been expanding its (partially secret) biodefense program in the framework of a narrow program for homeland security. While the related civilian expenditures in 2001 amounted to only US\$417 million, that figure had increased to an estimated US\$7.6 billion in 2005.<sup>18</sup> This is paralleled by a sharp increase of research funds devoted to prioritized bioweapons agents, at the expense of other pathogenic microorganisms with higher public health significance.<sup>19</sup> At the same time, transparency and openness were diminished in the US biosciences, whose integration into the national security strategy

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 17 World Health Organization (2002): Preparedness for the deliberate use of biological agents – A rational approach to the unthinkable. Geneva, May 2002; p. 6. <http://www.who.int/csr/resources/publications/deliberate/whacdscreph200216.pdf> [January 2007].

18 Ari Schuler (2005): Billions for Biodefense. In: *Biosecurity and Bioterrorism*, Vol. 3, No. 2; pp. 94–101.

19 Cf. Altman et al. (2005): An Open Letter to Elias Zerhouni. In: *Science*, March 2005, Vol. 307, No. 5714; pp. 1409f.

had global repercussions on the perception of the alleged bioterrorist threat and on the implementation of states' responses to it.

A biodefense approach that is slanted towards a terrorism scenario may imply unnecessary costs. For instance, there are good indications that the al-Qaida network only developed an interest in biological weapons after viewing media appearances by US government officials.<sup>20</sup> Also, massive buildups in a state's biodefense program increase the risk of unintended transfers of expertise and/or material from high-security laboratories to potential perpetrators. In addition, the secrecy and lack of transparency of defense-related research into weaponized agents may foster mistrust among countries concerning the true intentions of such activities, and may enhance the risk of proliferation, as some countries fear that offensive capabilities may be maintained in the framework of a secret biodefense program. In this respect, more transparency is required on both sides of the Atlantic.

When drafting policies for dealing with biological risks, it is beneficial to follow an "all-hazards" approach that aims for comprehensive protection of the population, irrespective of the nature of the threat. An inclusive understanding of the problem makes it easier to focus on synergies instead of trade-offs between the partners and sectors involved.

Apart from the activities of the intelligence services and certain police and military responsibilities, most of the precautionary and response measures and resources – especially in the health sector – can be employed as protection against deliberate or naturally occurring releases of biological pathogens. Such similarities include surveillance systems, laboratory capacities, infectious diseases and response training, research into and stockpiles of vaccines, medical equipments, etc.

The main difference is one of focus. While bioterrorism preparedness is based on an anticipatory strategy that focuses on the specific threat of a terror attack involving already identified biological weapons agents, the general model of infectious disease preparedness, in contrast, is designed

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20 Cf. Milton Leitenberg (2005): *Assessing the Biological Weapons and Bioterrorism Threat*. Carlisle: Strategic Studies Institute (SSI); pp. 34ff.

to focus not on a specified threat, but on the capability to respond to a variety of (unanticipated) infectious diseases threats – that is, a resilience strategy.<sup>21</sup> These differences in focus have widespread implications for the implementation of preparedness and response measures, especially as regards prioritized agents, funding of the public health and security sectors, the emphasis placed on the different first responders, as well as regarding the relationship between federal and local responsibilities. The narrow focus of the anticipation strategy bears the risk of failure in case a biological incident does not correspond to the established guidelines and targeted agents, whereas general improvements in the health sector – with a partial focus on terror-related health issues – can surely help prepare the public health system for a bioterrorism attack.

Such a “healthification” of the bioterrorism preparedness and response (re-)assigns the primary responsibility for an infectious disease emergency to public health authorities, with the security sector only becoming involved in cases where an outbreak is believed to have a terrorist background. Given the fact that natural outbreaks are inevitable, while intentional attempts to release biological agents are not, such an approach is far more cost-effective and politically sustainable than preparing a separate approach for each individual threat source.

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21 George Avery (2004): Bioterrorism, Fear, and Public Health Reform: Matching a Policy Solution to the Wrong Window. In: Public Administration Review, Vol. 64, No. 3; pp. 275–88.



## APPENDIX

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# GLOSSARY OF KEY TERMS

## **Anthrax**

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax commonly occurs in wild and domestic lower vertebrates (cattle, sheep, goats, and other herbivores), but it can also occur in humans exposed to infected animals, tissue from infected animals, or other manner. Human infection can occur in three ways: Cutaneous or skin anthrax enters the body at the site of a skin wound. It has a mortality rate of 20 per cent if left untreated, while treatment with antibiotics reduces this to near zero; pulmonary or inhalation anthrax has a mortality rate of well over 90 per cent, flu-like symptoms appear for several days after a brief incubation period, followed by acute symptoms typically ending in death. Gastrointestinal anthrax results after swallowing a large quantity of anthrax spores, typically from the meat of an infected animal with symptoms similar to food poisoning. Mortality rates vary between 25 per cent and 60 per cent.<sup>1</sup>

## **Antibiotics**

An antibiotic is a drug that kills or slows the growth of bacteria. Antibiotics are relatively harmless to the host, and therefore can be used to treat infections, and infectious disease. Penicillin, for example, is an antibiotic.

## **Antidotes**

An antidote is an agent used to neutralize or counteract the effects of a poison. Three types can be distinguished: A chemical antidote neutralizes the poison by changing its chemical nature; a mechanical antidote prevents absorption of the poison; a physiological antidote counteracts the effects of the poison by producing opposing physiologic effects.<sup>2</sup>

## **Australia Group**

The Australia Group is an informal arrangement that aims to allow exporting nations to minimize the risk of assisting chemical and biological weapons proliferation. Although the group places no legal constraints on its membership, a shared commitment to non-proliferation forms the basis for cooperation.

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1 Summarized from: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/anthrax\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/anthrax_g.htm)

2 Dorland's Medical Dictionary for Health Consumers (Saunders, 2007).

Coordination of export licensing measures and information exchange form the basis of the group's activities. All participating nations are parties to both the Chemical Weapons Convention and the Biological and Toxin Weapons Convention (BTWC).<sup>3</sup>

**Bacteriology**

Bacteriology is the study of bacteria.<sup>4</sup>

**Biocide**

A chemical agent, such as a pesticide, that is capable of destroying living organisms.<sup>5</sup>

**Biological Agents**

A biological agent is a virus, a micro-organism, or a toxic substance derived from a living organism or its products. Some biological agents adversely affect human health, and are therefore considered a biosecurity threat. Infectious diseases are caused by biological agents. Examples include anthrax, smallpox, avian influenza, and botulism, among others. In medicine, on the other hand, biological agents such as antibodies, interleukins, and vaccines are used in the prevention, diagnosis, or treatment of diseases.

**Biological Defense or Biodefense**

Designates a wide spectrum of efforts to prevent, mitigate, and deal with biological incidents, such as pandemics and bioterrorist attacks. This includes: threat awareness, which seeks to collect, analyze, and disseminate information on the nature of biosecurity-related issues and their prediction; prevention and protection, including critical infrastructure protection, development of processes and procedures to manage a emerging threats, and other biosecurity-related activities such as police actions or trade sanctions and other efforts such as the Australia Group, Wassenaar Arrangements, or similar export control regimes; surveillance and detection, where surveillance systems are used to warn of an outbreak, locating its origins, and assist in determining its origins and monitoring its spread with the assistance of epidemiologic monitoring techniques; and finally, response and recovery, which works to mitigate the effects of a release of pathogenic microorganisms, response planning, mass casualty care, and decontamination

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3 Summarized from: <http://www.australiagroup.net/en/intro.htm>  
4 Quoted from: [http://www.askoxford.com/concise\\_oed/bacteriology?view=uk](http://www.askoxford.com/concise_oed/bacteriology?view=uk)  
5 The American Heritage Dictionary of the English Language, Fourth Edition, updated in 2003 (Houghton Mifflin Company, 2000).

of people, places, and objects from the harmful biological agents. Biodefense procedures are also integrated into planning for Weapons of Mass Destruction (WMD) events involving chemical, biological, radiological, or nuclear (CBRN) incidents and their fallout.

**Biological Diversity or Biodiversity**

According to the United Nations Convention on Biological Diversity, this term “means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”<sup>6</sup>

**Biological Safety or Biosafety**

Biological safety implies the use of equipment and facilities to reduce the potential for the spread of infectious agents or biologically derived materials into the environment (see Biological Agents). This includes, for example, the use of containment devices to prevent the release of harmful materials into the atmosphere, the wearing of protective clothing to prevent contamination while working with infectious diseases, or used needle disposal services. It is distinct from biological security.

**Biological Safety Level or Biosafety Level (BSL)**

Indicates the level of protection afforded to personnel, the environment, and the community in laboratories working with infectious diseases. There are four biosafety levels, ranging from one (lowest) to four (highest). Level one (BSL-1) is suitable for work involving agents not known to cause disease in healthy adults; rarely are any particular biosafety precautions taken. Level two (BSL-2) is similar to level one; however, the agents involved pose a moderate hazard to humans and the environment, therefore additional precautions are taken. Level three (BSL-3) is required for work with indigenous or exotic agents which may cause serious or lethal disease as a result of inhalation. Lab personnel wear additional protective clothing and equipment to prevent inhalation of agents, and the laboratory has special engineering and design features to prevent contamination from spreading. Level four biosafety (BSL-4) is required for work with highly dangerous agents that pose a highly significant risk to personnel working in the laboratory, as well as the surrounding community should an accident or biosecurity incident occur.

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6 Article 2. Use of Terms of the United Nations Convention on Biodiversity. Quoted from: <http://www.biodiv.org/convention/articles.asp?lg=0&a=cbd-02>

Laboratory personnel wear a one-piece positive pressure personnel suit, attached to a life-support system, and the laboratory is completely isolated. An extensive decontamination procedure is applied to everything leaving the laboratory – from people to water run-off to air.<sup>7</sup>

### **Biological Security or Biosecurity**

Biological security deals with threats from biological sources or biological agents as well as the protection of people, plants, animals, and consumable resources – such as water or food stuff – against these threats. A biological security threat can include the use of bacteria, viruses, or toxins to create disease, cause death, or instill fear. Preventing the release of biological agents such as anthrax into a ventilation system, or protection of a water reservoir from contamination are aspects of biological security. Biological security is different than biological safety in that it deals with security aspects of biological and infectious diseases.

### **Biological Technology or Biotechnology**

The United Nations Convention on Biological Diversity defines ‘biotechnology’ as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.”<sup>8</sup>

### **Biological Terrorism or Bioterrorism**

Bioterrorism is the spread of fear by intentional release or dissemination of biological agents (bacteria, viruses, or toxins); these may be in a naturally-occurring or in a human-modified form.<sup>9</sup>

### **Biological and Toxin Weapons Convention (BTWC)**

The Biological and Toxin Weapons Convention (BTWC) bans the development, production, stockpiling, acquisition, and retention of microbial or other biological agents or toxins as well as associated equipment or means of delivery for hostile purposes or in armed conflict. The use of these types of agents is explicitly banned in the Geneva Protocol. While the Convention does allow retention of these toxins in small quantities for prophylactic, protective, or otherwise peaceful purposes – such as research – the BTWC is considered the first attempt to ban an entire weapons class. The convention entered into force in

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7 Summarized from: <http://www.cdc.gov/OD/ohs/biosfty/bmb14/bmb14s3.htm>

8 Article 2. Use of Terms of the United Nations Convention on Biodiversity. Quoted from: <http://www.biodiv.org/convention/articles.asp?lg=0&a=cbd-02>

9 <http://en.wikipedia.org/wiki/Bioterrorism>

the spring of 1975, and subsequent periodic review conferences have sought to keep the treaty updated.<sup>10</sup>

### **Biological Weapons (BW)**

As part of the class of chemical, biological, radiological, or nuclear (CBRN) weapons, this mass casualty weapon involves the use of a biological agent in an offensive, hostile manner. Although the Geneva Protocol bans the use in war of these weapons, and the development of biological weapons by the Biological and Toxin Weapons Convention (BTWC), it is thought that a terrorist group may use biological weapons for purposes of bioterrorism. The threat of the use of biological weapons presents a significant biosecurity threat given the potential for extensive destruction of life; however, it should be noted that costly, technical hurdles must be overcome prior to the weaponization of biological agents.

### **Bioorganic Chemistry**

While biochemistry is the study of the chemical processes and transformations in living organisms, bioorganic chemistry focuses on organic compounds and their role in biochemical processes. In contrast, bioinorganic chemistry is a specialized field that spans the chemistry of metal-containing molecules within biological systems.

### **Bioscience**

Also called life science. Any of several branches of the natural science, such as biology, medicine, anthropology, or ecology, that deal with living organisms and their organization, life processes, and relationships to each other and their environment.<sup>11</sup>

### **Bird Flu**

Also known as avian influenza, bird flu is a naturally occurring virus among birds. Worldwide, wild birds carry the virus, but do not often get sick. A particularly virulent and lethal strain for birds is the N<sub>5</sub>H<sub>1</sub> strain of the disease, which causes mortality rates of 90–100 per cent in bird populations within two days. Although humans have occasionally contracted the disease, and a resulting mortality rate is significant – over 50 per cent – the disease cannot yet be transmitted through inter-person contact. Those that have contracted the virus have been in prolonged, close contact with birds. The biosecurity risk for humans is that the bird flu

10 Summarized from: <http://www.opbw.org/>

11 The American Heritage Dictionary of the English Language, Fourth Edition, Updated in 2003 (Houghton Mifflin Company, 2000).

virus may mutate and either becomes more easily contracted by humans, or that person-to-person transmission becomes possible.<sup>12</sup>

### **Botulism**

Botulism is a muscle-paralyzing disease caused by a toxin made by a bacterium commonly found in soil. Although it is rare, all forms of the disease can be fatal, and each case is considered a medical emergency. Foodborne botulism can be particularly dangerous as large numbers of people can become ill after consuming contaminated food. A bioterrorist incident could involve the contamination of foodstuff bound for human consumption, or airborne exposure.<sup>13</sup>

### **Chemical Agents**

Generally considered the easiest mass casualty weapon to produce, chemical agents rely on the toxic properties of chemical substances to incapacitate, injure, or kill. Such weapons are different than nuclear or conventional weaponry in that they do not require explosive force to be highly destructive. Under the Chemical Weapons Convention, any toxic chemical, regardless of origin, is regarded as a weapon unless it is used for a non-prohibited purpose. For example, the use of white phosphorus as a battlefield luminescent, or as a signaling marker is an acceptable use of the chemical. Should that same white phosphorus be used against humans, regardless of nature or reason, that would be considered a prohibited action under the Chemical Weapons Convention. Chemical weapons are different from biological agents, which affect the functioning of a living organism at the microscopic level.

### **Chemical Weapons Convention**

The Chemical Weapons Convention, which entered into force on 29 April 1997, was the first multilateral treaty to ban an entire category of weapons and provide an international destruction verification mechanism. It bans the development, production, stockpiling, acquisition, and use of chemical weapons by signatory states, by their citizens anywhere, and by individuals on their territory. The Convention allows for the monitoring of commercial facilities that use dual-use chemicals to ensure they are not diverted towards prohibited purposes. Furthermore, the Chemical Weapons Convention penalizes non-signatories by restricting their access to certain chemicals controlled by the convention. The Convention has adopted a broad definition of chemical weapons: the term is applied to any toxic

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12 Summarized from: <http://www.cdc.gov/flu/avian/gen-info/facts.htm>

13 Summarized from: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/botulism\\_g.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/botulism_g.htm)

chemical or its precursor that can cause death, injury, temporary incapacitation, or sensory irritation through its chemical action. Munitions or other delivery devices designed to deliver chemical weapons, whether filled or unfilled, are also considered weapons themselves.<sup>14</sup>

**Classical Swine Fever (CSF)**

Classical swine fever or hog cholera (also sometimes called pig plague based on the German word “Schweinepest”) is a highly contagious disease of pigs and wild boar. The infectious agent responsible is a virus.<sup>15</sup>

**Contagion**

Generally, contagion is transmission of a disease by direct or indirect contact. Contagion, by a bacterium or virus, can be the direct cause of a communicable disease.<sup>16</sup>

**Conventional Weapon**

A conventional weapon is a weapon that does not incorporate chemical, biological, radiological, or nuclear (CBRN) payloads. The phrase is a retronym, invented to describe the weapons arsenal that existed before the other categories of weapons were heavily researched in the 20th century.

**Critical Infrastructure**

This term is used to describe material assets that are essential for the continuing function of a society and economy. Principally associated with facilities for: electricity generation and distribution; telecommunication; water supply; agriculture, food production and distribution; heating (natural gas, fuel oil); public health; transportation systems (fuel supply, railway network, airports); financial services; security services (police, military).

**Critical Infrastructure Protection**

The study, design, and implementation of precautionary measures aimed to reduce the risk of failure in critical infrastructure as the result of war, disaster, civil unrest, vandalism, sabotage, or terrorist incidents.

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14 Summarized from: <http://www.opcw.org/>  
15 [http://en.wikipedia.org/wiki/Classical\\_swine\\_fever](http://en.wikipedia.org/wiki/Classical_swine_fever)  
16 The American Heritage Stedman’s Medical Dictionary, Second Edition (Houghton Mifflin Company, 2004).

### **Decontamination**

Decontamination is the process of cleaning any sort of object, be it a person, animal, or surface, to remove contamination or potential contamination by a dangerous substance. For example, decontamination procedures at biosafety level-four facilities require a highly specific process to ensure that people do not come into contact with the materials they are working with. Mass decontamination procedures for infected populations following a CBRN event such as the release of a biological agent requires specialized facilities and operating procedures, such as those in place at the Los Angeles International airport.

### **Dual-Use Goods and Technologies**

This term is used to describe goods and technologies that are major or critical elements for the development, production, use, or enhancement of military capabilities. Dual-use goods and technologies are considered to have both civil and military applications. For this reason, Canada, for example, refuses to trade any nuclear energy components or related materials with India for its violation of the nuclear non-proliferation treaty, because the technology could be used to further India's indigenous nuclear weapons program. Another example is the Wassenaar Arrangement, which seeks to restrict items that could potentially upset or unbalance regional or global security orders, and lead to weapons proliferation.

### **Ebola Virus**

The Ebola virus is an extremely contagious filovirus causing an acute, highly fatal hemorrhagic fever. It is spread through contact with bodily fluids or secretions of infected persons and by airborne particles.<sup>17</sup>

### **Epidemiologic Surveillance**

Epidemiologic surveillance is the ongoing systematic collection, analysis, and interpretation of health data critical to planning, implementing, and evaluating public health practice. It is closely integrated with the timely distribution of information and data to public health officials. Epidemiologic surveillance considers factors affecting health and illness, and utilizing a range of investigative tactics to reveal an unbiased relationship between stressors in the environment and their effect on wellness and health. This is one of the principal ways in which public health services investigate and work to combat disease outbreaks.

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17 The American Heritage Dictionary of the English Language, Fourth Edition, Updated in 2003 (Houghton Mifflin Company, 2000).



**Epidemiology**

Epidemiology is the study of the incidence and distribution of diseases and other factors relating to health.<sup>18</sup>

**Epizootic / Epizootology**

An epidemic outbreak of disease in an animal population, often with the implication that it may extend to humans.<sup>19</sup> Epizootology is the science concerned with the factors involved in the occurrence and spread of animal diseases.

**Export Control / Control of Exports / Export License**

Restrictions placed on the export of materials or products by national governments, or in some cases, the United Nations Security Council, either restricted to particular states or as general bans. For example, Switzerland has imposed export controls on certain types of munitions, and will not allow any of its agencies or commercial operations based in Switzerland to export these munitions. Similar restrictions are often also placed on dual-use goods.

**First Responder**

A first responder is a person who has completed training in providing care for emergencies. Such experts have more skill than others who are trained in first aid, but are not emergency medical technicians.<sup>20</sup>

**Genetically Modified Organisms (GMO)**

A genetically modified organism or GMO is an organism whose genetic material has been altered using techniques in genetics generally known as recombinant DNA technology. Recombinant DNA technology is the ability to combine DNA molecules from different sources into a single molecule in a test tube. The characteristics of the organism, or the proteins it produces, can be modified through the modification of its genes. The term generally does not cover organisms whose genetic makeup has been altered by conventional cross-breeding or by targeted mutation breeding – or “mutagenesis” – as these methods predate the discovery of the recombinant DNA techniques.

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18 Quoted from: [http://www.askoxford.com/results/?view=dev\\_dict&field-12668446=epidemiology&branch=13842570&textsearchtype=exact&sortorder=score%2Cname](http://www.askoxford.com/results/?view=dev_dict&field-12668446=epidemiology&branch=13842570&textsearchtype=exact&sortorder=score%2Cname)

19 <http://www.medterms.com/script/main/art.asp?articlekey=14877>

20 [http://en.wikipedia.org/wiki/First\\_responder](http://en.wikipedia.org/wiki/First_responder)

### **Geneva Protocol**

The Geneva Protocol is the Protocol for the Prohibition of the use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological methods of Warfare. Opened for signatures in 1925, it seeks to limit the use of chemical or biological weapons in warfare. However, it says nothing about the production, storage, or transfer of these materials, a deficiency that later treaties and protocols have remedied (see, for example, Biological and Toxin Weapons Convention, Australia Group, or Wassenaar Arrangement). Numerous nations have expressed reservations about the protocol, although it is considered the legal mechanism that bans the use of chemical or biological weapons in laws governing the conduct of war.

### **Genomics**

Genomics is the study of genes and their function. Genomics aims to understand the structure of the genome, including the mapping of genes and sequencing of the DNA. Genomics examines the molecular mechanisms and the interplay of genetic and environmental factors in disease.<sup>21</sup>

### **Human Immunodeficiency Virus (HIV) / AIDS**

HIV is a retrovirus that causes acquired immunodeficiency syndrome (AIDS), a condition in humans in which the immune system begins to fail, leading to life-threatening opportunistic infections.

### **Hydrology**

Hydrology describes the scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.<sup>22</sup>

### **Hydrometeorology**

Hydrometeorology is the branch of meteorology that deals with the occurrence, motion, and changes of state of atmospheric water.<sup>23</sup>

### **Immunoprophylaxis**

Immunoprophylaxis is the prevention of disease by the use of vaccines or therapeutic antisera.<sup>24</sup>

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21 <http://www.medterms.com/script/main/art.asp?articlekey=23242>

22 <http://www.answers.com/Hydrology>

23 *The American Heritage Dictionary of the English Language, Fourth Edition, Updated in 2003* (Houghton Mifflin Company, 2000).

24 [http://www.mercksource.com/pp/us/cns/cns\\_hl\\_dorlands.jspzQzpgzEzzSzppdocszSzuszSz-commonzSzdorlandzSzdorlandzSzmd\\_i\\_03zPzhtn](http://www.mercksource.com/pp/us/cns/cns_hl_dorlands.jspzQzpgzEzzSzppdocszSzuszSz-commonzSzdorlandzSzdorlandzSzmd_i_03zPzhtn)

**Infectious Diseases**

In medicine, infectious diseases or communicable diseases are diseases caused by a biological agent such as by a virus, bacterium, or parasite. This is contrasted against physical causes, such as burns, or chemical causes, such as intoxication.

**Influenza Virus**

"The flu" is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death.<sup>25</sup>

**Malaria**

An infectious disease caused by protozoan parasites from the Plasmodium family that can be transmitted by the sting of the Anopheles mosquito or by a contaminated needle or transfusion.<sup>26</sup>

**Marburg Virus**

Marburg virus causes Marburg hemorrhagic fever, a disease that affects both humans and non-human primates. Caused by a genetically unique zoonotic (that is, animal-borne) RNA virus of the filovirus family, its discovery led to the creation of this virus family. The four species of Ebola virus are the only other known members of the filovirus family.<sup>27</sup>

**Microbiology**

Microbiology is the study of microorganisms, which are unicellular or cell-cluster microscopic organisms. This includes eukaryotes such as fungi and protists, and prokaryotes such as bacteria and certain algae. Viruses, though not strictly classed as living organisms, are also studied.<sup>28</sup>

**Metrology**

Metrology is the scientific study of measurement. Metrology includes all theoretical and practical aspects of measurement.

**Molecular Biology**

Molecular biology is the study of biology at a molecular level. The field overlaps with other areas of biology and chemistry, particularly genetics and biochemistry. Molecular biology chiefly concerns itself with understanding the interactions be-

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25 <http://www.cdc.gov/flu/keyfacts.htm>  
26 <http://www.medterms.com/script/main/art.asp?articlekey=4255>  
27 <http://www.medterms.com/script/main/art.asp?articlekey=6368>  
28 <http://en.wikipedia.org/wiki/Microbiology>

tween the various systems of a cell, including the interrelationship of DNA, RNA, and protein synthesis and learning how these interactions are regulated.<sup>29</sup>

### **Non-Conventional Weapons**

Generally referred to as chemical, biological, radiological, and nuclear (CBRN) weapons. Known also as mass casualty weapons.

### **Nonproliferation**

The prevention of an increase or spread of something; especially possession of weapons of mass destruction.

### **Orthopox Virus**

Orthopox viruses include many species isolated from non-human mammals, such as Variola virus (humans, smallpox). Orthopox viruses are distributed universally. All mammalian orthopox viruses should be considered capable of establishing infections in humans.<sup>30</sup>

### **Pandemic**

A pandemic is an outbreak of an infectious disease that spreads across large regions, or globally. Generally, three criteria must be met for an outbreak of infectious disease to be considered a pandemic: the disease is new to the population; human infection is occurring and it causes serious illness; agent of the disease spreads easily and sustainably among human populations.

### **Parasitology**

Parasitology is a biological discipline that encompasses the study of parasites, their hosts, and the relationship between them.<sup>31</sup>

### **Pathogen / Pathogenesis / Pathology**

A pathogen is an agent of disease; a disease producer. The term “pathogen” is most commonly used to refer to infectious organisms. These include bacteria, viruses, and fungi. Less commonly, “pathogen” refers to a noninfectious agent of disease such as a chemical.<sup>32</sup> Pathogenesis is the development of a disease, the origin of a disease, and the chain of events leading to that disease,<sup>33</sup> while

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29 [http://en.wikipedia.org/wiki/Molecular\\_Biology](http://en.wikipedia.org/wiki/Molecular_Biology)

30 <http://en.wikipedia.org/wiki/Orthopoxvirus>

31 <http://en.wikipedia.org/wiki/Parasitology>

32 <http://www.medterms.com/script/main/art.asp?articlekey=6383>

33 <http://www.medterms.com/script/main/art.asp?articlekey=6385>

pathology is defined as “that branch of medicine which treats of the essential nature of disease.”<sup>34</sup>

**Phytosanitary**

Plant health, especially the use of pesticides for plant health or inspections aimed at preventing the spread of plant diseases and pests across borders.<sup>35</sup>

**Plague**

Plague is a naturally occurring infectious disease that has several forms, affects both animals and humans, and is found globally. There are several forms of the disease, with pneumonic plague being of the greatest concern, as it can be spread in the air and can be transmitted from person to person through direct and close contact. Its use as in a bioterrorism attack would be of significant concern.<sup>36</sup>

**Polymerase Chain Reaction (PCR)**

PCR is a key technique in molecular genetics that permits the analysis of any short sequence of DNA (or RNA) without having to clone it. PCR is the technique for enzymatically replicating DNA without using a living organism and is therefore used to reproduce (amplify) selected sections of DNA.<sup>37</sup>

**Prophylaxis**

Prophylaxis means an action intended to prevent disease, or decisions taken as a preventive course of action.<sup>38</sup>

**Public Health**

Public health is concerned with threats to the overall health of a community based on population health analysis. The World Health Organization defines health as: “A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”<sup>39</sup>

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34 <http://www.medterms.com/script/main/art.asp?articlekey=6387>

35 <http://en.wikipedia.org/wiki/Phytosanitary>

36 Summarized from: <http://www.bt.cdc.gov/agent/plague/factsheet.asp>

37 <http://www.medterms.com/script/main/art.asp?articlekey=4807> and [http://en.wikipedia.org/wiki/Polymerase\\_chain\\_reaction](http://en.wikipedia.org/wiki/Polymerase_chain_reaction)

38 Summarized from: [http://www.askoxford.com/concise\\_oed/prophylactic?view=uk](http://www.askoxford.com/concise_oed/prophylactic?view=uk)

39 Quoted from: <http://www.who.int/en/>

### **Rabies**

Rabies is a potentially fatal viral infection that attacks the central nervous system. The rabies virus is carried primarily by wild animals, especially bats and raccoons. It finds its way to humans by way of direct contact with infected wild animals or by contact with domestic animals that have contracted the virus. Most cases of rabies can be traced to animal bites.<sup>40</sup>

### **SARS**

Severe Acute Respiratory Syndrome (SARS) is a viral respiratory illness caused by a coronavirus (a particular type of virus). First reported in Asia in February 2003, over the following months the illness spread to more than two dozen countries globally before the 2003 outbreak was contained. SARS appears to have spread by close (less than one meter) person-to-person contact, and thought to have spread most readily through respiratory droplets produced when an infected person coughed or sneezed, similar to the spread of the common cold. The outbreak of this disease sparked a global increase in biosafety measures by both international organizations such as the World Health Organization, national governments and individuals.<sup>41</sup>

### **Smallpox**

Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. The virus that carries smallpox has been eliminated in nature, however there are fears that some amount of the virus kept for laboratory research may be used as a biological agent in a bioterrorism incident.<sup>42</sup>

### **Strain Bank**

A microbiological strain bank is a collection of viruses and bacteria for the purpose of research for vaccines and defense against a range of biosafety and biosecurity-related threats. The Biological and Toxin Weapons Convention (BTWC) bans the use of microbiological strain banks for hostile purposes, such as in the development of offensive weapons.

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40 <http://www.medterms.com/script/main/art.asp?articlekey=11943>

41 Summarized from: <http://www.cdc.gov/ncidod/sars/basics.htm>

42 Summarized from: <http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>

**Surveillance System**

Surveillance systems collect and monitor data for disease trends and/or outbreaks so that public health personnel can protect the people against health threats. It is closely linked to epidemiologic surveillance.

**Therapeutics**

Therapeutics is that part of medicine concerned specifically with the treatment of disease.<sup>43</sup>

**Toxicology**

Toxicology is the branch of science concerned with the nature, effects, and detection of poisons.<sup>44</sup>

**Toxin**

Technically applied only to poisonous substances produced by living organisms or cells, these substances can cause injury, illness, or death to living things (such as plants, animals, or people), typically by a chemical reaction or other activity on the molecular scale. When used non-technically, the term “toxin” is often applied to any toxic substance. Toxic substances that are not of biological origin are more properly termed poisons. Toxinology is the science dealing with the toxins produced by certain higher plants and animals and by pathogenic bacteria.<sup>45</sup>

**Tuberculosis**

Tuberculosis (abbreviated as TB for Tubercle Bacillus) is any of the infectious diseases of humans and other animals that are due to a species of mycobacterium and marked by formation of tubercles and caseous necrosis in tissues of any organ; in humans, the lung is the major seat of infection and the usual portal through which infection reaches other organs.<sup>46</sup>

**Tularemia**

Tularemia is a highly infectious disease which can be caused by a small amount of bacteria; it is naturally occurring. Typically found in rural areas, it is common in animal populations, and functions as a zoonosis if transmitted via the bite of an infected animal (in particular rodents, rabbits, and hares), or if transmitted via a tick or deer fly bite. The disease can be contracted through the handling

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43 <http://www.medterms.com/script/main/art.asp?articlekey=18811>  
44 Quoted from: [http://www.askoxford.com/concise\\_oed/toxicology?view=uk](http://www.askoxford.com/concise_oed/toxicology?view=uk)  
45 Dorland’s Medical Dictionary for Health Consumers (Saunders, 2007).  
46 Dorland’s Medical Dictionary for Health Consumers (Saunders, 2007).

of infected animal carcasses, eating or drinking contaminated food or water, or inhaling the bacteria which causes the illness. If inhaled and left untreated, it can lead to severe respiratory illness, pneumonia, and systemic infection. There is a certain biosecurity risk associated with tularemia; if it were used as a bioweapon as part of a bioterrorism attack, it is thought that it would most likely be spread via airborne release.<sup>47</sup>

### **Vaccines**

A vaccine is a substance used to stimulate the natural production of antibodies, and to provide immunity against one or several diseases prepared from the causative agent of a disease or a synthetic substitute.<sup>48</sup>

### **Viral Hemorrhagic Fevers**

Viral hemorrhagic fevers refer to a group of illnesses that are caused by several distinct families of viruses. In general, the term “viral hemorrhagic fever” is used to describe a severe multisystem syndrome (multisystem in that multiple organ systems in the body are affected). Characteristically, the overall vascular system is damaged, and the body’s ability to regulate itself is impaired. These symptoms are often accompanied by hemorrhaging (bleeding); however, the bleeding itself is rarely life-threatening. While some types of hemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease. Those working with the virus must do so under BSL-4 conditions. Examples include: Lassa fever, Marburg virus, Ebola virus, Bolivian haemorrhagic fever, Korean hemorrhagic fever, Crimean-Congo hemorrhagic fever, and Dengue hemorrhagic fever.

### **Virology**

Virology is the scientific study of viruses.<sup>49</sup>

### **Wassenaar Arrangement**

The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies is a non-binding agreement between 40 nations, whose purpose is to contribute to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies to prevent destabilizing

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47 Summarized from: <http://www.bt.cdc.gov/agent/tularemia/facts.asp>

48 Summarized from: [http://www.askoxford.com/results/?view=dev\\_dict&field-12668446=Vaccine&branch=13842570&textsearchtype=exact&sortorder=score%2Cname](http://www.askoxford.com/results/?view=dev_dict&field-12668446=Vaccine&branch=13842570&textsearchtype=exact&sortorder=score%2Cname)

49 Quoted from: [http://www.askoxford.com/concise\\_oed/virology?view=uk](http://www.askoxford.com/concise_oed/virology?view=uk)



accumulations of those items. The Wassenaar Arrangement establishes lists of items to which member countries must apply export controls. Member governments implement these controls to ensure that transfers of the controlled items do not contribute to the development or enhancement of military capabilities that undermine the goals of the arrangement, and are not diverted to support such capabilities. In addition, the Wassenaar Arrangement imposes some reporting requirements on its member governments. The ultimate decision to deny or transfer goods remains exclusively with each participating government, in accordance with their respective national policies.<sup>50</sup> It is similar to the Australia Group, in that it attempts to limit the proliferation of offensive military related technologies.

**Weaponization**

Weaponization implies the altering of a previously benign substance or object with a peaceful or non-offensive purpose, into a substance or object with offensive abilities, properties, or form. For example, the weaponization of nuclear material implies that the material can now be used for nuclear weapons, rather than simply just as a source of fuel.

**Weapons of Mass Destruction (WMD)**

Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can consist of large amounts of high explosives (although this is not typical in the normative use of the term) or chemical, biological, radiological, or nuclear (CBRN) weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon.<sup>51</sup> Known also as mass casualty weapons.

**Weapons Non-Proliferation**

Usually applied to efforts to halt the proliferation of chemical, biological, radiological, and nuclear (CBRN) weapons, such as the Chemical Weapons Convention, the Biological and Toxins Weapons Convention, the Nuclear Non-Proliferation Treaty, the Australia Group, or the Wassenaar Arrangement.

.....  
50 Summarized from: <http://www.bis.doc.gov/wassenaar/default.htm> and <http://www.wassenaar.org>  
51 Defined from: [http://www.dtic.mil/doctrine/jel/new\\_pubs/jp1\\_02.pdf](http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf)

### **Weapons Proliferation**

Typically used in reference to nuclear weapons proliferation, this term generally can be taken to mean the proliferation of any chemical, biological, radiological, and nuclear (CBRN) weapons, or technologies associated with them (see “dual use”). Additionally, weapons proliferation can also refer to the proliferation of some conventional weapons, such as missiles.

### **Zoonoses**

The World Health Organization notes that: Any disease and/or infection which is naturally “transmissible from vertebrate animals to man” is classified as a zoonosis according to the PAHO publication “Zoonoses and communicable diseases common to man and animals”. Over 200 zoonoses have been described and have been known since many centuries. They involve all types of agents: bacteria, such as anthrax, plague, E.coli, or tularemia; parasites, such as those found in pigs; viruses, such as rabies, bird flu, or viral hemorrhagic fever; and other types of agents.<sup>52</sup>

.....  
52 Quoted and summarized from: <http://www.who.int/zoonoses/en/>





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# IMPORTANT LINKS

## COUNTRIES

### FRANCE

- **Arms Procurement Agency (DGA)**  
(<http://www.defense.gouv.fr/sites/dga/>)
- **Biotox plan** (<http://afssaps.sante.fr/htm/10/piratox/indpira.htm>)
- **Center for Nuclear, Biological, and Chemical Defense (CDNBC)**  
(<http://www.cofat.terre.defense.gouv.fr/Cofat%5F/Decouverte/ODF/Specialisees/CDNBC/>)
- **Central Criminal Investigation Directorate (DCPJ)**  
([http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/dcpj](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/dcpj))
- **Directorate for the Prevention of Pollution and Risks (DPPR)**  
([http://www.ecologie.gouv.fr/article.php3?id\\_article=1290](http://www.ecologie.gouv.fr/article.php3?id_article=1290))
- **Directorate of Civil Defense and Security (DDSC)** ([http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/defense\\_et\\_securite\\_civiles/presentation](http://www.interieur.gouv.fr/sections/a_1_interieur/defense_et_securite_civiles/presentation))
- **Directorate of Hospitalization and Organization of Care (DHOS)**  
(<http://www.sante.gouv.fr/>)
- **Directorate of Territorial Surveillance (DST)**  
([http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/))
- **French National Gendarmerie**  
(<http://www.defense.gouv.fr/sites/gendarmerie/>)
- **General Directorate of Alimentation (DGAL)**  
([http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation\\_a4572.html](http://www.agriculture.gouv.fr/spip/ressources.themes.alimentationconsommation_a4572.html))
- **General Directorate of Health (DGS)**  
(<http://www.sante.gouv.fr/>)

- **General Intelligence Directorate (DCRG)**  
([http://www.interieur.gouv.fr/sections/a\\_1\\_interieur/la\\_police\\_nationale/organisation/dcrg](http://www.interieur.gouv.fr/sections/a_1_interieur/la_police_nationale/organisation/dcrg))
- **General Secretariat of National Defense (SGDN)**  
([http://www.premier-ministre.gouv.fr/acteurs/premier\\_ministre/services-premier-ministre\\_195/secretariat-general-defense-nationale\\_328/](http://www.premier-ministre.gouv.fr/acteurs/premier_ministre/services-premier-ministre_195/secretariat-general-defense-nationale_328/))
- **Health Products Safety Agency (AFSSAPS)**  
(<http://afssaps.sante.fr/>)
- **Institute Pasteur** (<http://www.pasteur.fr/>)
- **Laboratory Jean Mérieux** (<http://www.cervi-lyon.inserm.fr/>)
- **National Institute for Public Health Surveillance (InVS)**  
(<http://www.invs.sante.fr/>)
- **National Institute of Research and Security (INRS)**  
(<http://en.inrs.fr/>)
- **National Institute of the Industrial Environment and Risks (INERIS)**  
(<http://www.ineris.fr/>)
- **Research Center of the Armed Force's Health Service (CRSSA)**  
([http://www.defense.gouv.fr/sites/sante/enjeux\\_defense/le\\_soutien\\_des\\_forces/la\\_recherche/les\\_etablissements\\_de\\_recherche/le\\_centre\\_de\\_recherche\\_emile\\_parde/](http://www.defense.gouv.fr/sites/sante/enjeux_defense/le_soutien_des_forces/la_recherche/les_etablissements_de_recherche/le_centre_de_recherche_emile_parde/))
- **Research Program “Microbiologie fondamentale”**  
(<http://www.cnrs.fr/DEP/prg/microbio.htm>)
- **Urgent Medical Services (SAMU)**  
(<http://www.samu-de-france.com/>)

## GERMANY

- **Bernhard Nocht Institute (BNI)**  
(<http://www.bni.uni-hamburg.de/>)
- **Bundeswehr** (<http://www.deutschesheer.de>)
- **Federal Agency for Nature Conservation (BfN)**  
(<http://www.bfn.de/>)

## Important Links

- **Federal Agency for Technical Relief (THW)**  
(<http://www.thw.bund.de/>)
- **Federal Criminal Police Office (BKA)**  
(<http://www.bka.de/>)
- **Federal Environment Agency (UBA)**  
(<http://www.umweltbundesamt.de/>)
- **Federal Institute for Occupational Safety and Health (BAuA)**  
(<http://www.baua.de/>)
- **Federal Institute for Risk Assessment (BfR)** (<http://www.bfr.bund.de/>)
- **Federal Intelligence Service (BND)** (<http://www.bnd.bund.de/>)
- **Federal Ministry of Food, Agriculture and Consumer Protection (BMELV)** (<http://www.bmelv.de/>)
- **Federal Office for the Protection of the Constitution (BfV)**  
(<http://www.verfassungsschutz.de/>)
- **Federal Office of Civil Protection and Disaster Assistance (BBK)**  
(<http://www.bbk.bund.de/>)
- **Federal Office of Consumer Protection and Food Safety (BVL)**  
(<http://www.bvl.bund.de/>)
- **Federal Office of Economics and Export Control (BAFA)**  
(<http://www.bafa.de/>)
- **Federal Research Centre for Nutrition and Food (BfEL)**  
(<http://www.bfel.de/>)
- **Fraunhofer Gesellschaft (FhG)** (<http://www.fraunhofer.de/>)
- **Friedrich Loeffler Institute (FLI)** (<http://www.fli.bund.de/>)
- **Institute for Virology, University of Marburg**  
(<http://www.med.uni-marburg.de/stpg/ukm/lt/hygiene/eviro.htm>)
- **Interdisciplinary Expert Network on Biological Dangers**  
([http://www.bevoelkerungsschutz.de/cln\\_007/DE/Home/homepage\\_\\_node.html\\_\\_nnn=true](http://www.bevoelkerungsschutz.de/cln_007/DE/Home/homepage__node.html__nnn=true))
- **Joint Terrorism Defense Centre (GTAZ)**  
([http://www.bmi.bund.de/cln\\_012/nn\\_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Gemeinsames\\_\\_Terrorismusabwehrzentrum\\_\\_de.html](http://www.bmi.bund.de/cln_012/nn_165104/Internet/Content/Themen/Terrorismus/DatenundFakten/Gemeinsames__Terrorismusabwehrzentrum__de.html))

- **Medical Service of the Bundeswehr**  
(<http://www.sanitaetsdienst-bundeswehr.de/portal/a/sanitaetsdienst>)
- **National Reference Centers (NRZ) and Consultant Laboratories**  
([http://www.rki.de/cln\\_011/nn\\_231536/EN/Content/Institute/DepartmentsUnits/NRC/nrc\\_\\_node\\_\\_en.html\\_\\_nnn=true](http://www.rki.de/cln_011/nn_231536/EN/Content/Institute/DepartmentsUnits/NRC/nrc__node__en.html__nnn=true))
- **National Vaccine Initiative**  
(<http://www.gesundheitsforschung-bmbf.de/de/376.php>)
- **Paul Ehrlich Institute (PEI)** (<http://www.pei.de/>)
- **Permanent Working Group of Centres of Expertise and Treatment (StAKoB)** (<http://www.stakob.org/>)
- **Robert Koch Institute (RKI)** (<http://www.rki.de/>)

## RUSSIA

- **External Reconnaissance Service (ERS)** (<http://www.svr.gov.ru/>)
- **Federal Agency of Industry** (<http://www.rosprom.gov.ru/>)
- **Federal Security Service (FSB)** (<http://www.fsb.ru/>)
- **Federal Service of Technical and Export Control (FSTEC)**  
(<http://www.fstec.ru/>)
- **Federal Service on Ecological, Technological, and Nuclear Control**  
(<http://www.gosnadzor.ru/>)
- **Federal Service on Hydrometeorology and Control of the Environment (MECOM)** (<http://www.mecom.ru/>)
- **International Science and Technology Center (ISTC)**  
(<http://www.istc.ru/>)
- **Ministry of Agriculture (MoA)** (<http://www.mcx.ru/>)
- **Ministry of Defense** (<http://www.mil.ru/>)
- **Ministry of Economic Development and Trade**  
(<http://www.economy.gov.ru/>)
- **Ministry of Education and Science (MON)**  
(<http://www.mon.gov.ru/>)
- **Ministry of Foreign Affairs (MID)** (<http://www.mid.ru/>)
- **Ministry of Industry and Energy (MTE)** (<http://www.mte.gov.ru/>)

## Important Links

- **Ministry of Internal Affairs (MVD)** (<http://www.mvd.ru/>)
- **Ministry of Natural Resources (MNR)** (<http://www.mnr.gov.ru/>)
- **Ministry of Public Health and Social Development (MZSRRF)** (<http://www.mzsrrf.ru/>)
- **Ministry of the Russian Federation for Civil Defense, Emergencies, and the Elimination of the Consequences of Natural Disasters (EMERCOM)** (<http://www.mchs.gov.ru/>)
- **Ministry of Transportation** (<http://www.mintrans.ru/>)
- **Russian Academy of Medical Sciences (RAMS)** (<http://www.m-vesti.ru/ramn.htm>)
- **Russian Academy of Sciences (RAS)** (<http://www.ras.ru/>)
- **State Research Center of Virology and Biotechnology Vector (SRC VB VECTOR)** (<http://www.vector.nsc.ru/>)

## SWEDEN

- **Centre for Microbiological Preparedness (KCB)** (<http://www.smittskyddsinstitutet.se/in-english/about-smi/departments-and-units/centre-for-microbiological-preparedness/>)
- **Crismart – National Centre for Crisis Management, Research, and Training** (<http://www.crismart.org/>)
- **National Board of Health and Welfare (SoS)** (<http://www.socialstyrelsen.se/>)
- **National Defense Radio Centre (FRA)** (<http://www.fra.se/>)
- **National Food Administration (NFA)** (<http://www.slv.se/>)
- **National Inspectorate of Strategic Products (ISP)** (<http://www.isp.se/>)
- **National NBC Defence Centre (SkyddC)** (<http://www.skyddc.mil.se/>)
- **National Police Board (RPS)** (<http://www.polisen.se/>)
- **National Veterinary Institute (SVA)** (<http://www.sva.se/>)
- **Swedish Armed Forces (FM)** (<http://www.mil.se/>)
- **Swedish Board of Agriculture (SJV)** (<http://www.sjv.se/>)

- **Swedish Chemicals Inspectorate (KemI)** (<http://www.kemi.se/>)
- **Swedish Customs Service** (<http://www.tullverket.se/>)
- **Swedish Defence Material Administration (FMV)**  
(<http://www.fmv.se/>)
- **Swedish Defence Research Agency (FOI)** (<http://www.foi.se/>)
- **Swedish Emergency Management Agency (SEMA)**  
(<http://www.krisberedskapsmyndigheten.se/>)
- **Swedish Institute for Infectious Disease Control (SMI)**  
(<http://www.smittskyddsinstitutet.se/>)
- **Swedish National Defence College (SNDC)** (<http://www.fhs.se/>)
- **Swedish Rescue Services Agency (SRSA)** (<http://www.srv.se/>)
- **Swedish Security Service's (SÄPO)**  
(<http://www.sakerhetspolisen.se/>)
- **Swedish Work Environment Authority (SWEA)**  
(<http://www.av.se/>)

## SWITZERLAND

- **Armasuisse**  
(<http://www.ar.admin.ch/internet/armasuisse/en/home.html>)
- **Coordinated Medical Services (CMS)**  
(<http://www.vbs-ddps.ch/internet/groupgst/de/home/sanit/koordiniertero.html>)
- **ERFA Bio** (<http://www.erfa-bio.ch/>)
- **Federal Commission for NBC Protection (ComNBC)**  
(<http://www.komabc.ch/>)
- **Federal Coordination Center for Biotechnology at the Federal Office for the Environment (FOEN)**  
(<http://www.bafu.admin.ch/biotechnologie/01744/01745/index.html?lang=en>)
- **Federal Office for Civil Protection (FOCP)**  
(<http://www.bevoelkerungsschutz.admin.ch/>)



## Important Links

- **Federal Office for National Economic Supply (FONES)**  
(<http://www.bwl.admin.ch/>)
- **Federal Office of Police (fedpol)** (<http://www.fedpol.admin.ch/>)
- **Institute of Virology and Immunophylaxis (IVI)**  
(<http://www.ivi.ch/>)
- **National Emergency Operations Centre (NEOC)**  
(<http://www.naz.ch/>)
- **NBC Competence Center (Komp Zen ABC)**  
(<http://www.vbs-ddps.ch/internet/groupgst/de/home/operation-en/kompetenzzentrum.html>)
- **Pharmacy of the Army**  
(<http://www.lba.vbs.admin.ch/internet/lba/de/home/logistikleistung/armeeapotheke.html>)
- **Service for Analysis and Prevention (SAP)**  
([http://www.fedpol.admin.ch/fedpol/en/home/fedpol/organisation/dienst\\_fuer\\_analyse.html](http://www.fedpol.admin.ch/fedpol/en/home/fedpol/organisation/dienst_fuer_analyse.html))
- **Spiez Laboratory (LS)** (<http://www.labor-spiez.ch/>)
- **State Secretariat for Economic Affairs (SECO)**  
(<http://www.seco.admin.ch/>)
- **Strategic Intelligence Service (SIS)**  
(<http://www.vbs.admin.ch/internet/vbs/de/home/departement/organisation/snd.html>)
- **Swiss Expert Committee for Biosafety (SECB)**  
([http://www.efbs.ch/buwal/eng/fachgebiete/fg\\_efbs/index.html](http://www.efbs.ch/buwal/eng/fachgebiete/fg_efbs/index.html))
- **Swiss Federal Office of Public Health (FOPH)**  
(<http://www.bag.admin.ch/>)
- **Swiss Federal Veterinary Office (FVO)**  
(<http://www.bvet.admin.ch/>)

## UNITED KINGDOM

- **Advisory Committee on Dangerous Pathogens (ACDP)**  
(<http://www.hse.gov.uk/aboutus/meetings/acdp/>)
- **Biotechnology and Biological Sciences Research Council (BBSRC)**  
(<http://www.bbsrc.ac.uk/>)
- **British Security Service (MI5)** (<http://www.mi5.gov.uk/>)
- **Capabilities Program**  
(<http://www.ukresilience.info/preparedness/ukgovernment/capabilities.shtm>)
- **Centre for Emergency Preparedness and Response (CEPR)**  
(<http://www.hpa.org.uk/cepr/default.htm>)
- **Centre for Infections (CfI)** (<http://www.hpa.org.uk/infections/>)
- **Chemical, Biological, Radiological and Nuclear (CBRN) Resilience Program** (<http://security.homeoffice.gov.uk/cbrn-resilience/>)
- **Chemical, Biological, Radiological and Nuclear (CBRN) Science and Technology Program**  
(<http://security.homeoffice.gov.uk/science-technology/using-cbrn-science-technology/>)
- **Civil Contingencies Secretariat (CCS)**  
(<http://www.ukresilience.info/>)
- **Communicable Disease Surveillance Centre (CDSC)**  
([http://www.hpa.org.uk/infections/about/surveillance/surveillance\\_menu.htm](http://www.hpa.org.uk/infections/about/surveillance/surveillance_menu.htm))
- **Counter-Terrorism and Intelligence Directorate (CTID)**  
(<http://security.homeoffice.gov.uk/about-us/about-the-directorate/?version=1>)
- **Defence CBRN Centre**  
([http://www.army.mod.uk/ukpep/where/winterbourne\\_gunner.htm](http://www.army.mod.uk/ukpep/where/winterbourne_gunner.htm))
- **Defence Science and Technology Laboratory (DSTL)**  
(<http://www.dstl.gov.uk/>)
- **Department for Environment, Food and Rural Affairs (Defra)**  
(<http://www.defra.gov.uk/>)

## Important Links

- **Department of Health (DH)** (<http://www.dh.gov.uk/>)
- **Emergency Planning College (EPC)**  
(<http://www.epcollege.gov.uk/>)
- **Emergency Planning Society (EPS)** (<http://www.the-eps.org/>)
- **Environment Agency (EA)**  
(<http://www.environment-agency.gov.uk/>)
- **Export Control Organization (ECO)**  
(<http://www.dti.gov.uk/europeandtrade/strategic-export-control/index.html>)
- **Fire and Resilience Directorate (FRD)**  
(<http://www.communities.gov.uk/index.asp?id=1159221>)
- **Food Standards Agency (FSA)**  
(<http://www.foodstandards.gov.uk/>)
- **Food, Water and Environmental (FWE) Microbiology Testing Service** ([http://www.hpa.org.uk/hpa/fwe/fwe\\_default.htm](http://www.hpa.org.uk/hpa/fwe/fwe_default.htm))
- **Foreign Affairs Committee (FAC)**  
([http://www.parliament.uk/parliamentary\\_committees/foreign\\_affairs\\_committee.cfm](http://www.parliament.uk/parliamentary_committees/foreign_affairs_committee.cfm))
- **Government Decontamination Service (GDS)**  
(<http://www.gds.gov.uk/>)
- **Health and Safety Executive (HSE)** (<http://www.hse.gov.uk/>)
- **Health Protection Agency (HPA)** (<http://www.hpa.org.uk/>)
- **Joint Intelligence Committee (JIC)**  
(<http://www.intelligence.gov.uk/machinery/jic.asp>)
- **Joint Terrorism Analysis Centre (JTAC)**  
(<http://www.mi5.gov.uk/output/Page421.html>)
- **Local Resilience Forums (LRF)**  
(<http://www.ukresilience.info/preparedness/ukgovernment/lrfs.shtm>)
- **Medical Research Council (MRC)** (<http://www.mrc.ac.uk/>)
- **National Biomanufacturing Centre (NBC)**  
(<http://www.biomanufacturing.co.uk/>)
- **National Counter Terrorism Security Office (NaCTSO)**  
(<http://www.secureyourfertiliser.gov.uk/nactso.htm>)

- **National Institute for Biological Standards and Control (NIBSC)**  
(<http://www.nibsc.ac.uk/>)
- **Natural Environment Research Council (NERC)**  
(<http://www.nerc.ac.uk/>)
- **Non-Proliferation Directorate**  
(<http://www.dti.gov.uk/europeandtrade/non-proliferation/index.html>)
- **Secret Intelligence Service (SIS or MI6)** (<http://www.sis.gov.uk/>)
- **Voluntary Immunization Program Against Anthrax**  
(<http://www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/HealthandSafety/AnthraxVIP/>)

## UNITED STATES

- **Administrator of General Services (GSA)**  
(<http://www.gsa.gov/>)
- **Agency for Healthcare Research and Quality (AHRQ)**  
(<http://www.ahrq.gov/>)
- **Agency for Toxic Substances and Disease Registry (ATSDR)**  
(<http://www.atsdr.cdc.gov/>)
- **Animal and Plant Health Inspection Service (APHIS)** of the Department of Agriculture (USDA) (<http://www.aphis.usda.gov/>)
- **Bureau of Industry and Security (BIS)** (<http://www.bis.doc.gov/>)
- **Centers for Disease Control and Prevention (CDC)**  
(<http://www.cdc.gov/>)
- **Coordinating Office for Terrorism Preparedness and Emergency Response (COTPER)** (<http://www.bt.cdc.gov/>)
- **Defense Advanced Research Projects Agency (DARPA)**  
(<http://www.darpa.mil/>)
- **Defense Security Cooperation Agency (DSCA)**  
(<http://www.dsca.osd.mil/>)
- **Department of Health and Human Services (HHS)**  
(<http://www.hhs.gov/>)

## Important Links

- **Department of Homeland Security (DHS)**  
(<http://www.dhs.gov/>)
- **Directorate for Emergency Preparedness and Response**  
([http://www.dhs.gov/xabout/structure/editorial\\_0794.shtm](http://www.dhs.gov/xabout/structure/editorial_0794.shtm))
- **Directorate for Science and Technology (S&T Directorate)**  
([http://www.dhs.gov/xabout/structure/editorial\\_0530.shtm](http://www.dhs.gov/xabout/structure/editorial_0530.shtm))
- **Directorate of Defense Trade Controls (DDTC)**  
(<http://www.pmdtc.org/>)
- **Directorate of Intelligence (DI)** (<https://www.cia.gov/cia/di/>)
- **Edgewood Chemical and Biological Center (ECBC)**  
(<http://www.edgewood.army.mil/>)
- **Environmental Protection Agency (EPA)** (<http://www.epa.gov/>)
- **Federal Bureau of Investigation (FBI)** (<http://www.fbi.gov/>)
- **Federal Emergency Management Agency (FEMA)**  
(<http://www.fema.gov/>)
- **Food and Drug Administration (FDA)** (<http://www.fda.gov/>)
- **Food and Nutrition Service (FNS)** (<http://www.fns.usda.gov/>)
- **Health Resources and Services Administration (HRSA)**  
(<http://www.hrsa.gov/>)
- **Homeland Security Council (HSC)**  
(<http://www.whitehouse.gov/hsc/>)
- **Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD)** (<http://www.jpeocbd.osd.mil/>)
- **Laboratory Response Network (LRN)**  
(<http://www.bt.cdc.gov/lrn/>)
- **Lawrence Livermore National Laboratory (LLNL)**  
(<http://www.llnl.gov/>)
- **National Bioterrorism Syndromic Surveillance Demonstration Program** (<https://btsurveillance.org/btpublic/>)
- **National Center for Infectious Diseases (NCID)**  
(<http://www.cdc.gov/ncidod/>)
- **National Counterterrorism Center (NCTC)**  
(<http://www.nctc.gov/>)

- **National Immunization Program (NIP)**  
(<http://www.cdc.gov/nip/>)
- **National Institutes of Health (NIH)** (<http://www.nih.gov/>)
- **National Response Plan**  
([http://www.dhs.gov/xprepresp/committees/editorial\\_0566.shtm](http://www.dhs.gov/xprepresp/committees/editorial_0566.shtm))
- **National Science Advisory Board for Biosecurity (NSABB)**  
(<http://www.biosecurityboard.gov/>)
- **Nonproliferation and Arms Control Technology Working Group (NPAC-TWG)** (<http://www.npactwg.org/>)
- **Office of Operations Coordination**  
([http://www.dhs.gov/xabout/structure/editorial\\_0797.shtm](http://www.dhs.gov/xabout/structure/editorial_0797.shtm))
- **Office of Public Health Emergency Preparedness (OPHEP)**  
(<http://www.hhs.gov/ophep/>)
- **Office of the Special Assistant for Chemical and Biological Defense and Chemical De-militarization Programs (OSA CBD&CDP)**  
(<http://www.acq.osd.mil/cp/index.html>)
- **Plum Island Animal Disease Center (PIADC)**  
(<http://www.ars.usda.gov/plum/>)
- **Project BioShield Act**  
([http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_public\\_laws&docid=f:publ276.108.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ276.108.pdf))
- **Proliferation Security Initiative (PSI)**  
(<http://www.state.gov/t/np/cro390.htm>)
- **Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases (RCEs)** (<http://www.rcebiodefense.org/>)
- **Select Agent Program (SAP)** (<http://www.cdc.gov/od/sap/>)
- **Strategic National Stockpile Program (SNS)**  
(<http://www.bt.cdc.gov/stockpile/>)
- **U.S. Army Pine Bluff Arsenal (PBA)** (<http://www.pba.army.mil/>)
- **United States Air Force Counterproliferation Center**  
(<http://www.au.af.mil/au/awc/awcgate/awc-cps.htm>)
- **United States Army Medical Research Institute for Infectious Diseases (USAMRIID)** (<http://www.usamriid.army.mil/>)

## INTERNATIONAL ORGANIZATIONS

### WORLD HEALTH ORGANIZATION (WHO)

- **Epidemic and Pandemic Alert and Response (EPR)**  
(<http://www.who.int/csr/en/>)
- **Global Outbreak Alert and Response Network (GOARN)**  
(<http://www.who.int/csr/outbreaknetwork/en>)
- **Global Public Health Intelligence Network (GPHIN)**  
([http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004\\_gphin-rmispbk\\_e.html](http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html))
- **International Health Regulations (IHR)**  
(<http://www.who.int/csr/ihr/en/>)
- **WHO Biosafety Programme**  
(<http://www.who.int/csr/labepidemiology/projects/biosafetymain/en/>)
- **World Health Organization (WHO)** (<http://www.who.int/>)

### EUROPEAN UNION (EU)

- **Anthrax-EuroNet** (<http://www.anthraxeuro.net.org/>)
- **Communicable Diseases Networks**  
([http://ec.europa.eu/health/ph\\_threats/com/comm\\_diseases\\_networks\\_en.htm](http://ec.europa.eu/health/ph_threats/com/comm_diseases_networks_en.htm))
- **Digital Mapping Archive (DMA)** (<http://dma.jrc.it/>)
- **EudraPharm** (<http://eudrapharm.eu/>)
- **European Agency for Safety and Health at Work (EU-OSHA)**  
(<http://osha.europa.eu/>)
- **European Centre for Disease Prevention and Control (ECDC)**  
(<http://www.ecdc.eu.int/>)
- **European Food Safety Authority (EFSA)**  
(<http://www.efsa.europa.eu/>)
- **European Medicines Agency (EMA)** (<http://www.emea.eu.int/>)
- **European Union (EU)** (<http://europa.eu/>)

- **Health Emergency & Diseases Information System (HEDIS)**  
(<http://hedis.jrc.it/>)
- **Innovative Measures for Protection against CBRN Terrorism (IMPACT)** (<http://www.impact-eu.com/>)
- **Medical Intelligence System (MedISys)** (<http://medusa.jrc.it/>)
- **Med-Vet-Net** (<http://www.medvetnet.org/>)
- **MODELREL**  
([http://ec.europa.eu/health/ph\\_projects/2003/action2/action2\\_2003\\_03\\_en.htm](http://ec.europa.eu/health/ph_projects/2003/action2/action2_2003_03_en.htm))
- **R&D Experts Group on Countering the Effects of Biological and Chemical Terrorism**  
(<http://ec.europa.eu/transparency/regexpert/detail.cfm?ref=759&l=all>)

### **NORTH ATLANTIC TREATY ORGANISATION (NATO)**

- **Euro-Atlantic Disaster Response Coordination Centre (EADRCC)**  
(<http://www.nato.int/eadrcc/home.htm>)
- **NATO Multinational Chemical Biological Radiological and Nuclear Defence Battalion**  
(<http://www.nato.int/shape/issues/cbrndb/index.htm>)
- **North Atlantic Treaty Organisation (NATO)**  
(<http://www.nato.int/>)

### **INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC)**

- **A Model Law: The Biological and Toxin Weapons Crimes Act**  
(<http://www.icrc.org/Web/eng/siteengo.nsf/html/review-859-p573/>)
- **Appeal on Biotechnology, Weapons and Humanity**  
(<http://www.icrc.org/Web/eng/siteengo.nsf/htmlall/5EAMTT>)
- **ICRC's Biotechnology, Weapons and Humanity Initiative**  
(<http://www.icrc.org/web/eng/siteengo.nsf/htmlall/bwh/>)



## Important Links

- **International Committee of the Red Cross (ICRC)**  
(<http://www.icrc.org/>)

## G8

- **G8 Information Center** (<http://www.g7.utoronto.ca/>)
- **Global Health Security Initiative (GHSI)** (<http://www.ghsi.ca/>)
- **The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction**  
(<http://www.g8.gc.ca/2002Kananaskis/globpart-en.asp>)



# LIST OF EXPERTS

## FRANCE

**Christian Sommade**, Haut Comité Français pour la Défense Civile (HCFDC)

## RUSSIA

**Aleksandr Rabodzey**, Science, Technology and Global Security Working Group, Massachusetts Institute of Technology (MIT; until 2006)

## SWEDEN

**Roger Roffey**, Swedish Defence Research Agency (FOI)  
**Anders Tegnell**, National Board of Health and Welfare (SoS)

## SWITZERLAND

**Christian Fokas**, Federal Commission for NBC Protection (ComNBC)  
**Kurt Münger**, Spiez Laboratory (LS)  
**Pierre-Alain Raeber**, Federal Office of Public Health (FOPH)  
**Martin Schütz**, Spiez Laboratory (LS)

## UNITED KINGDOM

**Steve Gee**, Health Protection Agency (HPA)  
**David Stott**, Senior Emergency Planning Officer, Lancashire County Council

UNITED STATES

**Frank Gottron**, Congressional Research Service (CRS)

WORLD HEALTH ORGANIZATION (WHO)

**Cathy E. Roth**, World Health Organization (WHO)

EUROPEAN UNION (EU)

**Germain Thinus**, EU Directorate General Health and Consumer Protection (DG SANCO)

NORTH ATLANTIC TREATY ORGANISATION (NATO)

**Ted Whiteside**, NATO Weapons of Mass Destruction Centre

**Andie da Ponte**, NATO Weapons of Mass Destruction Centre

INTERNATIONAL COMMITTEE OF THE RED CROSS (ICRC)

**Robin Michael Coupland**, International Committee of the Red Cross (ICRC)

THE SUNSHINE PROJECT

**Jan van Aken**, Sunshine Project Germany



**The Center for Security Studies** at ETH Zurich (Swiss Federal Institute of Technology) was founded in 1986 and specializes in the fields of international relations and security policy. The Center coordinates and develops the Crisis and Risk Network (CRN), a Swiss-Swedish initiative for open dialog on risks and vulnerabilities that is aimed at enhancing knowledge of the causes, interactions, probabilities, and costs of risks in modern societies.

**The International Biodefense Handbook** compares political, strategic, and structural approaches to biosecurity in seven countries and five international and supra-national organizations. It provides an overview of national and multilateral biodefense efforts by examining important policies in this field and through an inventory of the institutions and actors involved.