



FOOD DEFENCE WORKSHOP

16 FEBRUARY 2009
SINGAPORE



**S. RAJARATNAM SCHOOL
OF INTERNATIONAL STUDIES**
A Graduate School of Nanyang Technological University

NATIONAL SECURITY
COORDINATION SECRETARIAT

FOOD DEFENCE WORKSHOP

REPORT ON A WORKSHOP ORGANIZED BY
THE CENTRE OF EXCELLENCE FOR NATIONAL SECURITY (CENS)
AT THE S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES (RSIS),
NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE
WITH THE SUPPORT OF
THE NATIONAL SECURITY COORDINATION SECRETARIAT (NSCS)
AT THE PRIME MINISTER'S OFFICE, SINGAPORE

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NANYANG TECHNOLOGICAL UNIVERSITY
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EXECUTIVE SUMMARY

On 16 February 2009, the Centre of Excellence for National Security (CENS), with the support of the National Security Coordination Secretariat (NSCS), organized the Food Defence Workshop at Traders Hotel, Singapore. The workshop looked at the issue of the intentional and malicious contamination of the food supply chain—“food defence”—and brought together a mix of international practitioners and academics to share both current research efforts as well as the different policy approaches various countries take to the issue.

The drive for instituting food defence at a policy level arose out of fears that the food supply chain was vulnerable to contamination by terrorists, which could cause damage to public health on a mass scale. To this end, some countries have started to institute policy changes to address these fears. Given a lack of data and the overwhelming empirical evidence of the public health impact of food safety issues, the notion of food defence as a policy issue is still being debated in some quarters. The goal of this workshop is to: (i) improve the understanding of this issue among policymakers in Singapore; (ii) discuss the current state of the art in research efforts; and (iii) gain perspectives from different countries on their approaches to this issue.

The first panel saw Shaun Kennedy, Director of the U.S.-based National Center for Food Protection & Defense, discuss some of their current research efforts into food defence as well as sharing the results of a food defence exercise carried out with members of the G8 Group of nations. Beyazit Cirakoglu and Hami Alpas presented on the results of a long-term pilot

study into food chain security funded by the NATO Science for Peace and Security (SPS). In partnership with the European Science Foundation (ESF), this study was a collaboration of 18 countries and may serve as one approach to broadening international collaboration efforts in this domain.

In the second panel, Allan Edwards, Manager of Food Chain Protection within the Australian Government Department of Agriculture, Fisheries and Forestry, gave a presentation on Australia's approach to food defence that makes use of a collaborative information-sharing network between differing government agencies and private industries. Alpas then gave a presentation on Turkey's food quality and safety architecture. Perfecto Santiago, Deputy Assistant Administrator at the Office of Food Defence and Emergency Response, shared best practices in his discussion of the development and implementation of a food defence system within the U.S. government. The final speaker, Dave Franz of Midwest Research Institute, took a broader view that complemented the other speakers by drawing links between food safety and food defence systems while sharing a possible model for better allocating resources in this area. The workshop closed with a roundtable discussion among the speakers and participants, from which two of the main themes were developed—the challenges to improve public engagement as well as inter-agency and inter-government collaboration.

Conference papers and presentations, as well as more CENS research into Food Defence, can be found at <http://www.rsis.edu.sg/CENS/>

WELCOME REMARKS BY HEAD, CENS



In his welcome remarks, Kumar Ramakrishna described how in recent years a perception has emerged within policy circles that the food supply chain is both a vulnerable and attractive target for attack by elements harbouring malicious intentions. He cited a World Health Organization report published in 2002 stating that “the malicious contamination of food for terrorist purposes is a real and current threat, and deliberate contamination of food at one location could have global public health implications”. He went on to explain how the United States, among other countries, have reorganized certain aspects of their food safety apparatus and sponsored a number of international policy initiatives, especially with

member countries of APEC. Regionally, he pointed to the 2007 endorsement of a set of voluntary “Food Defence Principles” at the ministerial meetings in Sydney, signifying how Food Defence has become a focus of policy attention.

As a result, Ramakrishna explained, food defence has been one of the main research areas of the CENS Homeland Defence Programme over the past year. This has included a major study of incidents involving the malicious contamination of food along the entire food supply chain between 1950 and 2008.

However, Ramakrishna pointed out that it is still not entirely clear whether the malicious contamination of food for terrorist purposes indeed represents a clear and present danger, as WHO has stated. Nor for that matter is the potential global public health threat from an incident of a terrorist attack on our food supply all that straightforward. Some may say that the threat is over-blown. Ramakrishna added that one of the aims of the workshop was to address the extent to which malicious and intentional contamination of food is as serious—or even more serious—a problem than the usual more mundane concerns over the simple hygiene and safety of the food we eat.

AN OVERVIEW OF FOOD DEFENCE AND CURRENT RESEARCH EFFORTS

Food Defence: Overview, Multi-national Exercises & Ongoing Research



Shaun Kennedy opened his presentation with a description of the different definitions associated with food policy. The four terms he defined included: food security, food safety, food defence and food protection. The latter two operated under the same umbrella, Kennedy explained, defining them both as reducing the impact of system attacks of the global food supply system.

Kennedy outlined the current concerns associated with food, which included significant estimated public health and economic impacts. He cited that globally there are 1.8 million deaths per year associated with diarrhoeal diseases. Another statistic he presented described how the rate of food-borne illnesses in developed countries is estimated to be

approximately 30 per cent. In order to address these issues Kennedy suggested that significant regulatory requirements would be required as well as private sector investment.

The history of food contamination was also covered in the presentation, where Kennedy cited the use of food as a weapon in military operations dating back as far as 590 BC, when the Athenians poisoned Kirrah troops. Also related to military operations, Kennedy referenced Japan's alleged use in World War 2 of *Salmonella paratyphi* and *Yersinia pestis* in China and Manchuria. Kennedy also cited incidents related to terrorist and criminal acts in both the United States and abroad.

Kennedy's presentation went on to outline a food defence exercise called Demeter's Resilience, designed to test how countries would react to a food defence emergency. The exercise showed how the intentional contamination of one day's production of breaded chicken product made in the United States could possibly spread to as many as eight developed countries. The exercise showed that there is a need for the continued development of global supply chain vulnerability assessment tools. Further studies must also address international food transportation vulnerabilities. Kennedy finished the presentation by declaring that we must further the defence of the safety of the food system through research and education.

Food Chain Security



Hami Alpas and Beyazit Cirakoglu described the results of a NATO-SPS-funded pilot study into food chain security. The project examined how the careless handling of food as well as terrorist attacks on the food system should be addressed and mitigated. They described how the nature of terrorist threats against the food system could be very diverse and unpredictable, involving chemical and biological agents of various kinds. While preparing for all possible contingencies is not practical, Alpas and Cirakoglu suggested that governments should utilize a risk-management approach to the issue.

The NATO-SPS study found that while there is no specific information suggesting an attack on the food supply is imminent, intelligence sources indicate that terrorists have discussed attacking components of the food sector and that manuals discussing the use of poison and biological weapons are widely available online. An attack using biological weapons on the food supply chain, they warned, could result in mass

casualties. It was noted by the speakers that even an ineffective attack could cause significant economic and psychological damage. In addition, the severity of the attack is dependent upon the agent and attack scenario used, as well as the effectiveness of detection and response.

In addressing the threat of terrorism to the food supply chain the speakers argued that the best approach is to know your enemy. By examining the target selection of terrorists they found that ideological and psychological factors were involved and included a desire to spark disproportional fear. Their study found that one possible method for attacking the food supply chain would be through the use of biological weapons. The use of biological agents in an attack on foodstuff is probable, they claimed, for the following reasons: Biological agents (i) are easy to obtain and to produce; (ii) are easy to spread or distribute; (iii) are insensitive to temperature; (iv) can cause deadly or severe diseases; (v) have direct health effects; and (vi) lack effective treatments.

The speakers argued that vulnerability assessments could help address food supply-chain security by determining the selection of countermeasures and emergency responses. These assessments would also aid in the development of preparedness exercises and determine whether sufficient laboratory capabilities are in place. Such an approach allows for the targeting of outreach to stakeholders through offering guidance as well as industry or regulator training. These measures accompanied by the development of lines of communication are critical in addressing the issue of food defence.

Food Chain Protection: Australia's Approach to Food Defence



Alan Edwards began his presentation by discussing the vulnerability of food and agriculture to global hazards and terrorism. In particular, he emphasized that while the likelihood of a deliberate act is assessed as low, the potential consequences of any successful act remains extremely high. To deal with this steep vulnerability, he shed light on the Australian government's central "all-hazards" approach—a whole-of-chain and whole-of-industry, government posture towards food and agricultural safety. Such an approach, he explained, was due to the crucial centrality of Australia's food and agricultural industries. Demographic patterns as well as Australia's role as an economic exporter and manufacturer places an even heavier responsibility on government and industry to ensure the security of the food chain.

Specifically, the Australian government adopts a holistic array of strategies comprising pre-border, border and post-border tactics. He explained that the government placed added importance on border measures because of Australia's largely coastal demographic spread. Compared to other countries where the population is distributed into the hinterland, Australians are at greater risk to food-chain vulnerabilities that may enter via the border. To

elaborate, he provided several examples. Pre-border tactics included active surveillance programmes and deeper committed roles in regional and international bodies. For border strategies, large investments are made to bolster the number of quarantine staff as well as the screening process. Imports are closely monitored and a high percentage of incoming passengers as well as mail are screened thoroughly. This is considered critical for Australia's border bio-security, and he added that the system is set for further revamp and improvement. Post-border measures include rigorous training programmes as well as nation-wide simulation exercises for both industry and government.

Edwards proceeded to illustrate the robust all-inclusive relationship that the Australian government has established with the industry. This, he pointed out, could be most evidently observed in Australia's Trusted Information Sharing Network (TISN), which was established in 2003. Through this networking forum, critical information and infrastructure protection arrangements are coordinated between government and industry players in a harmonious, non-threatening environment. It was an achievement, he noted, considering the longstanding difficulties government and industry have always had in communicating.

He concluded his presentation with a summary of the central approaches that guide Australia's food chain protection. The primary all-hazards approach is built on the government's existing security infrastructure but is integrated with current counter-terrorism plans. This makes the approach more cost-effective and operationally more efficient. The second vital cog is the "all agencies" approach anchored by the TISN system of sharing sensitive information and intelligence with industry players who, in return, provide the technical expertise and alternative perspectives for counter-terrorist agencies. The sum of these, he asserted, has been central to Australia's success in rising to the dynamic challenges of food defence.

Food Quality Systems in Turkey: Perspectives in Terms of Food Defence



Hami Alpas' presentation provided participants with a broad overview of Turkey's food-quality systems, including new projects to be implemented in the near future. More importantly, he focused on efforts taken by the Turkish government bureaucratically, as well as legislatively, to enhance the nation's food defence systems.

He began by illustrating Turkey's commitment to adopt higher standards of food legislation by converging and pegging its laws with the European Union's General Food Law. With this in force since 2004, Turkey's Ministry of Agricultural and Rural Affairs (MARA) has been granted central authority in food control and production. He added that MARA has shown dedication to the job, with continuous improvements and new concepts being embraced. For instance, issues of contamination traceability, risk analysis and alert systems are some of the new additions introduced by the ministry. Turkey also recognizes the vulnerability of food and the inability to limit any contamination, considering the close border proximities within the region. This is the primary reason why the Turkish National Food Codex is pegged closely to the European Union's. In addition, Turkey is actively working to complete its data and communication systems in order to comply with the European Union's Rapid Alert System—an information-sharing network for members to update each other in the event of a suspected contamination.

However, Alpas was also frank in his assessment of the government's efforts thus far, noting, for example, that the adoption of the EU's food law has been mixed and varied in application. Likewise, domestically, the Turkish Food Codex is a concerted effort by the Ministry of Health as well as MARA, which in reality has been plagued by a tenuous relationship and bureaucratic politicking.

Moving on to key vulnerabilities, Alpas highlighted that border security as well as contamination from biochemicals and pesticides on Turkey's fresh produce and manufactured products are central concerns in Turkey's food defence. With the current standard of border screening practices, he argued that approximately only 10 to 12 per cent of imports could be checked and accounted for. Otherwise, the movement of fresh produce in the food chain is not properly monitored. Hence, he was of the opinion that MARA's food control administration requires more improvement despite the achievements thus far. To MARA's credit, he provided several notable examples of their efforts, such as the upgrading of food control laboratories, an Aflatoxin and Residue monitoring programme, as well as training programmes for food inspectors.

He concluded his presentation by highlighting areas that are in need of attention if Turkey is to improve its food defence system. Firstly, the issue of communication between Turkey's academics, government and industry is relatively weak despite MARA's apparent efforts to cooperate with the private sector. Not only does government need to communicate more with the public, he added that after the Chernobyl incident, which was not effectively dealt with by stakeholders in Turkey, the public's regard of the government's competency is poor. Ultimately, greater risk analysis efforts, newer technologies in research and development, as well as increased levels of communication between the government and the public and private sectors are, in his opinion, the most pressing issues that need to be addressed today.

FOOD DEFENCE & SAFETY: POLICY, SECURITY AND THE GLOBAL FOOD SUPPLY CHAIN

Development and Implementation of a Food Defence System



Perfecto Santiago discussed some of the possible approaches—as well as challenges—to developing and implementing a food defence system from the perspective of the Food Safety & Inspection Service (FSIS), a division of the United States Department of Agriculture. Santiago examined these themes using the “preparedness, response and recovery” framework and highlighted that one of the operational goals of a food defence system is to leverage existing food safety systems while putting into place physical, personnel and operational counter-measures when vulnerabilities are identified in the food safety system. These can often be quite simple measures, Santiago noted, such as putting a lock on water systems controls as a physical counter-measure.

Some of the challenges Santiago discussed in developing and implementing a food defence system include: (i) the statutory authority to mandate food defence measures; (ii) funding priority for food defence initiatives; (iii) the wide spectrum of operational nodes in the farm-to-table continuum that need to be

protected against bioterrorism; (iv) information gaps on potential threat agents; (v) low probability and predictability of intentional contamination of food; (vi) threats of food contamination not easily detected in surveillance systems; and (vii) disposal of large volumes of contaminated foods.

Statutory authority was identified as one of the key drivers and challenges to implementing a food defence system. Generally statutory authority is very soft, if not absent, in this area. In 2002, the United States passed the Bioterrorism Act, which expanded existing authorities to prevent bioterrorism incidents, including giving USDA and FDA “very small and soft” authority to develop a food defence system. However, the other key-implementation challenge identified was in the realm of funding priorities. Santiago noted that FSIS’s budget is around US\$1 billion, along with 12,000 inspectors doing continuous inspections. However, only about US\$6 million is allocated to food defence. FSIS has a commitment to expand resources on food defence but they try to leverage whatever food-safety initiatives they have to include food defence in order to better maximize resources.

Santiago then went on to describe the various parts of an effective food defence system within the broader framework of preparedness, response and recovery. Overall, he identified eight aspects of what a comprehensive food defence system should include: (i) statutory authority; (ii) outreach and training; (iii) vulnerability assessments; (iv) an integrated surveillance system; (v) food defence research; (vi) an emergency response plan; (vii) decontamination and disposal guidelines; and (viii) partnerships with food-related agencies, including industry.

Global Partnerships for Food Safety, Defence... and Security



Dave Franz took a strategic view of analysing the interrelated nature of food defence and food safety given the nature of a globalized food supply chain. He noted that while we generally understand the risk of natural contamination along the supply chain, the best we can do is describe vulnerabilities when it comes to intentional contamination. The same pathogens, toxins or chemicals that are occasionally introduced accidentally through systematic breakdown or human oversight can be introduced with intent to harm. On the other hand, “accidental” food-borne diseases cause approximately 76 million illnesses, 325,000 hospitalizations and 5,000 deaths in the United States each year. Therefore, Franz noted, the need for food safety and food security programmes is much more easily rationalized than the need for food defence programmes.

Franz then went on to discuss how modifying the all-hazards approach to bio-security could be applied to the food supply chain in order to better integrate food defence and food safety. Making specific vaccines and drugs for every threat agent (bacteria, virus and toxin) on the official government threat lists is not feasible.

However, we can afford to prepare specifically with medical and physical counter-measures for a few “outliers” such as anthrax, smallpox and FMD. For the rest of the disease-causing agents that might be used against us intentionally, we can prepare just as we do for (unpredictable) emerging infectious diseases. Furthermore, funding for this generic, all-hazards preparations will not be wasted if we never have an intentional attack. Franz advocated having broad diagnostic and disease surveillance capabilities, a robust public health system, law enforcement and intelligence communities that are more aware, a vibrant life-sciences research base, effective programmes of international engagement and collaboration with other countries.

This model can then be applied to the issue of food defence and food safety. There are steps we can take, along our food supply chain to improve our food defences that we would not need, if intentional adulteration of our food supply were not a probability. The best examples are probably physical security measures: cameras, lights, locks, fences and guards, along with special packaging, possibly, tamper-proof seals and awareness training for employees. These measures can go a long way to help prevent the rare, but potentially high-impact, intentional event. Like the bioterrorism all-hazards approach above, this focused “defence” package is overlaid on a necessary and easily justified base that includes inter alia (i) capabilities for food-borne disease diagnostics; (ii) surveillance and tracking of products back to their source; (iii) risk assessment and communication capabilities; (iv) advances in processing and packaging technologies; (v) the same robust public health system mentioned above; (vi) international engagement on food safety; (vii) capacity building globally; and (viii) good leadership.

ROUNDTABLE DISCUSSION



Two themes dominated the discussion: the challenges to (i) public engagement and (ii) both inter-agency and inter-government collaboration.

Regarding the challenges of public engagement on the security issue, the influence of the media was debated. On criticisms of the media's role in amplifying security threats to unnecessarily alarming the public, the point was raised that the media merely reports information provided by the government. As such, it is possible that the climate of fear and insecurity is inadvertently created as a result of well-meaning state efforts to inform and prepare the public for security threats. Hence, there is a need for government and the media to collaborate better and be more discerning about assessing and reporting information for public dissemination.

At the other extreme, some states economize public information regarding food defence issues on the grounds that the threat is low but at the same time allocate a large portion of the national budget

to address the threat. While the tension between word and deed was acknowledged, it was posited that states tend to err on the side of caution when it comes to national security issues, especially when an all-hazards approach is adopted. In relation to this, the merits of a certain degree of public disinterest in security issues in order to minimize public alarm were raised. The challenge to states therefore is to sustain awareness but without alarming the public.

On the operational aspect of inter-agency and inter-government collaboration, the integration of systems pertaining to the monitoring of food-chain security was discussed. It was highlighted that the NATO-SPS pilot study has since resulted in collaborative spin-off projects among member states. An example was the setting up of a terrorist alert centre by Italy and Russia located at the west of the Black Sea.

The challenges of operating within a whole-of-government approach were also discussed. While the primacy of security agencies vis-à-vis the food regulatory agencies in the coordination of food defence issues varies from country to country, it was noted that clarity of roles and the chain of command is key to successful monitoring.

Note: "Chatham House" rules were applied for this discussion so as to enable for a free-spirited and creative dialogue; discussants are thus not named in this report.

WORKSHOP PROGRAMME

0815 – 0855	Registration	1105 – 1205	Panel Two: Country Perspectives on Food Defence
0855	All guests to be seated		
0900 – 0910	Welcome Introduction Kumar Ramakrishna, Head, <i>Centre of Excellence for National Security (CENS), Rajaratnam School of International Studies (RSIS), NTU</i>		Speakers: Alan Edwards, Manager, <i>Food Chain Protection, Food & Product Integrity and Safety Branch, Department of Agriculture, Fisheries, and Forestry (Australia)</i>
0910 – 1010	Panel One: An Overview of Food Defence & Current Research		Hami Alpas, Food Engineering Department Middle East Technical University (Turkey)
	Speakers: Shaun Kennedy, Director, <i>National Center for Food Protection & Defense (USA)</i>	1205 – 1235	Discussion Moderator: Norman Vasu
	Dr. Beyazit Cirakoglu, Director, <i>NATO – SPS Food Chain Security Pilot Study; Food Engineering Department, Middle East Technical University (Turkey)</i>	1235 – 1415	Lunch Venue: Café Biz (Lobby Level)
	Venue: The Gallery @ Level 2 Traders Hotel	1415 – 1515	Panel Three: Food Defence & Safety: Policy, Security, and the Global Food Supply Chain
1010 – 1040	Discussion Moderator: Kumar Ramakrishna		Speakers: Perfecto Santiago, Deputy Asst. Adm., <i>Office of Food Defence & Emergency Response, Food Safety & Inspection Services, United States Department of Agriculture (USA)</i>
1040 – 1105	Coffee / Tea Break		Dave Franz, <i>Midwest Research Institute (USA)</i>
		1515 – 1545	Discussion Moderator: Bill Durodie
		1715	End of workshop

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ABOUT CENS

The Centre of Excellence for National Security (CENS) is a research unit of the S. Rajaratnam School of International Studies (RSIS) at Nanyang Technological University, Singapore. Established on 1 April 2006, CENS is devoted to rigorous policy-relevant analysis of a range of national security issues. The CENS team is multinational in composition, comprising both Singaporean and foreign analysts who are specialists in various aspects of national and homeland security affairs.

Why CENS?

In August 2004 the Strategic Framework for National Security outlined the key structures, security measures and capability development programmes that would help Singapore deal with transnational terrorism in the near and long term.

However, strategising national security policies requires greater research and understanding of the evolving security landscape. This is why CENS was established to increase the intellectual capital invested in strategising national security. To this end, CENS works closely with not just other RSIS research programmes, but also national security agencies such as the National Security Coordination Secretariat within the Prime Minister's Office.

What Research Does CENS Do?

CENS currently conducts research in three key areas of national security:

- Risk Assessment/Horizon Scanning
 - The art and science of detecting “weak signals” emanating from the total security environment so as to forewarn

policy-makers, the private sector and the public about approaching “shocks” such as terrorism, pandemics, energy crises and other easy-to-miss trends and ostensibly distant events.

- Social Resilience
 - The capacity of globalised, multicultural societies to hold together in the face of systemic shocks such as diseases and terrorist strikes.
- Homeland Defense
 - The security of land-based, aviation and maritime transport networks and increasingly, the total supply chain vital to Singapore's economic vitality.

How Does CENS Help Influence National Security Policy?

Through policy-oriented analytical commentaries and other research output directed at the national security policy community in Singapore and beyond, CENS staff members promote greater awareness of emerging threats as well as global best practices in responding to those threats. In addition, CENS organises courses, seminars and workshops for local and foreign national security officials to facilitate networking and exposure to leading-edge thinking on the prevention of, and response to, national and homeland security threats.

How Does CENS Help Raise Public Awareness of National Security Issues?

To educate the wider public, CENS staff members regularly author articles in a number of security and intelligence related publications, as well as write op-ed analyses in leading newspapers. Radio and television interviews have allowed CENS staff to participate in and shape the public debate on critical issues such as risk assessment and horizon scanning, multiculturalism and social resilience, intelligence reform and defending critical infrastructure against mass-casualty terrorist attacks

How Does CENS Keep Abreast of Cutting Edge National Security Research?

The lean organisational structure of CENS permits a constant and regular influx of Visiting Fellows of international calibre through the Distinguished CENS Visitors Programme. This enables CENS to keep abreast of cutting edge global trends in national security research.

For More on CENS

Log on to <http://www.rsis.edu.sg> and follow the links to “Centre of Excellence for National Security”.

ABOUT THE S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES, NANYANG TECHNOLOGICAL UNIVERSITY

The S. Rajaratnam School of International Studies (RSIS) was inaugurated on 1 January 2007 as an autonomous School within the **Nanyang Technological University (NTU)**, upgraded from its previous incarnation as the **Institute of Defence and Strategic Studies (IDSS)**, which was established in 1996.

The School exists to develop a community of scholars and policy analysts at the forefront of Asia-Pacific security studies and international affairs. Its three core functions are research, graduate teaching and networking activities in the Asia-Pacific region. It produces cutting-

edge security related research in Asia-Pacific Security, Conflict and Non-Traditional Security, International Political Economy, and Country and Area Studies.

The School's activities are aimed at assisting policymakers to develop comprehensive approaches to strategic thinking on issues related to security and stability in the Asia-Pacific and their implications for Singapore.

For more information on the School, visit www.rsis.edu.sg

ABOUT NSCS

The National Security Coordination Secretariat (NSCS) was set up in the Prime Minister's Office in July 2004 to facilitate national security policy coordination from a Whole-Of-Government perspective. NSCS reports to the Prime Minister through the Coordinating Minister for National Security (CMNS). The current CMNS is the Deputy Prime Minister Professor S. Jayakumar, who is also Minister for Law.

NSCS is headed by Permanent Secretary (National Security and Intelligence Coordination). The current PS(NSIC) is Mr Peter Ho, who is concurrently Head of Civil Service and Permanent Secretary for Foreign Affairs.

NSCS provides support to the ministerial-level Security Policy Review Committee (SPRC) and Senior official-level National Security Coordination Committee (NSCCom) and Intelligence Coordinating Committee (ICC). It organises and manages national security programmes, one example being the Asia-Pacific Programme for National Security Officers. NSCS also funds experimental, research or start-up projects that contribute to our national security.

NSCS is made up of two components: the National Security Coordination Centre (NSCC) and the Joint Counter-Terrorism Centre (JCTC). Each centre is headed by a director.

NSCC performs three vital roles in Singapore's national security: national security planning, policy coordination, and anticipating strategic threats. As a coordinating body, NSCC ensures that government agencies complement each other, and do not duplicate or perform competing tasks.

JCTC is a strategic analysis unit that compiles a holistic picture of terrorist threat. It studies the levels of preparedness in areas such as maritime terrorism and chemical, biological and radiological terrorist threats. It also maps out the consequences should an attack in that domain take place.

More information on NSCS can be found at www.nscs.gov.sg



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