



POISON GAS IN WORLD WAR I

By Michael Neiberg



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In May, 1919, just as the diplomats of the great powers were putting the final touches on what became the Treaty of Versailles, Britain's Royal Academy of Arts awarded its painting of the year to John Singer Sargent's "Gassed" (<http://jssgallery.org/Paintings/Gassed/Gassed.htm>). Sargent, an American, was then 62 years old and already a legend in the art world for his portraits and his epic grand paintings. On the strength of those paintings, he had received a commission from the British government to paint an epic picture for the proposed Hall of Remembrance in London. Unsure of his approach for so crucial a painting, Sargent wrote to a friend to express his concern that he would not be able to find a subject worthy of the grandeur and the scale that the British government wanted for the hall.

Sargent had already seen his share of the horrors of the war as an official artist for the American government, yet nothing he had yet seen seemed to him sufficient for the new work. He went to the western front in August, 1918 and witnessed a German mustard gas attack near Arras. The horrific scene repelled Sargent, but gave him a subject that he thought captured the essence of the war. "Gassed" measured an enormous 7½ feet by 20 feet and featured a row of men blinded by their exposure to gas. Each man, eyes covered in bandages, walks past other gas casualties scattered on the ground. Unable to see, the men guide themselves through the scene by placing an arm on the shoulder of the man in front of them. The painting, large enough for its 11 main figures to appear almost in life size, hangs today in London's Imperial War Museum.

Sargent's painting became the second major artistic product of the war to focus on the effects of gas. A year earlier, Wilfrid Owen had written his poem "Dulce et Decorum Est" (<http://www.warpoetry.co.uk/owen1.html>). Although its most famous lines occur at the end when he ridiculed the "old lie" of the title ("sweet and fitting it is to die for one's country"), the bulk of the poem describes the terrifying experience of witnessing a comrade fall victim to gas simply because he failed to fit his mask in time. The man, Owen writes, "plunges at me, guttering, choking, drowning."

Poison gas had the power to inspire works of art and poetry like these. It did not, in fact, kill many World War I soldiers; artillery has the dubious distinction of having killed by far the most men in the war. Moreover, less than 5% of the men exposed to gas died of their wounds. Yet neither artillery nor machine guns nor bayonets had quite the same power to inspire artists like Sargent and Owen that poison gas had.

In part, of course, poison gas terrified because of its novelty. Although chemical weapons of one kind or another had been around for centuries, by 1914 states had the power to mass produce them in many varieties. Civilian

industries, most ironically the perfume industry, could also adapt themselves to the production of chemical weapons if sufficiently inspired by lucrative government contracts. Gas weapons therefore represented just one more murderous aspect of this industrial war.

Although all of the great powers had limited amounts of chemical weapons stockpiled in 1914, none of them used the weapons in any important way in the war's first year. The 1899 Hague Convention had banned the use of "poisons" in warfare, but the existence of such weapons in the stocks of the great powers shows that they were willing to violate that agreement if necessary. Not all of the barriers to the use of poison gas came from moral, ethical, or legal grounds. Gas weapons came with significant military drawbacks, most importantly the inadequacies of the delivery systems. Getting the chemicals where they could kill the enemy without endangering one's own troops proved more complicated than expected. Placing the poisons on top of artillery shells showed the most early promise, but it came with the risk of the shell exploding in the wrong place as well as the inherent inaccuracy of artillery. Putting gases in glass jars, carrying them silently across the lines through no man's land, then having marksmen shoot the jars had some appeal, but getting the jars across the lines proved to be difficult. All delivery systems, especially the most common method of releasing gas from cylinders in one's own line, were subject to the vagaries of the winds, which might well blow the poisons back on one's own troops.

Gases dissipated in the air and frequently fell victim to weather conditions, especially unpredictable winds. The French Army did experiment with the tear gas ethyl bromoacetate in the war's opening weeks but they used it in quantities so small that the Germans never even detected their use. The Germans themselves first used poison gas in quantity, introducing it on the eastern front in January, 1915. They released the tear gas xylyl bromide (variations of which are still used today by riot police across the world) by firing 18,000 shells full of it over Russian lines. The gas, however, did not react as the Germans had hoped; most of it froze rather than vaporize, negating much of the value that it might have had.

In April, the Germans tried again, releasing 168 tons of chlorine gas from 5,000 cylinders on the western front. The gas formed an eerie greenish cloud in the Ypres salient of Belgium where atmospheric conditions favored its use in all ways but one. Using gas of any kind on the western front presented special challenges for the Germans, as the winds there normally moved west to east, forcing the Germans to act with great care. Taking advantage of momentary easterly winds, the Germans deployed the gas against French Territorial (mainly North African) units, which broke and fled in terror as men began to choke from the mysterious cloud that enveloped them. German units, however, refused to advance into the cloud, limiting the tactical effect of the gas.

Almost as soon as the Germans deployed chlorine gas at Ypres, defenders began to work on counter measures. Trench raids and other intelligence had revealed that Germany had chlorine gas in the Ypres sector, although neither the French nor the British armies fully warned their soldiers of its possible use. Canadian troops in the Ypres sector took the brave, if not exactly sanitary, approach of soaking rags in urine, whose ammonia negated some of the worst effects of the chlorine. In the end, few men died from gas at Ypres, although many were temporarily disabled and a hole in the Allied line of more than four miles did open up, even if the Germans were unable to proceed through it before the Canadians closed it. Gas had thus proven a limited success but an alluring possibility to the problem of breaking the stasis of the western front.

Once the Germans had opened this particular Pandora's box, the British and French soon followed, even if many people retained qualms about the use of gas. French chemists introduced phosgene, which, unlike chlorine, was odorless and colorless. It thus struck enemy positions with little warning. It had the additional benefit of being largely negated by the simultaneous introduction of gas masks to French and British soldiers, allowing soldiers to advance into areas containing the gas. Throughout the year, both sides endeavored to develop tons of chemicals of all kinds. The great powers manufactured almost 200,000 tons of gas before the armistice in 1918.

Gas nevertheless remained a weapon of limited utility, especially as more sophisticated counter measures began to arrive. The British Small Box Respirator gave the Allies an edge in 1916, but the Germans soon began to fire mustard gas in combination with chlorine. The mustard caused terrible sores and irritation that caused men to cast off their respirators, leaving them vulnerable to the asphyxiation that chlorine could cause. For the remainder of the war, armies played a deadly game of cat and mouse as each tried simultaneously to defend their men from the enemy's gas and create new chemicals to outwit the enemy's countermeasures. Training men to fight through gas clouds proved more difficult, although by 1917 all armies had specially-trained units to do just that.

Although not a belligerent until 1917, the United States Army began to think about both chemical warfare and methods of protecting its soldiers from gas. By the time of America's entry into the war, 118 scientists working in private industry, on college campuses, and directly for the government were dedicated to the problems of chemical war. The Army began to train its men in defensive measures and eventually amalgamated most of the bureaus and offices dedicated to chemical war into one organization. President Wilson may have wanted to keep his country on the moral high ground, but the Americans were just as willing to use chemical weapons as were the Europeans.

Still, some American officers expressed their objections to the use of gas. Part of the terror that gas inspired in all combatants came from the novel and particularly gruesome ways that it killed. Owen captured that horror in his poem, although most men eventually recovered from their gas attack. Many (though certainly not all) of the men whose blindness inspired Sargent undoubtedly recovered their eyesight, if not during the war then in the years afterwards. The British Army estimated that 70% of gas casualties recovered enough to return to duty within a few weeks. Nevertheless, the sight of men choking on the fluid that their own lungs produced after inhaling poison gas created a particular sense of fear even in soldiers who did not fear machine guns or artillery in quite the same way.

Gas was heavier than air, giving it a special tactical purpose on the battlefield. Unlike artillery, it could sink into the deepest dugouts and man-made defenses, turning shell-proof safe havens into inescapable death traps. Men wrote of the poisons chasing them through trenches and tunnels as if they were ghosts or spirits. Unlike artillery or machine guns, poison gas seemed to have a life, and a mind, of its own. Gas could also stay active (and invisible) for days after an attack. Soldiers who sought refuge in shell holes or caves thus found themselves unexpectedly exposed. Even if the gas did dissipate, having to wear masks that constricted breathing and were particularly uncomfortable in hot weather added to the accumulated miseries of the western front.

Still, none of these qualities fully explains the particular horror and fear that accompanied gas, especially among civilians. To understand civilian terror we must look elsewhere. Gas, unlike artillery or machine guns, had the potential to strike civilians themselves. The possibility of gas attacks had featured in a few pulp novels in both Britain and on the continent in the years before the war, presenting an apocalyptic scenario to civilians accustomed to being safe behind the lines. The development of airplanes and lighter-than-air ships like zeppelins increased the sense of anxiety and fear among those on the home front.

For the most part during World War I civilians in the west enjoyed safety from the war's direct effects. The stasis of the western front had the one benefit of containing the death and destruction to a narrow strip of Belgium and France. But as aerial bombardment grew in intensity during the war, the possibility arose of one side dropping bombs laden with chemicals on civilian targets. Both sides ruled such a tactic out, probably because poison gas would lose much of its effectiveness under such conditions. Dropping bombs from the air dissipated the chemicals too much and the technology of the time did not allow aviators to drop their bombs with any accuracy. The great powers also likely feared both an enemy reprisal and the repercussions that would come from being the first state to use poison gas on unarmed civilians.

As Sargent and Owen understood, gas was different from the other weapons of the age, even if it actually proved to be less lethal than many of those weapons. World War I gave poison gas a sinister reputation from which it has never recovered. Even a century later we are still dealing with the repercussions of that reputation and the consequences of the proliferation of gas weapons worldwide.

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