Sabretache

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Gassed - Part 2

Gassed' by John Singer Sergeant (1919)

Tactics, Delivery Methods, and Measures Taken to Defend Against Poison Gas

Delivery Methods

Deadlier gasses with more reliable delivery systems evolved throughout the war. By 1917, chemical shells, gas projectors, and mortars deposited dense gas barrages on enemy lines, on rear supply routes, reserve trenches and gun batteries. Later types of gas like phosgene, being nearly invisible and more lethal would cause casualties with no advanced warning. Mustard gas, in particular, attacked the skin and blinded its victims, thereby defeating existing gas masks and respirators.

As the war progressed, knowledge of the nature of gas warfare gained by military planners and scientists from both sides quickly evolved into a kind of technological chess match. New ways of delivering poison gas and gas tactics evolved throughout the war. These new threats were met by an evolving array of defensive countermeasures.

Initially, specially designed gas cylinders or gas grenades were used to deliver the gas as a more or less continuous indiscriminate wave of drifting gas along a portion of the trench system. But, methods of deploying gas weapons changed over time, as systems that were less dependent on wind direction and speed, and better protected the operators were gradually developed. Most of the poison gas that was used in the Great War was delivered by artillery and mortar rounds. Continued Page 2.

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The British introduced Livens projectors to the battlefield in 1916, which were capable of blanketing target areas in large clouds of poison gas. The newer methods, i.e. shells, mortars and the Livens Projectors allowed the gas to be targeted to specific locations rather than relying on a freely drifting cloud that was subject to existing weather conditions.

Livens Projector bomb

Canadians Installing Livens Projectors

British gas mortar bomb

Combinations of various gases such as phosgene used with small amounts of chlorine or chlorine used with smoke were also often found to be more effective.

Tactics

By the spring of 1917, the defensive measures employed by the Allied armies to contain the German gas threat were increasingly successful, as least with respect to limiting fatalities. Surprisingly, such defensive success came as the offensive deployment of gas weapons became increasingly sophisticated. Since 1915, the integration of ongoing field and laboratory studies involving agent stability, meteorological conditions, and weapons design made the tactical planning involved in delivering gas to specific targets much more reliable.

By the last year of the war, gas was directed more commonly against enemy gun batteries and the lines of communication in all theatres of the war. They were also used to isolate defenders and set up chemical barriers in order to bypass areas of resistance. If the horses and mules could be gassed or slowed because they were forced to wear respirators, forthcoming attacks or resilient defenses could be disrupted.

With horses and mules targeted, their hooves, lower legs and bellies suffered burns and blisters from contaminated mud, many of which became infected and took the animals out of the battle or forced them to be euthanized.

By 1918, chemical shells made up 35%, 25% and 20% respectively of French/German, British and American ammunition supplies.

As a shock formation thrown into battle after battle, the Canadian Corps relied heavily on gas for all manner of missions during the Hundred Days campaign from 8 August to the end of the war. The Corps commander, Sir Arthur Currie, said after the war, "We tried to make his life miserable.... We never forgot that gas at the second battle of Ypres, and we never let him forget it either. We gassed him on every conceivable occasion, and if we could have killed the whole German army by gas we would gladly have done so." In particular, at the suggestion of Andrew McNaughton, the Commanding Officer of the Canadian Corps Counter-battery Artillery, enemy gun batteries were targeted, forcing the gunners to wear their masks and thereby dramatically slowing their rate of fire.

Anti-Gas Measures

1914 to early 1915

No formal anti-gas measures were available other than covering the mouth and nose with a water or urine-soaked cloth. Following the first three major gas attacks by the Germans at Ypres and the gas identified as chlorine, the British and French quickly developed a primitive gas mask made of muslin cotton (usually taken from bandages) and laced with the chemical agent, thiosulfate. This was tied around the nose, mouth and back of the head but while the thiosulfate effectively would neutralize the gas, the mask itself was largely ineffective due to it tendency to fall off the face, its discomfort and the fact that it was hard to breath when being worn.

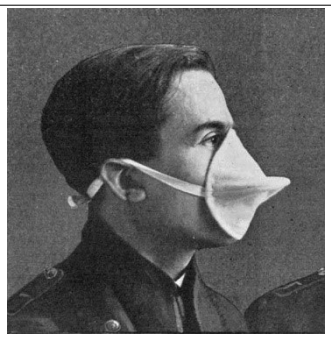
The Germans, in turn, issued their troops with small gauze pads filled with cotton waste, and bottles of a bicarbonate solution with which to dampen the pads.

Mid-1915 to 1918

Mid-1915 to 1916 was the main period of technical innovation regarding gas masks. Starting with chemically-saturated gauze pads, then canvas helmets (essentially bags that fit over the head), then a progression of respirator-type masks of varying designs until culminating in the self-contained canister type respirator. The British medical corps devised a more effective wool hood soak in thiosulfate, sodium bicarbonate and glycerin. Essentially a bag that fit over the head, this 'hypo helmet', 'P Helmet' or 'Smoke Helmet' fully enclosed the soldier's head and had a mica window so that the soldier could see. While better than nothing, soldiers found them difficult to quickly put on, uncomfortable and easily damaged.

British soldiers wearing early gauze face-masks with goggles

Following the P Helmet throughout 1915, an evolution of various only partially effective gas helmets and gas masks were devised by the British and especially the French and tested.



Early French design. Flannel is soaked in a chemical solution

Early Italian design. It has an exhaust valve for exhaling.

Early pattern British gas helmets. The ones on the right have exhaust tubes

The Germans experienced more success by developing their 'Gummischutzmaske', a respirator type mask that had an activated charcoal filter small enough to be worn on the face piece and thus proved to be quite effective.

German cavalryman wearing a Gummischutzmaske

By early 1916 the Allied nations developed truly effective respirators primarily using charcoal filters similar to that used by the Germans. The British Large Box Respirator followed by the Small Box Respirator, the French M2 Gas Mask and the Russian Zelinsky-Kumant Helmet were manufactured and quickly issued to soldiers through 1916 and beyond. The British Small Box Respirator, in particular, provided effective protection from most chemical agents throughout the rest of the war because it could be easily modified to neutralize new agents, such as mustard gas.

Also by 1916, troops on both sides were now being issued with gas helmets of one type or another. Initially only partially effective against chlorine and phosgene, they showed continual improvement until they were effective, assuming they were used promptly and correctly.

Various gas masks employed on the Western Front during the war

British Small Box Respirator

Soldiers wearing Small Box Respirators, March 1917

Anti-Gas Measures

As it was with rifle training, on both sides, gas mask training and drills, i.e. the discipline and skills needed in donning of all protective gear as rapidly as possible under the most difficult battle conditions became an integral part of training and a necessary part of life for all at the front. Accompanying this new area of training there was also an increasing need for gas specialists to instruct the soldiers. Soldiers were instructed to always have their mask handy, no matter where they were or what they were doing. Responding to the sound of a specific whistle, clanging alarm bell, or shout, soldiers would move with all due speed to put on their masks or hoods.

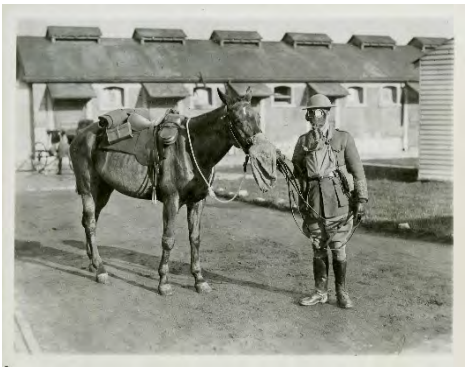
Canadian Gas Drill, Bexhill

Yet there always men who were slow to put on respirators or had them blown off their faces by shellfire. Far from embracing gas masks as a life-saving technology, soldiers often felt emasculated and claustrophobic

in them. Wearing the bug-eyed respirators was debilitating to morale. The y isolated soldiers and forced them to confront their fears alone, away from the sympathetic glance of a mate and only with the soft hiss of one's own breath in one's ears. They were hot and uncomfortable, they significantly restricted sight and there was no guarantee that the gas masks would work. Although British and German masks were fairly reliable because of strict quality control measures, the French mask were notoriously unreliable. Moreover treating wounded soldiers became even more difficult when both stretcher-bearers and injured men needed to don masks, and in some cases the masks caused more trauma to victims.

Also the probability of gas attack was so frequent that in time researchers on both sides even devised masks for horses, dogs and even messenger pigeons involved in military operations.

German dogs with gas masks



Horse with gas mask

The probability of gas attack was so frequent that in time researchers on both sides even devised masks for horses, dogs, and messenger pigeons involved in military operations.

There were also other measures to protect against poison gas. These included the lime bath, water bath and even placing a moist blanket treated with glycerin over trench dugout doors. Soldiers would dip their boots into lime after returning from battle to wash off any residue from soil contaminated by mustard gas. Soldiers would also use a petroleum-type paste called sag paste to protect against mustard gas that they would apply on parts of their body that produced moisture. Every piece of clothing was washed to completely remove any gas residue. Fans were utilized to blow poison gas back to the enemy, fires were lit to evaporate the gas and scouts deployed to search for gas-contaminated areas. And of course, there were a variety of gas gongs, rattles and other noise makers to signal a gas attack.

Gas Alarm Rattle

Gas Gong