

A Toxic Legacy: Mustard Gas and the Invention of Plastic Surgery

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Mustard Gas was first introduced and used during WW1. This powerful poison inflicted a variety of wounds to soldiers externally and internally. The introduction of these gasses and their effects on soldiers long term health and the development of various medical treatments like plastic surgery, endure to this day.

Mustard Gas, also known as sulfur mustardⁱ or Agent Orange,ⁱⁱ has long been used in warfare to inconvenience or incapacitate enemy forces.ⁱⁱⁱ On July 12, 1917, Germany was the first country to use gas in modern warfare,^{iv} and it has been used in many conflicts since.^v In 1993, there was an international effort to ban Mustard Gas at the Chemical Weapons Convention, but Mustard Gas is cheap, easy to make and effective as a toxin; therefore hard to ban.^{vi} Mustard Gas starts as a liquid; it is colourless, odorless and turns to vapor when heated.^{vii} There are two ways to release Mustard Gas, drift gas or through shells. Drift gas is when Mustard Gas gets released into the wind currents and carried over into enemy trenches. This method is unpredictable and risky and could result in friend or foe exposure. Another method is aerosolized poison gas shells that are administered via explosion, this is less risky, but the gas tends to have less of an impact due to the smaller quantity.^{viii}

Death is not the most common outcome with Mustard Gas, long-term chronic effects are usually the main concern.^{ix} Mustard gas causes acute and chronic injuries to a wide range of physiology systems leaving long-term effects on the skin, eyes, respiratory tract and immune system. The most common place of injury with this gas is within the upper respiratory tract, causing burns to the top parts of the lungs, forever damaging them.^x This will cause chronic respiratory issues even if the patient survives the gas exposure.^{xi}

Mustard Gas causes burns, often mutilating soldiers bodies and faces. Up until 1915, surgeons lacked the skills and techniques to treat these facial wounds to heal them in a way that

resembled how they were before the injury. Many surgeons at the time simply sewed up the soldiers faces and let nature take its course, resulting in disfigurements.^{xii} Sir Harold Gillies, a surgeon during WW1, wrote to the higher ups of the Army Medical services, asking them to create an establishment where he could perform reconstructive surgeries entirely devoted to the demands of these facial casualties.^{xiii} Gillies's higher ups agreed and let him set up a section at the Cambridge Military Hospital in Aldershot, entirely devoted to treating soldiers facial wounds. Gillies later moved his set up to the Queen's Hospital in Sidcup. Gillies demonstrated the need for meticulous precision in both planning and executing procedures to maximize results.^{xiv} He insisted that replacement must be as close as possible in terms of tissue loss, bone for bone, cartilage for cartilage and skin for skin. This became the cornerstone of plastic surgery.^{xv}

The use of mustard gas in modern warfare, had devastating effects on soldiers, in both the immediate aftermath and through long term chronic health issues. The severe injuries caused by Mustard Gas pushed advancements in medical treatments, particularly in plastic surgery, as demonstrated by pioneers like Sir Harold Gillies. The enduring impact of Mustard Gas serves as a stark reminder of the destructive potential of chemical warfare and the resilience of humanity in finding new ways to heal and rebuild.

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Endnotes

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- ^v Kamyar Ghabili et al., "Mustard Gas Toxicity", n.p..
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- ^x Kamyar Ghabili et al., "Mustard Gas Toxicity", n.p..
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