

## *Chemicals Weapons of the First World War*

### Lesson objective

Students will demonstrate their ability to understand technical information and research chemical terms. Depending on the class level some questions in the task may be better completed as a class discussion.

### Materials

This lesson requires access to computers

### Key Fact

A chemical weapon is a device that uses chemicals designed to inflict death or harm on humans.



AUSTRALIAN WAR MEMORIAL

H09652

AWM H09652 (copyright expired) A British Army dog handler with two messenger dogs affected by mustard gas which attacked their feet.

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### Reading

Of the 255, 000 Australian casualties in the First World War 30,000 were incapacitated by chemical weapons and over five hundred died.

Chemical weapons can be widely dispersed in gas, liquid and solid forms. The types of weapons employed ranged from disabling chemicals, such as tear gas, to lethal agents like phosgene and chlorine. Gas was unlike most other weapons of the First World War because it was possible to develop effective countermeasures, such as gas masks.

From 1916 to 1918 the Australians fought on the Western Front, in France and Belgium, where gas was a permanent feature of warfare. The first major use of gas there was in April 1915 when the Germans released 168 tons of chlorine from pressure cylinders at the battle of Ypres. Chlorine is a powerful irritant that can inflict damage to the eyes, nose, throat and lungs. At high concentrations and prolonged exposure it can cause death by asphyxiation, however this is unlikely. Despite its limitations chlorine was an effective psychological weapon—the sight of an oncoming cloud of the gas was a source of dread for the infantry. At Ypres the clouds of green vapour floating into their trenches took the British and French by surprise. Choking and vomiting, many fled in panic. It became evident that the men who stayed in their place suffered less than those who ran away, as any movement worsened the effects of the gas, and that those got out of their trenches sometimes escaped serious effects. The worst sufferers were the wounded lying on the ground.

The first amateur countermeasure to gas was soon devised, the soldiers held a cloth soaked in urine over their mouth and nose; the ammonia in the urine neutralised the chlorine. More effective defences against gas were soon developed. When the Australians reached France in 1916 they were issued with a box respirator in which a filter prevented hazardous chemicals from entering the mouth and nose. Worn on the chest, it was connected to the face piece by a rubber tube. Goggles protected the eyes against tear gas.



# THE BORELLA RIDE





# THE BORELLA RIDE

Chemical Weapons of the First World War  
Science  
Year 9

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Gas released from cylinders was unreliable as it relied on the wind blowing in the right direction. In 1916 all armies began delivering gas by using gas-filled shells, fired by artillery. At the battle of Messines in June 1917 the Australians were marching through a wood at night on their way to the front line. German artillery shelled the wood with a newly developed gas, the chemical compound phosgene. Phosgene burns the skin on contact and if inhaled limits the victim's ability to breathe. It can cause suffocation or heart failure. The Australians put on their gas masks and continued to march, but at least 500 men were incapacitated by gas — most were hospitalised and 30 later died.

In 1917 the Germans developed dichlorethyl sulphate, or mustard gas. More like an oil and odourless, it took Allied troops by surprise, especially as its most painful effects, severe skin blistering and lung congestion, did not appear for several hours. The worst of all First World War chemical weapons, mustard gas stripped the mucous membrane from the bronchial tubes. Most sufferers were in so much pain they had to be strapped to their beds.

### Task

Answer each question in twenty to thirty words.

1. Write a definition of each underlined word or phrase
2. Why was an artillery shell a more effective means of
3. delivery than a gas cloud?
4. List all the effects of gas inhalation mentioned in the article
5. Which was the most deadly gas and why?
6. How did a gas mask work?
7. Why would gas be more dangerous closer to the ground?



AWM E00825 (copyright expired) Australians at Ypres wearing gas masks, 1917.