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Tuesday, 25 September, 2001, 13:50 GMT 14:50 UK

## Century of biological and chemical weapons



Iraq was found to have chemical weapons stockpiles

A World Health Organisation warning has renewed fears about chemical or biological weapons being used by groups like the one which targeted America.

The United States takes the threat seriously enough that it has grounded crop-dusting planes - a possible means of delivery of deadly agents - and gas masks are reported to have sold out in New York shops.

The vast majority of chemical attacks to date have been by governments in wartime.

Chemical weapons were used widely in World War I following their introduction by German forces at the beginning of 1915.

The British and French were using them by the end of the year as well, and by the end of the war in 1918, roughly one-quarter of all shells fired contained chemical weapons. Some 100,000 people were killed and up to one million injured by gas attacks.

The 17 different gasses used in the war fell into three categories:

- Tearing agents, much like the tear gas used for personal defence or crowd control today
- Asphyxiants, designed to choke the enemy, against which gas masks offer some protection
- Blistering agents, such as mustard gas,



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which burns any exposed skin, lungs and eyes. Gas masks offer only very limited defence.

The chemical weapons used in World War I were unreliable. The first time British forces used them in September 1915, wind blew the gas back at the soldiers who had fired it.

### Outlawed

The Geneva Protocol of 1925 outlawed the use of chemical and biological weapons in war, but did not actually prevent their use.

But the personal experience of one World War I German soldier may have helped prevent the battlefield use of poison gas in World War II.

As a sergeant in the Kaiser's army, Adolf Hitler was gassed by British troops in 1918, and the experience may have caused him to refrain from using it as a tactical weapon himself.



Developing and storing such weapons is difficult

The Nazis did, of course, use poison gas on civilians in death camps.

Chemical weapons were used in a further 11 campaigns after World War I, according to the Federation of American Scientists - often delivered from aircraft rather than artillery, thus reducing the fear that it would rebound against those who used it.

### Around the world

Mustard gas was used by British forces intervening in the Russian Civil War in 1919 and by Soviet forces in China in the 1930s.

Spanish and Italian troops used it in north African campaigns between the world wars, as did Japanese soldiers in China during World War II.

The US used a chemical defoliant, Agent Orange, in Vietnam throughout the 1960s, which proved to have harmful effects on people as well as the plants it was intended to

16 May 01 | Science/Nature  
Biological weapons could be even deadlier

24 Sep 01 | Americas  
US fears grow of biological attack

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WHO Biological Weapons Report  
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clear.

Iraq under Saddam Hussein used chemical weapons against both Iran in the 1980-88 war and simultaneously against Iraqi Kurds in 1987-88.



Agent Orange proved harmful to humans

Despite Israeli fears that Iraqi Scud missiles would be tipped with chemical or biological agents during the Gulf War, there is no evidence Saddam Hussein fired non-conventional weapons at the Jewish state.

While some soldiers who fought in the Gulf War say they were exposed to chemical or biological weapons, resulting in Gulf War Syndrome, there is no solid proof of that assertion.

#### **Chemical campaigns**

**World War I: Both sides  
Spanish in Morocco,  
1923-26**

**Italian in Ethiopia, 1935-40**

**Soviets in China, 1934,  
36-37**

**Japanese in China, 1937-45**

**US in Vietnam, 1961-69**

**Iraq in Iran and Iraq,  
1983-88**

**Source: Federation of  
American Scientists**

But UN inspections of Iraq after the Gulf War showed that Saddam Hussein had no fewer than five laboratories working to develop chemical and biological weapons.

Some 130 countries signed a protocol banning the production, stockpiling and use of chemical weapons in January 1993.

Biological weapons had been banned under an earlier treaty, in 1975.

#### **Militant use**

With states having pledged to put chemical and biological weapons beyond use, concern now focuses on militant groups and other so-called "non-state actors".

One militant group, the Japanese sect Aum Shinrikyo, released nerve gas on the Tokyo subway in 1995, killing 12 and injuring thousands.

The militant leftist German group the Red Army Faction is believed to have tried to develop botulism toxin - with some success - in the 1980s.

A raid on a Red Army Faction safe house in

Paris in 1984 uncovered a makeshift laboratory containing toxins.

Members of a religious cult in the US state of Oregon succeeded in poisoning local restaurant salad bars with salmonella in 1994, injuring more than 700 people. No one is believed to have died as a result of the attack.



British soldiers train for chemical attacks

A militant group would encounter significant difficulties if it wanted to use chemical or biological weapons.

Developing and storing them would require sophisticated facilities. There are concerns that they could be stolen from countries that have them.

Even if a militant group obtained non-conventional agents, it would find them difficult to deliver effectively.

That is the source of worry about reports that one of the World Trade Center hijackers was interested in learning about crop dusters - they are designed specifically to disperse chemicals over a large region.

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