



# Mustard Agent Likely Used in ISIL Attack

*Product of the Research & Information Support Center (RISC)*

*The following report is based on open source reporting.*

## **Summary**

Early tests show that the [Islamic State of Iraq and the Levant](#) (ISIL) used chemical agents during an attack on Kurdish Peshmerga forces on August 11 in Makhmour, Iraq. U.S. government officials reported that preliminary tests on shell fragments indicated a presence of chemical agents, although additional analyses would be necessary to determine the full composition. Early media reports have pointed to the use of mustard agent. Overall, ISIL's use of mustard agent appears to be largely undeveloped - although the group is likely seeking to advance its capabilities - and there is no evidence that they have used mustard agent (also known as mustard gas) against civilian interests at this point.

## **ISIL Chemical Weapons Use**

ISIL has been accused of using chemical weapons previously by forces on the ground. On August 21, ISIL reportedly used mustard agent in a mortar attack in Aleppo province, Syria, where victims reportedly suffered respiratory problems and developed blisters. Confirmation of mustard-gas exposure is pending. In June, ISIL is suspected of having used mustard agent against Syrian Kurdish People's Protection Units (YPG) forces in Hassakeh.

ISIL has also reportedly used chlorine gas in attacks; although chlorine is not a banned chemical agent, its use as a weapon is prohibited under international law. Kurdish Peshmerga forces claim that a January 23, 2015 ISIL car bomb contained chlorine gas. According to Kurdish authorities, laboratory tests on clothing and soil samples indicated that chlorine had been used as a weapon.<sup>i</sup>

## **Syrian and Iraqi Chemical Weapons Programs**

Both Syria and Iraq have had chemical-weapons programs, and ISIL controls territory in both countries that overlaps with areas known to have contained chemical-weapons stockpiles. It is unknown where undeclared chemical-weapons stockpiles may exist, and if they are in ISIL strongholds. It also remains unclear when or where ISIL obtained chemical agents.

In response to growing international pressure, Syria acceded to the [Chemical Weapons Convention](#) in 2013 and agreed to destroy its chemical-weapons cache. Syria declared 23 chemical-weapons sites to the Organization for the Prohibition against Chemical Weapons (OPCW), which coordinated their removal and destruction. The exact locations of these sites have not been made public. The Syrian regime reportedly had some 1,300 metric tons of chemicals, 100 missile warheads (primarily Scud missiles), and roughly 1,100 aerial bombs.

The last declared chemical weapons were shipped out of Syria in June 2014 for destruction by the OPCW, but reports in late 2014 and 2015 indicated that the Syrian regime may have failed to report all chemical weapons.<sup>ii</sup> In May 2015, OPCW reported that inspectors had found unreported traces of sarin and VX nerve agents at a military research site. Meanwhile, additional reports suggest the Syrian government used chemical weapons in [2015](#).

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Iraq's chemical-weapons program has been defunct for years, but old stockpiles and facilities have been uncovered recently. Iraq's chemical-weapons program was developed during the Iran-Iraq war in the 1980s. The majority of the program consisted of mustard agent and sarin; Iraq was reportedly unsuccessful in developing VX nerve gas. Saddam Hussein famously used mustard agent, Tabun, and nerve agent throughout the Iran-Iraq War and during the 1988 Halabja massacre against the Kurdish population.

Hussein's weapons are not necessarily still viable due to significant aging, but they may contain mustard agent or residual sarin. Some chemical weapons discoveries have taken place near areas now under ISIL-control as recent as 2011; the Muthanna State Establishment, now under ISIL control,<sup>iii</sup> was Iraq's main chemical-weapons research, development, and production facility. However, the likelihood of ISIL accessing chemical-weapons agents at the Muthanna compound and utilizing them is believed low.

### **Mustard Agent 101**

Mustard agent, or sulfur mustard, is a chemical-warfare agent that causes blistering of the skin and mucous membranes. It is fatal in large quantities. Mustard agent was first introduced during World War I as a chemical-warfare agent; because it rarely causes casualties, it can be used to weaken or slow opposing forces.

Mustard agent is colorless and can smell like garlic, onions, or mustard, or it may have no odor. It can be used as a vapor or aerosol or an oily-textured liquid. It can also be found as a solid, but usually only when frozen with a low freezing point of 14 degrees Celsius. Some state programs have created a powdered form of mustard agent which was imply the distilled mustard imbued on a particulate matter. Mustard can range from clear to yellow or brown in color.

There are many factors to consider prior to and during a chemical accident or attack:

- Exposure can vary. As a gas, mustard agent impacts mucus membranes, including eyes, lungs, and skin. Symptoms range from irritation of the mucus membranes to more severe symptoms, such as blistering of the skin and damage to the eyes, and damage to the lungs. Some agents can penetrate normal clothing. If released into water as a liquid, the risks involve skin exposure or drinking contaminated water. As the form changes when dissolved in water, so drinking mustard agent would be unlikely.
- Symptoms manifest differently. Some symptoms can manifest quickly, but others can take up to 48 hours to develop; it is important not to dismiss exposure if symptoms do not present. For additional information on symptoms, please view the U.S. Centers for Disease Control and Prevention's (CDC) [Facts about Mustard Agent](#).
- There is no treatment for mustard-agent exposure. Instead, it is the symptoms that must be treated. Decontamination is vital to limiting further exposure. The CDC provides additional information about [personal cleaning and disposal of contaminated clothing](#).

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- Preparation can limit exposure. With appropriate protection resources and warning, exposure can be limited. Physical protection against mustard agent includes the use of gas masks specifically dedicated for chemical, biological, radiological, nuclear, and explosives exposure (CBRNE) and protective clothing. Gas masks equipped with chemical filters are effective against inhaled chemical agents but will not protect against skin contact. Gas-mask filters have a finite capacity and a limited lifetime once put into operation. Protective clothing can lessen the threat of exposure via skin contact when donned correctly, and ranges in complexity and protective ability, depending on the chemical and its toxicity.
- Evacuation or sheltering in place may both be options. The decision as to whether to evacuate or take shelter following a chemical attack or accident will depend on the nature of the situation. For example, some gases are heavier than air, and would sink to the ground, making sheltering in a basement more dangerous than sheltering in a multi-story space. The ventilation could also pass vapors between rooms and floors. The CDC provides additional information about [sheltering in place](#) and [evacuating](#) during a chemical incident.

#### For Additional Information

For additional information on chemical weapons, including resource on what to do in the event of exposure, and how to protect yourself, please see the below resources:

[Organization for the Prohibition of Chemical Weapons](#)

[Center for Disease Control: Chemical Emergencies](#)

[Bureau of Diplomatic Security: Responding to a CBRN Threat...Are you ready?](#)

For additional information on developments in Iraq, please contact OSAC's [Middle East and North Africa Analyst](#) and OSAC's [Health Analyst](#).

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<sup>i</sup> <http://www.aljazeera.com/news/middleeast/2015/03/iraqi-kurds-allege-chlorine-gas-attack-isil-150314170715284.html>

<sup>ii</sup> <http://www.wsj.com/articles/mission-to-purge-syria-of-chemical-weapons-comes-up-short-1437687744>

<sup>iii</sup> <http://www.telegraph.co.uk/news/worldnews/middleeast/iraq/10913275/Isis-storms-Saddam-era-chemical-weapons-complex-in-Iraq.html>