

Q and A on chemical release, protection and decontamination

The below Q/A on chemicals and chemical weapons are based on the WHO guidance and specific WFP procedures and equipment.

Toxic chemicals may be deliberately released with the intention of causing injury, panic and death in the target population. These FAQs provide general information about the possible health effects of toxic chemicals and the actions that people can take to protect themselves. Much of this information is equally applicable to the accidental release of toxic chemicals.

Q1: What chemicals can be used as chemical weapons?

In principle, any toxic chemical in combination with a suitable delivery method can be used to inflict harm. During the 20th century, a number of groups of chemicals were developed on a large-scale as weapons. This category of weapon employs the toxicity of their active components to cause temporary incapacitation, permanent harm or death. Chemical weapons can be irritants, choking agents, disabling chemicals, blistering agents, nerve agents, or asphyxiants. Depending on the agent involved, and on the means for dispersal, chemical weapons can be in liquid, solid or gaseous forms. The development, stockpiling, transfer and use of chemical weapons are banned under the prohibitions of the 1993 Chemical Weapons Convention.

Q2: What treatment exists?

In most cases treatment involves removal from exposure, decontamination and symptomatic and supportive care, but the type of treatment available will differ depending on the chemicals involved. Antidotes are available for a small number of chemicals, for example for some nerve agents. These antidotes should be administered under medical supervision as soon as possible after exposure.

Q3: How would I know if a chemical had been released?

There are a number of features that suggest that a toxic chemical has been released: the more features noted, the stronger the likelihood. These include the following: an unexplained smell, such as a smell of garlic, horseradish, onions, bleach or a fruity smell; a visible mist or cloud not consistent with the weather; the presence of droplets or an oily film on surfaces; the presence of a suspicious device, such as an exploded shell or an abandoned tanker (especially in close proximity to the smell or mist); multiple sick or dead animals, and multiple sick or dead people. Some typical symptoms include: eye irritation, itchy nose, sneezing, coughing, difficulty in breathing, runny eyes and nose, drooling, itchy or stinging skin, a sudden urge to urinate, defecate or vomit, blurred vision, muscle twitching, dizziness, disorientation, feeling faint.

Q4: What can I do to protect myself if I think that a chemical has been released?

You should try to move away from the source as quickly as possible, staying upwind if you can (i.e. so that any wind is blowing the chemical away from you) or moving crosswind. Many chemical weapons are heavier than air so it is usually a good idea to move to higher ground. If the release was outdoors, then moving into a building onto an upper floor and closing windows, doors, vents and

switching off any equipment that draws air in from outside (e.g. air-conditioners) will provide some protection.

Q5: What should I do if I think that I have been exposed to a chemical weapon?

Most chemical weapons are harmful by inhalation and some are also harmful by skin contact and absorption. Some chemicals have a rapid effect, such as most nerve agents, while others may not cause effects for a number of hours, such as mustard agents. It is important to remove chemicals from your skin as quickly as possible to prevent them from being absorbed and from injuring your skin. Clothing provides some limited and temporary protection from skin exposure and taking off your clothes will often remove a large proportion of the chemical. Since contaminated clothing will provide a source of exposure to others e.g. anyone coming to your assistance, removing your clothes and placing them in a closable container (e.g. a strong plastic bag) will also protect other people. You should also try to wash yourself with soap and water, or with water alone, not forgetting your hair. If your eyes are irritated then rinse them with clean, cool water for several minutes. You should then seek medical help. For more information on decontamination see below.

Q6: How can I decontaminate myself?

If you do not know what kind of chemical you have been exposed to, once you have moved away from the source and found a safe place, you should remove your clothes as quickly as possible, carefully brush any powder off your skin and then wash your entire body and hair with soap and water (ideally), or with water alone. If your eyes are irritated then rinse them with clean, cool water for several minutes.

Avoid using your bare hands to brush off the powder and remember to dispose of what you've used to brush off the powder into the strong plastic bag.

When removing your clothes you should try to avoid spreading chemicals from the clothes onto your skin, for example do not pull clothes over your head if possible – it is better to cut them off. Try not to touch any wet or powdery areas. Again, if you can, carefully fold your clothing, so that the most contaminated parts are folded in, and put the clothes into a container that you can close e.g. a strong plastic bag. Try to avoid touching contaminated clothes with your bare hands – use an implement or wear thick rubber gloves. Put any contaminated personal effects or other objects into the same bag. Close the bag and, if possible, put this bag into another bag and close that also. Remember that the contents of the bag are contaminated so put a warning on the bag.

If possible, decontaminate yourself before going to get medical attention. Firstly this will reduce your own exposure to the chemical. Secondly, it will prevent you from contaminating other people, including health care workers, and also the treatment centre. Do not be surprised if you are put through another decontamination process before being allowed into a treatment facility.

Q7: How should I help someone who has been exposed to a chemical weapon?

You should take care not to become contaminated yourself. You should not enter a chemically-contaminated area unless you have been trained to work in such an area and are wearing a full

chemical protection suit with self-contained breathing apparatus (sometimes called Level A protection). If you are assisting a victim who has left the contaminated area you should still wear specialised personal protective equipment, including chemically-resistant gloves and suit, eye protection and respirator with an air purifying filter. If this equipment is not available and the victim is conscious and able to move then encourage the victim undress and wash themselves. Find medical help for the victim as quickly as possible. Note that you should not take chemically-contaminated victims into a health care facility otherwise you will risk contaminating the facility and poisoning staff and other patients. Victims should be decontaminated before entering a health care facility.

Q8: What are the effects of exposure to nerve agents?

Nerve agents include substances such as sarin, tabun and VX. They are absorbed by inhalation, and through the skin and mucous membranes. They are also toxic if swallowed, for example by ingesting contaminated food or water. Once absorbed they affect the nervous system and cause, amongst other things, runny nose, watery eyes, drooling, sweating, vomiting and diarrhoea, incontinence, tightness of the chest and difficulty breathing, coughing, confusion, muscle twitching, collapse and convulsions.

Q9: What should I do if I think I have been exposed to nerve agent?

You should try to move away from the source as quickly as possible, staying upwind if you can (i.e. so that any wind is blowing the chemical away from you) or moving crosswind. Nerve agents are heavier than air and will tend to sink to low-lying areas, therefore move to higher ground if you can.

Once you have reached a safe area, you should remove your clothing as quickly as possible, carefully brush any powder off your skin, and wash your entire body with soap and water (ideally), or water alone. If your eyes are irritated then rinse them with clean, cool water for several minutes. You should then seek medical help.

When removing your clothes you should try to avoid spreading chemicals from the clothes onto your skin, for example do not pull clothes over your head if possible – it is better to cut them off. Try not to touch any wet or powdery areas. Again, if you can, carefully fold your clothing, so that the most contaminated parts are folded in, and put the clothes into a container that you can close e.g. a strong plastic bag. Try to avoid touching contaminated clothes with your bare hands – use an implement or wear thick rubber gloves. Put any contaminated personal effects or other objects into the same bag. Close the bag and, if possible, put this bag into another bag and close that also. Remember that the contents of the bag are contaminated so put a warning on the bag.

Q10: What are the effects of exposure to chlorine?

Chlorine is a greenish-yellow gas with a distinctive bleach-like smell. It is intensely irritant and exposure will immediately result in stinging and watering of the eyes, you may start coughing, have a feeling of tightness of the chest, difficulty in breathing and nausea and vomiting. It may also cause skin irritation. Pulmonary oedema (which is swelling in the lungs making it difficult to breathe) may develop after 12-24 hours.

Q11: What should I do if I think I have been exposed to chlorine

You should try to move away from the source as quickly as possible, staying upwind if you can (i.e. so that any wind is blowing the chemical away from you) or moving crosswind. Since chlorine is heavier than air you should avoid low-lying areas and move to higher ground.

Once you have reached a safe area, you should remove your clothing as quickly as possible and wash your entire body with soap and water (ideally), or water alone. If your eyes are irritated then rinse them with clean, cool water for several minutes. You should then seek medical help.

If you think you have been exposed to liquid chlorine then you should take care when removing your clothes to try to avoid spreading chemicals from the clothes onto your skin, for example do not pull clothes over your head if possible – it is better to cut them off. Try not to touch any wet areas. If clothing is stuck to your skin do not pull it off – soak the area in tepid water and try to ease the clothing off. Again, if you can, carefully fold your clothing, so that the most contaminated parts are folded in, and put the clothes into a container that you can close e.g. a strong plastic bag. Try to avoid touching contaminated clothes with your bare hands – use an implement or wear thick rubber gloves. Put any contaminated personal effects or other objects into the same bag. Close the bag and, if possible, put this bag into another bag and close that also. Remember that the contents of the bag are contaminated so put a warning on the bag.

Q12: What are the effects of exposure to mustard gas?

There are a number of different types of mustard agent e.g. sulphur mustard and nitrogen mustard but they are all blistering agents. You can be exposed by skin or eye contact and by inhaling the vapour. They are also toxic if swallowed, for example by ingesting contaminated food or water. These chemicals can linger in the environment for several days.

The mustard agents are irritant chemicals that can cause blistering and damage to the skin, eyes and lungs. Exposure may relatively quickly result in eye irritation, coughing and mild irritation to the skin, but often the severe effects of exposure, including characteristic blistering, are delayed for several hours. Effects can include painful eyes and difficulty in seeing, retching and vomiting, itching and reddening of the skin and the formation of blisters, coughing, sneezing, hoarseness, difficulty breathing and chest infection. Exposure to mustard agents does not usually result in death.

Q13: What should I do if I think I have been exposed to mustard gas?

You should try to move away from the source as quickly as possible, staying upwind if you can (i.e. so that any wind is blowing the chemical away from you) or moving crosswind. Avoid touching contaminated surfaces and any pools of liquid or water that may be contaminated. Mustard agents are heavier than air and will tend to sink to low-lying areas, therefore move to higher ground if you can.

Once you have reached a safe area, you should remove your clothing as quickly as possible and wash your entire body with soap and water (ideally), or water alone. If your eyes are irritated then rinse them with clean, cool water for several minutes. You should then seek medical help.

When removing your clothes you should try to avoid spreading chemicals from the clothes onto your skin, for example do not pull clothes over your head if possible – it is better to cut them off. Try not to touch any wet areas. Again, if you can, carefully fold your clothing, so that the most contaminated parts are folded in, and put the clothes into a container that you can close e.g. a strong plastic bag. Try to avoid touching contaminated clothes with your bare hands – use an implement or wear thick rubber gloves. Put any contaminated personal effects or other objects into the same bag. Close the bag and, if possible, put this bag into another bag and close that also. Remember that the contents of the bag are contaminated so put a warning on the bag.

Q14: Can chemical weapons pose a threat to the food chain?

Following the release of a chemical weapon, food and/or water may become contaminated. In addition, chemicals may deliberately be introduced into the food chain or water supply. The nerve agents sarin and tabun mix easily with water and, depending on their concentration in the water, they could cause poisoning if the water was consumed or was used on the skin. These chemicals are not persistent in water, however, and usually degrade over 1-2 days. The nerve agent VX is less soluble but more persistent, breaking down into a chemical that is toxic by ingestion. In water, mustard agents may form globules surrounded by a protective outer layer. These globules may settle out and may persist for several years, continuing to pose a hazard by contact and by ingestion. You should avoid contact with, and consumption of, food or water that you think might be contaminated.

Q15: How can chemical weapons be detected?

Detection and monitoring for the presence of chemical weapons is the task of specialized units in most countries. There are commercially available detection kits for the commonly known chemical weapons, and civil authorities, such as fire brigades, police and emergency medical personnel can use these. The effects of chemical weapons will usually be rapidly apparent.

WFP Specific issues:

Q1: What does WFP do to protect staff?

WFP has purchased and is deploying individual emergency protection and decontamination equipment to all personnel in Syria and to locations where there is a perceived risk of potential exposure to a deliberate release of chemicals.

Q2: What does the equipment do?

The individual emergency protection equipment consists of 15 different items, including:

A protective hood that will provide protection of the respiratory system. The hood can be used by any person and can be applied within a few seconds. It allows the user to breathe safely while evacuating him/herself from a contaminated area.

A product called "*Reactive Skin Decontamination Lotion*" (RSDL). This is a chemical compound that is applied directly to the skin after suspected exposure. The RSDL will neutralise the dangerous chemicals within two minutes after application.

A clean set of clothing that will allow conducting full self-decontamination once away from the source of the contamination.

Specially marked bags to ensure containment of potentially contaminated clothing and other items.

Q3: How is the equipment used?

All staff in locations where the equipment is made available will receive a one day training in the use of the equipment and on the procedures on how to conduct the self-decontamination.

Q4: Does the equipment take gender/religious issues into consideration?

When designing the protection and decontamination kits, all possible effort was made to ensure the highest possible level of respect for various religious and socio-cultural practices as well as preserving the privacy and dignity of the individual.

The protection hood can be used and will provide the same level of protection regardless of facial hair growth or length of the hair of the user.

The clean set of clothing is non-transparent, loose-fit, one size, emergency clothing. It provides an option of covering the head (apart from the face) should this be required by the wearer.

Q5: Who is the point of contact for more information or guidance?

All questions on chemical issues relating to the Syria Emergency Operation should be addressed to Mr. Ian Clarke, REC Strategic Advisor (ian.clarke@wfp.org) and Mr. Jess Torp, Senior Programme Adviser on CBRN (OME) (jess.torp@wfp.org)