

Fact Sheet: TOPOFF 3 Background, Chemical Agents

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Chemical agents are poisonous vapors, aerosols, liquids or solids that have toxic effects on people, animals or plants. They can be released by bombs, sprayed from aircraft, boats, or vehicles, or used as a liquid to create a hazard to people and the environment. Some chemical agents may be odorless and tasteless. They can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days). While potentially lethal, chemical agents are difficult to deliver in lethal concentrations. Outdoors, the agents often dissipate rapidly. Chemical agents are also difficult to produce.

Examples of Chemical Agents

Cyanide

– Cyanide is a rapidly acting, potentially deadly chemical that exists in many forms. Exposure can occur from breathing air, drinking water, eating food, or touching soil that contains cyanide. This agent prevents the cells of the body from using oxygen. It is most dangerous in an enclosed space.

Sulfur mustard

– Sulfur mustard is a manufactured chemical that exists in many forms. Exposure is usually not fatal, but symptoms may not occur for 2 to 24 hours. Mustard can last from one to two days in average weather conditions and from weeks to months in very cold conditions. Extensive exposure causes blistered skin, long-term respiratory or digestive problems, and potential blindness.

Sarin

– A human-made chemical warfare agent, sarin is a clear, colorless, and tasteless liquid that has no odor in its pure form. Sarin can evaporate into a vapor (gas) and spread into the environment. This and other nerve agents prevent the proper operation of the chemical that acts as the body's "off switch" for glands and muscles. Without an "off switch," the glands and muscles are constantly stimulated. They may tire and no longer be able to sustain breathing function. Complete recovery is possible with short-term exposure, but long-term exposure is usually fatal.

Ricin

– Ricin is a poison that can be made from the waste leftover from processing castor beans. It can be inhaled, ingested or injected, and works by getting inside the cells of a person's body and preventing the cells from making the proteins they need. Without the proteins, cells die. Eventually, this is harmful to the whole body, and death may occur.

How To Prepare for a Chemical Attack

- Talk to your doctor to ensure all required or suggested immunizations are up to date.
- Assemble a disaster supply kit, including the following:
 - Battery-powered commercial radio with extra batteries.
 - Non-perishable food and drinking water.
 - First aid kit and sanitation supplies, including soap, water, and bleach.

What To Do During a Chemical Attack

- Listen to your radio for instructions.
- If you are instructed to remain indoors, you should:
 - Turn off all ventilation.
 - Seek shelter in an internal room, preferably one without windows.
 - Avoid using a utility room or a room containing a furnace as a shelter-in-place.
 - Do not use any major appliances in your shelter-in-place.
 - Remain in the protected area and be sure to take your battery-operated radio with you.
- If you are caught in an unprotected area, you should:
 - Attempt to get up-wind of the contaminated area.
 - Attempt to find shelter as quickly as possible.
 - Listen to your radio for official instructions.

What To Do After a Chemical Attack

Immediate symptoms of exposure to chemical agents may include blurred vision, eye irritation, difficulty breathing and nausea. A person affected by a chemical or biological agent requires immediate attention by professional medical personnel. Remove all clothing and other items in contact with the body. Contaminated clothing should be placed in a plastic bag, and any part of your body exposed should be decontaminated with soap and water.

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For more information, view the Information on Agents and Threats section of the **Centers for Disease Control and Prevention** Website: www.bt.cdc.gov

CDC Cyanide Information www.bt.cdc.gov/agent/cyanide/index.asp

CDC Sulfur Mustard Information www.bt.cdc.gov/agent/sulfurmustard/index.asp

CDC Ricin Information www.bt.cdc.gov/agent/ricin/index.asp

CDC Sarin Information www.bt.cdc.gov/agent/sarin/index.asp