

Sarin (GB)

What is sarin (GB)?

Sarin is a highly toxic substance belonging to a class of chemicals known as nerve agents. Sarin, also referred to as GB, has no color, odor or taste. It is the most volatile of the nerve agents, meaning that sarin changes from a liquid to a gas faster than the other nerve agents.

Sarin and other nerve agents are structurally similar to a family of common insecticides called organophosphates, but they are much more potent. As the name implies, nerve agents work by attacking the nervous system.

Can sarin be used as an attack agent?

Nerve agents, including sarin, are classified as weapons of mass destruction. They can be dispersed from missiles, bombs, spray tanks, land mines and by other methods. Because sarin turns into vapor so readily and is so potent when inhaled, it poses its greatest threat as a gas. A sudden release of sarin gas has the potential to cause mass casualties.

Sarin was used twice by terrorists in Japan. In 1994, the Aum Shinrikyo cult released sarin gas in the city of Matsumoto, killing 7 and injuring at least 500. In 1995, the same cult released sarin gas into Tokyo's subway system causing 12 deaths and 6,000 injuries. Sarin also is believed to have been used by Iraq in the Iran-Iraq war of the 1980s.

How are people exposed to sarin?

There are several ways a person can be exposed. The most potent is breathing air containing sarin gas or vapors. Exposure also can occur when liquid sarin or droplets come into contact with the skin or eyes. Another way is consuming food or water poisoned with sarin. And because clothing from a contaminated person can release vapors for about 30 minutes after exposure, it also is possible for people who were not in an original area of release to be exposed.

Effects from sarin gas are usually immediate, while effects from liquid sarin may be immediate or delayed.

What should you do if you are exposed to sarin?

If you are in an area where sarin has been released, leave quickly and go to an area with fresh air. If the release is outdoors, move to higher ground. Because sarin is heavier than air, it will sink to low-lying areas.

Remove your outer clothing, taking care not to touch the outside of your clothing to your skin. Carefully put contaminated clothing in plastic bags, and set them aside for proper disposal by authorities. Clothing contaminated with sarin should never be washed or worn again.

Decontaminate yourself by washing your body thoroughly with soap and water. Rinse your eyes with water for 10 to 15 minutes. Then quickly seek medical attention.

How does sarin affect the body?

Sarin and other nerve agents work by interfering with an enzyme critical to the normal control of nerve impulses to muscles, glands, and certain other nerve cells in the brain, resulting in numerous reactions.

Signs and symptoms of low to moderate exposure include:

- Nausea, abdominal cramps, and vomiting
- Diarrhea
- Small, pinpoint pupils
- Runny eyes and nose
- Blurred vision and aching eyes
- Uncontrolled drooling
- Excessive sweating
- Uncontrolled urination
- Coughing
- Tightness in the chest
- Rapid breathing
- Fast or slow heart rate
- High or low blood pressure
- Headache
- Drowsiness
- Confusion

Large doses may cause the following symptoms:

- Uncontrolled muscle tremors and contractions
- Convulsions
- Loss of consciousness
- Paralysis
- Respiratory failure
- Death

People who experience mild or moderate exposure usually recover completely. Severe exposure is usually fatal.

How is sarin exposure treated?

Exposure to sarin can be treated with specific antidotes – atropine and pralidoxime chloride (2-PAM) – along with supportive medical care in a hospital. These nerve agent antidotes are most effective when given soon after exposure.