

## FACT SHEET

### Chlorine

#### What is it?

Chlorine is an element used in industry and found in some household products. It is sometimes in the form of a poisonous gas. Chlorine gas can be pressurized and cooled to change it into a liquid so that it can be shipped and stored. When liquid chlorine is released, it quickly turns into a gas that stays close to the ground and spreads rapidly. Chlorine gas can be recognized by its pungent, irritating odor, which is like the odor of bleach. The strong smell may provide an adequate warning to people that they have been exposed. Chlorine gas appears to be yellow-green in color. Chlorine itself is not flammable, but it can react explosively or form explosive compounds with other chemicals such as turpentine and ammonia.

#### Its use

Chlorine was used during World War I as a choking (pulmonary) agent. Chlorine is one of the most commonly manufactured chemicals in the United States. Its most important use is as a bleach in the manufacture of paper and cloth, but it is also used to make pesticides (insect killers), rubber, and solvents. Chlorine is used in drinking water and swimming pool water to kill harmful bacteria. It is also used as part of the sanitation process for industrial waste and sewage. Household chlorine bleach can release chlorine gas if it is mixed with other cleaning agents.

#### Exposure

- People's risk for exposure depends on how close they are to the place where the chlorine was released.
- If chlorine gas is released into the air, people may be exposed through skin contact or eye contact. They may also be exposed by breathing air that contains chlorine.
- If chlorine liquid is released into water, people may be exposed by touching or drinking water that contains chlorine.
- If chlorine liquid comes into contact with food, people may be exposed by eating the contaminated food.
- Chlorine gas is heavier than air, so it would settle in low-lying areas.

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**How does chlorine work?**

The extent of poisoning caused by chlorine depends on the amount of chlorine a person is exposed to, how the person was exposed, and the length of time of the exposure. When chlorine gas comes into contact with moist tissues such as the eyes, throat, and lungs, an acid is produced that can damage these tissues.

**Signs and symptoms**

During or immediately after exposure to dangerous concentrations of chlorine, the following signs and symptoms may develop:

- Coughing;
- Chest tightness;
- Burning sensation in the nose, throat, and eyes;
- Watery eyes;
- Blurred vision;
- Nausea and vomiting;
- Burning pain, redness, and blisters on the skin if exposed to gas, skin injury similar to frostbite if exposed to liquid chlorine;
- Difficulty breathing or shortness of breath (may appear immediately if high concentrations of chlorine gas are inhaled, or may be delayed if low concentrations of chlorine gas are inhaled); and
- Fluid in the lungs (pulmonary edema) within 2 to 4 hours.

**Treatment**

No antidote exists for chlorine exposure. Treatment consists of removing the chlorine from the body as soon as possible and providing supportive medical care in a hospital setting.

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