

**This fact sheet answers the most frequently asked health questions (FAQs) about hydrogen peroxide. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**HIGHLIGHTS: Hydrogen peroxide is a manufactured chemical, although small amounts of hydrogen peroxide gas may occur naturally in the air. Low exposure may occur from use at home; higher exposures may occur from industrial use. Exposure to hydrogen peroxide can cause irritation of the eyes, throat, respiratory airway, and skin. Drinking concentrated liquid can cause mild to severe gastrointestinal effects. This substance has been found in at least 18 of the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

### What is hydrogen peroxide?

Hydrogen peroxide is a colorless liquid at room temperature with a bitter taste. Small amounts of gaseous hydrogen peroxide occur naturally in the air. Hydrogen peroxide is unstable, decomposing readily to oxygen and water with release of heat. Although nonflammable, it is a powerful oxidizing agent that can cause spontaneous combustion when it comes in contact with organic material.

Hydrogen peroxide is found in many households at low concentrations (3-9%) for medicinal applications and as a clothes and hair bleach. In industry, hydrogen peroxide in higher concentrations is used as a bleach for textiles and paper, as a component of rocket fuels, and for producing foam rubber and organic chemicals.

### What happens to hydrogen peroxide when it enters the environment?

- Hydrogen peroxide released to the atmosphere will react very rapidly with other compounds found in air.
- Hydrogen peroxide breaks down rapidly in water.

- If released to soil, hydrogen peroxide will be broken down by reacting with other compounds.

- Hydrogen peroxide does not accumulate in the food chain.

### How might I be exposed to hydrogen peroxide?

- You can be exposed to hydrogen peroxide through its use as a general disinfectant. Hydrogen peroxide solutions used for this purpose are sold at almost all drugstores or supermarkets.

- Because hydrogen peroxide is used in many industries for a variety of purposes, workers in such industries may be exposed to this chemical through inhalation or contact with the skin.

### How can hydrogen peroxide affect my health?

Hydrogen peroxide can be toxic if ingested, inhaled, or by contact with the skin or eyes. Inhalation of household strength hydrogen peroxide (3%) can cause respiratory irritation. Exposure to household strength hydrogen

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peroxide can cause mild ocular irritation. Inhalation of vapors from concentrated (higher than 10%) solutions may result in severe pulmonary irritation.

Ingestion of dilute solutions of hydrogen peroxide may result in vomiting, mild gastrointestinal irritation, gastric distension, and on rare occasions, gastrointestinal erosions or embolism (blockage of blood vessels by air bubbles). Ingestion of solutions of 10-20% strength produces similar symptoms, but exposed tissues may also be burned. Ingestion of even more concentrated solutions, in addition to the above, may also induce rapid loss of consciousness followed by respiratory paralysis.

Eye exposure to 3% hydrogen peroxide may result in pain and irritation, but severe injury is rare. More concentrated solution may result in ulceration or perforation of the cornea. Skin contact can cause irritation and temporary bleaching of the skin and hair. Contact with concentrated solutions may cause severe skin burns with blisters.

We do not know if exposure to hydrogen peroxide may affect reproduction in humans.

### **How likely is hydrogen peroxide to cause cancer?**

The International Agency for Research on Cancer (IARC) has determined that hydrogen peroxide is not classifiable as to its carcinogenicity to humans.

### **How can hydrogen peroxide affect children?**

There are no studies on the health effects of children exposed to hydrogen peroxide. Documented cases of

children being accidentally exposed to hydrogen peroxide have described effects similar to those observed in adults.

We do not know if exposure to hydrogen peroxide may result in birth defects or other developmental effects in people.

### **How can families reduce the risk of exposure to hydrogen peroxide?**

- Most families may be exposed to household strength hydrogen peroxide.
- Hydrogen peroxide should not be stored in containers that may appear attractive to children, such as soda bottles. Containers with hydrogen peroxide should be stored out of the reach of children.

### **Is there a medical test to show whether I've been exposed to hydrogen peroxide?**

There are no clinical tests that show that you have been exposed to hydrogen peroxide. White foam from the mouth immediately after ingestion of significant amounts may provide a clue to emergency personnel.

### **Has the federal government made recommendations to protect human health?**

The Occupational Safety and Health Administration (OSHA) sets a limit of 1 part of hydrogen peroxide in a million parts of air (1 ppm) in the workplace for an 8-hour work shift, 40-hour work week.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

