

This fact sheet answers the most frequently asked health questions (FAQs) about sodium and calcium hypochlorite. 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: The general public can be exposed to small amounts of sodium and calcium hypochlorite by using household products that contain these chemicals. Workers in occupations that use these chemicals have the highest risk of being exposed. Sodium and calcium hypochlorite can cause irritation of the eyes, skin, respiratory and gastrointestinal tract. Exposure to high levels can result in severe corrosive damage to the eyes, skin, respiratory and gastrointestinal tissues and can be fatal. Sodium and calcium hypochlorite have been found 6 times each in the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are sodium and calcium hypochlorite?

Sodium hypochlorite is generally used dissolved in water at various concentrations. Although available, solid sodium hypochlorite is not commercially used. Sodium hypochlorite solutions are clear, greenish to yellow liquids with an odor of chlorine. Calcium hypochlorite is a white solid that readily decomposes in water releasing oxygen and chlorine. It also has a strong chlorine odor. Neither compound occur naturally in the environment.

Sodium and calcium hypochlorite are used primarily as bleaching agents or disinfectants. They are components of commercial bleaches, cleaning solutions, and disinfectants for drinking water and waste water purification systems and swimming pools.

What happens to sodium and calcium hypochlorite when they enter the environment?

- When released to air, sodium and calcium hypochlorite are broken down by sunlight and compounds commonly found in the air.
- In water and soil, sodium and calcium hypochlorite separate into sodium, calcium and hypochlorite ions (an ion

is an electrically charged atom or molecule). These ions may react with other substances found in the water.

- Sodium and calcium hypochlorite do not accumulate in the food chain.

How might I be exposed to sodium and calcium hypochlorite?

- You can be exposed to low levels of sodium and calcium hypochlorite if you use disinfectants like household bleach.
- You can also be exposed by swimming in pools where these chemicals were added to kill bacteria.
- Drinking water from public drinking water supplies where these chemicals were added to kill bacteria.
- Workers employed in occupations where these compounds are used to bleach paper and textiles may be subject to slightly higher levels of exposure.

How can sodium and calcium hypochlorite affect my health?

The toxic effects of sodium and calcium hypochlorite are due primarily to the corrosive properties of hypochlorite. If you ingest a small amount of household bleaches (3-6%

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hypochlorite) you may experience gastrointestinal irritation. If you ingest a more concentrated commercial bleach (10% or higher hypochlorite) or hypochlorite powder you may suffer severe corrosive injuries to the mouth, throat, esophagus and stomach with bleeding, perforation, and eventually death. Permanent scars and narrowing of the esophagus may occur in survivors of severe intoxication.

If you inhale chlorine gas released from concentrated hypochlorite solutions you may experience nasal irritation, sore throat, and coughing. Contact of strong hypochlorite solutions with your skin may cause burning pain, inflammation, and blisters. Contact of the eye with mild bleach solutions may cause mild and transitory irritation. More concentrated solutions may cause severe eye injuries. Long-term exposure to low levels of hypochlorite can cause dermal irritation.

We do not know if exposure to chlorine can result in reproductive effects.

How likely are sodium and calcium hypochlorite to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that hypochlorite salts are not classifiable as to their carcinogenicity to humans.

How can sodium and calcium hypochlorite affect children?

Children are probably affected by exposure to sodium and calcium hypochlorite in the same ways as adults. We do not know whether children differ from adults in their susceptibility to sodium and calcium hypochlorite. In general, children may be more vulnerable to corrosive agents than adults because of the smaller diameter of their airways.

We do not know if exposure to sodium and calcium hypochlorite can result in birth defects or other developmental effects.

How can families reduce the risk of exposure to sodium and calcium hypochlorite?

- Most families will not be exposed to high levels of sodium or calcium hypochlorite.
- Household products containing sodium or calcium hypochlorite should be stored in safe locations, out of the reach of children.

Is there a medical test to show whether I've been exposed to sodium and calcium hypochlorite?

Specific tests for the presence of sodium, calcium or chlorine in the blood or urine are not generally useful. If a severe exposure has occurred, blood and urine analyses and other tests may show whether damage has occurred to the lungs and gastrointestinal tract. Some of these tests can be performed in a doctor's office. Some testing may require hospital facilities.

Has the federal government made recommendations to protect human health?

The Food and Drug Administration (FDA) has set a limit for chlorine, as sodium hypochlorite or calcium hypochlorite, not to exceed 0.0082 or 0.0.036 pounds, respectively, of chlorine per pound of dry food starch.

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.

