

This fact sheet answers the most frequently asked health questions (FAQs) about acrylamide. For more information, call the CDC Information Center at 1-800-232-4636. 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 population is exposed to acrylamide by eating contaminated food. Acrylamide affects the nervous system and reproductive system. This chemical has been found in at least 3 of the 1,699 National Priorities List sites identified by the Environmental Protection Agency (EPA).

## What is acrylamide?

Acrylamide is a colorless, odorless, crystalline solid that can react violently when melted. When it is heated, sharp fumes may be released.

Acrylamide is used to make polyacrylamide, which is mainly used in treating waste water discharge from water treatment plants and industrial processes.

In addition, acrylamide and polyacrylamides are used in the production of dyes and organic chemicals, contact lenses, cosmetics and toiletries, permanent-press fabrics, paper and textile production, pulp and paper production, ore processing, sugar refining, and as a chemical grouting agent and soil stabilizer for the construction of tunnels, sewers, wells and reservoirs.

Acrylamide is formed in foods that are rich in carbohydrates when they are fried, grilled, or baked.

## What happens to acrylamide when it enters the environment?

- It may enter drinking water during the water treatment process.
- It is not usually found in air.
- It is broken down quickly by bacteria in soil and water.
- It is removed from soil by hydrolysis.
- It is not expected to bioaccumulate in the environment.

## How might I be exposed to acrylamide?

- Eating carbohydrate-rich foods that are cooked at high temperatures.
- Breathing second-hand tobacco smoke.
- Drinking water from wells near plastic or dye plants.
- Working in the production or use of acrylamide and acrylamide containing products (exposure may occur through skin contact).

## How can acrylamide affect my health?

The main targets of acrylamide toxicity are the nervous system and reproductive system.

Nervous system effects such as muscle weakness, numbness in hands and feet, sweating, unsteadiness, and clumsiness were reported in some acrylamide workers. However, most people are not exposed to acrylamide levels high enough to cause these effects.

Acrylamide reduces the ability of male animals to produce offspring and could cause similar effects in humans, but not likely at exposure levels experienced by most people.

## How likely is acrylamide to cause cancer?

Acrylamide has caused several types of cancer in animals. Adequate human data are not available.

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have concluded that acrylamide is likely to be carcinogenic to humans, based on sufficient evidence of cancer in animals.

# Acrylamide

CAS # 79-06-1

## How can acrylamide affect children?

Acrylamide is expected to affect children in the same manner as adults.

Acrylamide can cross the placenta and result in exposure to unborn children. It has also been detected in breast milk.

In animals exposed to acrylamide during pregnancy, offspring had decreased body weight, decreased startle responses, and decreased levels of some chemicals involved in transmission of brain signals.

## How can families reduce the risk of exposure to acrylamide?

- Avoid eating a lot of carbohydrate-rich foods that are cooked at high temperatures (e.g., french fries).
- Avoid overcooking carbohydrate-rich foods.
- Acrylamide is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.

## Is there a medical test to determine whether I've been exposed to acrylamide?

Acrylamide and its breakdown products can be measured in blood and urine. These measurements may be useful in estimating how much acrylamide has entered the body.

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

The EPA has determined that the exposure to acrylamide in drinking water at concentrations of 1.5 milligrams per liter (1.5 mg/L) for one day or 0.3 milligrams per liter (0.3 mg/L) for 10 days is not expected to cause any adverse effects in a child.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 0.3 milligrams per cubic meter (0.3 mg/m<sup>3</sup>) for acrylamide in workplace air for an 8-hour workday, 40-hour workweek.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for Acrylamide. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

## Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

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.