ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ACROLEIN
CAS # 107-02-8

This fact sheet answers the most frequently asked health questions (FAQs) about acrolein. 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's 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: Exposure to acrolein occurs mostly from breathing it in the air. Cigarette smoke and automobile exhaust contain acrolein. Acrolein causes burning of the nose and throat and can damage the lungs. This chemical has been found in at least 7 of the 1,177 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is acrolein?

(Pronounced ăkʹrə-līn)

Acrolein is a clear or yellow liquid with a disagreeable odor. It dissolves in water very easily and quickly changes to a vapor when heated. It also burns easily. Small amounts of acrolein can be formed and can enter the air when trees, tobacco, other plants, gasoline, and oil are burned. Acrolein is used as a pesticide to control algae, weeds, bacteria, and mollusks. It is also used to make other chemicals.

What happens to acrolein when it enters the environment?

- Acrolein may be found in soil, water, or air.
- It breaks down fairly rapidly in the air (about half will disappear within 1 day) by reacting with other chemicals and sunlight.
- Acrolein evaporates rapidly from soil and water.
- Once dissolved in water, acrolein can be broken down to other chemicals by reactions with water or bacteria.
- Acrolein does not build up in the food chain.

How might I be exposed to acrolein?

- Breathing contaminated air near hazardous waste sites that contain acrolein.
- Smoking tobacco or breathing air containing tobacco smoke or automobile exhaust.
- Working in, or living near, industries where it is manufactured or used to make other chemicals.
- Drinking water containing small amounts of acrolein.
- Eating foods, such as fried foods and roasted coffee, that may contain small amounts of acrolein.

How can acrolein affect my health?

There is very little information about how exposure to acrolein affects people's health. The information we have indicates that breathing large amounts damages the lungs and could cause death. Breathing lower amounts may cause eye watering and burning of the nose and throat and a decreased breathing rate.

Animal studies show that breathing acrolein causes irritation to the nasal cavity, lowered breathing rate, and damage to

the lining of the lungs.

We do not know if acrolein causes reproductive effects or birth defects in people or animals.

How likely is acrolein to cause cancer?

There are no definitive studies on the carcinogenic effects of acrolein in people or animals. The International Agency for Research on Cancer (IARC) has determined that acrolein is not classifiable as to human carcinogenicity.

Is there a medical test to show whether I've been exposed to acrolein?

Methods have been developed to detect acrolein or breakdown products of acrolein in biological or environmental samples; however, there are no specific medical tests available in a doctor's office to determine if you have been exposed to acrolein.

Has the federal government made recommendations to protect human health?

The EPA recommends that levels in lakes and streams should be limited to 0.32 parts of acrolein per million parts of water (0.32 ppm) to prevent possible health effects from drinking water or eating fish contaminated with acrolein. Any release to the environment of more than 1 pound of acrolein must be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.1 ppm over an 8-hour workday, 40-hour workweek.

The National Institute of Occupational Safety and Health (NIOSH) recommends that average workplace air should not exceed 0.1 ppm acrolein averaged over a 10-hour period or a 40-hour workweek.

The federal recommendations have been updated as of July 1999.

Glossary

Carcinogenicity: Ability to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or a gas.
National Priorities List: A list of the nation's worst hazardous waste sites.
Pesticide: A substance that kills pests.
ppm: Parts per million.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1990. Toxicological profile for acrolein. 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, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW 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.