

This fact sheet answers the most frequently asked health questions (FAQs) about cresols. 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 these substances 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 cresols occurs mainly from breathing air containing car exhaust, air from homes heated with coal or wood, and smoking cigarettes. Cresols are corrosive and high levels can cause skin burns and internal burns if ingested, in addition to liver and kidney damage, and possibly death. Low levels may cause eye, nose, and throat irritation. *o*-Cresol, *m*-cresol, *p*-cresol, and mixed cresols have been found in at least 210, 22, 310, and 70 of the 1,678 current or former National Priority List (NPL) sites, respectively, identified by the Environmental Protection Agency (EPA).

What are cresols?

Cresols are a widely occurring natural and manufactured group of chemicals. In their pure form, they are colorless solids and may be liquids if they are mixtures. Cresols smell like medicine.

There are three forms of cresols that differ slightly in their chemical structure: *ortho*-cresol (*o*-cresol), *meta*-cresol (*m*-cresol), and *para*-cresol (*p*-cresol). These forms occur separately or as a mixture. Cresols are used to dissolve other chemicals, as disinfectants and deodorizers, and to make other chemicals.

Cresols may be formed normally in the body from other compounds. Cresols are found in many foods and in wood and tobacco smoke, crude oil, coal tar, and in chemical mixtures used as wood preservatives. Small organisms in soil and water produce cresols when they break down materials in the environment.

What happens to cresols when they enter the environment?

- Cresols enter the environment from natural sources, car exhaust, combustion, manufacture and use, and waste sites.
- In air, cresols quickly break down into other chemicals.
- Cresols evaporate slowly from soil and water surfaces, but can be quickly degraded by bacteria.
- Cresols do not attach strongly to soils; therefore, they may move into groundwater below the soil surface.

- Cresols may last longer in deep groundwater or water that does not have bacteria.
- In soil, half the total amount of cresols will break down in about a week.
- Cresols do not seem to accumulate in fish or other organisms.

How might I be exposed to cresols?

- Breathing contaminated air from car exhaust, coal or wood combustion, oil refineries, or cigarette smoke.
- If you work in a place that manufactures or uses cresols you may be exposed by breathing air or by skin contact.
- Eating foods, including ketchup, tomatoes, cheese, butter, and bacon, or drinking beverages such as coffee, black tea, whiskey, brandy, and rum, but generally the levels are low and not harmful.
- Drinking contaminated water near garbage dumps or hazardous waste sites where cresols may be stored or buried.

How can cresols affect my health?

Most of the cresols that you may ingest will enter the blood stream, but less will enter the blood if there is contact with the skin.

Most exposures to cresols are at very low levels that are not harmful, but cresols breathed, ingested, or applied to the skin at very high levels, can be very harmful because they are corrosive substances. Inhalation of high levels

of cresols for a short time results in irritation of the eyes, nose, and throat. Very little else is known about the effects of breathing cresols. Ingestion of high levels results in mouth and throat burns, abdominal pain, vomiting, kidney problems, and effects on the blood and nervous system. Skin contact with high levels of cresols can burn the skin and damage the kidneys, liver, blood, lungs, and brain. Death may occur in both cases. It is not known what the effects are from long-term ingestion or skin contact with low levels of cresols.

Studies in animals have also found lesions inside the nose and thyroid gland damage in animals eating food containing mostly *p*-cresol or a mixture of *m*- and *p*-cresol. Animal studies suggest that cresols probably would not affect reproduction in humans.

How likely are cresols to cause cancer?

No human studies are available on the carcinogenic effects of cresols. Animal studies show that cresols may increase the ability of some carcinogenic chemicals to cause tumors.

The EPA has determined that cresols are possible human carcinogens.

How can cresols affect children?

Children can be exposed to cresols the same way adults might be exposed. There is no unique way of exposure for children. There are no studies of children exposed to cresols, but a baby who had a solution of cresol accidentally spilled on his head suffered serious damage to the skin, liver, and kidneys, became comatose, and died within 4 hours of the accident.

We do not know whether exposure of pregnant women to cresols can harm the unborn child. Studies in animals indicate that exposure during pregnancy at levels that harm the mother can also adversely affect the fetus. There are no reports of cresols in maternal milk.

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.

How can families reduce the risks of exposure to cresols?

- Avoiding environmental tobacco smoke, which contains cresols, will reduce exposures to cresols.
- Household cleaners and disinfectants containing cresols should be stored out of the reach of young children to prevent accidental poisonings and skin burns.

Is there a medical test to determine whether I have been exposed to cresols?

Tests are available that measure the amount of cresols in the urine. The tests must be performed within 1 day of exposure since cresols break down quickly in the body.

Since cresols occur naturally in the body, results of tests for cresols exposure would have to be compared to results of tests taken from the same person either before exposure or several days after exposure.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 5 ppm for cresols in air to protect workers during 8-hour work shifts.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Cresols. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.