ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

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ToxFAQs™ for Aluminum

(Aluminio)

CAS# 7429-90-5

This fact sheet answers the most frequently asked health questions about aluminum. For more information, you may 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. This information is important 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: Everyone is exposed to low levels of aluminum from food, air, and water. Exposure to high levels of aluminum may result in respiratory problems. Aluminum has been found in at least 427 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is aluminum?

Aluminum occurs naturally and makes up about 8% of the surface of the earth. It is always found combined with other elements such as oxygen, silicon, and fluorine.

Aluminum metal is silver-white and flexible. It is often used in cooking utensils, containers, appliances, and building materials. It

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is also used in paints and fireworks; to produce glass, rubber, and ceramics; and in consumer products such as antacids, astringents, buffered aspirin, food additives, and antiperspirants.

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What happens to aluminum when it enters the environment?

- It binds to particles in the air.
- It can dissolve in lakes, streams, and rivers depending on the quality of the water.
- Acid rain may dissolve aluminum from soil and rocks.
- It can be taken up into some plants from soil.
- It is not known to bioconcentrate up the food chain.

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How might I be exposed to aluminum?

- Eating small amounts of aluminum in food.
- Breathing higher levels of aluminum dust in workplace air.
- Drinking water with high levels of aluminum near waste sites, manufacturing plants, or areas naturally high in aluminum.
- Eating substances containing high levels of aluminum (such as antacids) especially when eating or drinking citrus products at the same time.
- Very little enters your body from aluminum cooking utensils.

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How can aluminum affect my health?

Low-level exposure to aluminum from food, air, water, or contact with skin is not thought to harm your health. Aluminum, however, is not a necessary substance for our bodies and too much may be harmful.

People who are exposed to high levels of aluminum in air may have respiratory problems including coughing and asthma from breathing dust.

Some studies show that people with Alzheimer's disease have more aluminum than usual in their brains. We do not know whether aluminum causes the disease or whether the buildup of aluminum happens to people who already have the disease. Infants and adults who received large doses of aluminum as a treatment for another problem developed bone diseases, which suggests that aluminum may cause skeletal problems. Some sensitive people develop skin rashes from using aluminum chlorohydrate deodorants.

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How likely is aluminum to cause cancer?

The Department of Health and Human Services, the International Agency for Research on Cancer, and the EPA have not classified aluminum for carcinogenicity. Aluminum has not been shown to cause cancer in animals.

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How does aluminum affect children?

Children with kidney problems who were given aluminum in their medical treatments developed bone diseases. Other health effects of aluminum on children have not been studied. It is not known whether aluminum affects children differently than adults, or what the long-term effects might be in adults exposed as children. Large amounts of aluminum have been shown to be harmful to unborn and developing animals because it can cause delays in skeletal and neurological development. Aluminum has been shown to cause lower birthweights in some animals.

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How can families reduce the risk of exposure to aluminum?

The most important way families can lower exposure to aluminum is to know about the sources of aluminum and lessen exposure to these sources. Since aluminum is so common and widespread in the environment, families cannot avoid exposure to aluminum. Exposure to the low levels of aluminum that are naturally present in food and water and the forms of aluminum present in dirt and

aluminum cookware is generally not harmful. The best way to reduce exposure to aluminum is to avoid taking large quantities of soluble forms of aluminum such as aluminum-containing antacids and buffered aspirin. Make sure these products have child-proof caps so children will not accidentally eat them. Some soy-based formulas may contain high levels of aluminum, so parents may want to consult with their physician when choosing an infant formula.

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

There are tests to measure aluminum in blood, urine, and feces. The amount in your urine can tell you whether you have been exposed to higher than normal levels of aluminum. Tests can also detect aluminum in your hair and fingernails. Not all of these tests are routinely performed at your doctor's office, but your doctor can take samples and send them to a testing laboratory.

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Has the federal government made recommendations to protect human health?

EPA requires that spills or accidental releases of 5,000 pounds or more of aluminum sulfate be reported. Special regulations are set for aluminum phosphide because it is a pesticide.

EPA recommends that the concentration of aluminum in drinking water not exceed 0.2 parts of aluminum per million parts of water (0.2 ppm) because of aesthetic effects, such as taste and odor problems.

The Food and Drug Administration (FDA) has determined that aluminum cooking utensils, aluminum foil, antiperspirants, antacids, and other aluminum products are generally safe.

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References

Agency for Toxic Substances and Disease Registry (ATSDR).

1999. Toxicological Profile for aluminum. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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Where can I get more information?

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.

For more information, contact:

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