



## ZINC

### What is ZINC?

Zinc is a metal with a bright color that ranges from blue-white to gray. It is not found in nature as pure zinc. Rather, it is found as part of other minerals.

### Where can zinc be found and how is it used?

Zinc is found in many foods and is an important element for maintaining good health. In adults, the largest dietary sources of zinc are meats, dairy products, grains and mixed dishes. Smaller amounts of zinc are found in fruits, nuts, fats, sweeteners and beverages.

Zinc is also present in most drinking water. If drinking water or beverages are stored in metal containers, they may have high levels of zinc. If drinking water flows through pipes coated with zinc to resist rust, zinc could be in that drinking water. Levels of zinc in air are low. Air near factories may have higher levels of zinc. In industry, zinc is used for galvanizing iron and other metals to protect them against rust and corrosion.

### How can people be exposed to zinc?

Employees who work in the mining, smelting, welding and manufacture of brass, bronze, or other metal alloys can be exposed to zinc. Consumer products made with zinc include machine parts, rubber, paint, linoleum, oil cloths, batteries and dyes. Construction workers, automobile mechanics and painters can also be exposed to zinc.

*You could be exposed to zinc through:*

**Breathing** dust containing zinc. This may happen if you work where zinc is used or made. You can also breathe zinc dust if you live near a factory or waste site polluted with zinc.

**Drinking** water that naturally contains zinc. You can also drink zinc if beverages are stored in metal containers or flow through pipes coated with zinc.

**Touching** zinc, by using products containing it. Such products include skin cream, suntan lotions and sunscreens, foot powders and dandruff shampoos.

**Eye Contact**, by touching the eyes after using creams and ointments containing zinc, or by getting zinc dust in the eyes.

### How does zinc work?

Zinc enters the body when you eat food or drink water containing it. Near a waste site, the most likely way to be exposed is by drinking water with a high amount of zinc. Zinc smelting or zinc welding can also cause zinc dust, which can then be inhaled. The amount of zinc that passes through the skin is small. After exposure, zinc increases quickly in blood and bone, remains in the bone for many days, and then is usually excreted in urine and waste matter.

### How can zinc affect my health?

Breathing large amounts of zinc dust or fumes causes a short-term disease called metal fume fever, a flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Metal fume fever usually goes away when the zinc exposure stops. Very little is known about the long-term effects of breathing zinc dust or fumes.

When the Recommended Dietary Allowances (RDAs) for zinc are followed, it is a healthy element in the diet. Too much zinc, however, can negatively affect your health. Zinc that exceeds the RDAs, such as too many dietary supplements, can cause stomach cramps, stomach upset and vomiting. Eating a high level of zinc for several months may cause anemia, a problem with the blood. It can also damage the pancreas and decrease levels of HDL cholesterol.

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## Frequently Asked Questions

Too little zinc in the diet causes loss of appetite, lessened taste and smell, and a lowered immune function, which makes the body less resistant to sickness and disease. Too little zinc can also cause wounds to heal slowly, skin sores, poorly developed sex organs, and growth problems in young men.

Zinc is especially important for proper growth and development of young children. If a pregnant woman does not get enough zinc, her baby may have birth defects or be born with a low birth weight. Very young children who do not receive enough zinc are smaller than other children.

### How is zinc poisoning treated?

There is no treatment for zinc poisoning. Depending on the severity of the poisoning, a doctor may give milk or water, or pump the stomach.

### What should I do if exposed to zinc?

**If you breathe zinc** fumes or dust, move to fresh air right away. Get medical help.

**If you eat a substance containing zinc** (except for vitamins and food, etc.), wash out your mouth with water.

**If you touch zinc**, wash with lots of water for at least 15 minutes.

**If you get zinc in your eyes**, wash the eye with clean water for at least 15 minutes.

### What factors limit use or exposure to zinc?

Children living near waste sites containing zinc are likely to be exposed to higher levels of zinc. They can become exposed from breathing dust, drinking water with zinc in it (whether naturally occurring or contaminated), touching soil, or eating soil containing zinc. It is unlikely that a child would eat enough zinc in soil to cause harmful effects. Nevertheless, parents should teach children to avoid eating soil and to wash their hands often, particularly before eating. Using too much of some medicines and vitamins containing zinc might be harmful.

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

Tests can show if your body fluids contain high levels of zinc. Long-term zinc exposure can be determined by analyzing hair samples.

### Technical information for zinc

CAS Number: 7440-66-6

Chemical Formula: Zn

Carcinogenicity (EPA): Not classifiable as to human carcinogenicity.

MCL (Drinking Water): The EPA MCL for zinc is a secondary MCL of 5 milligrams per liter.

OSHA Standards: There is no standard for elemental zinc. The standard for zinc oxide is 5 milligrams per cubic meter of air.

NIOSH Standards: There is no standard for elemental zinc. The standard for zinc oxide total dust is 5 milligram per cubic meter of air.

ACGIH: 8-hr Time Weighted Avg (TWA): 2 mg/m<sup>3</sup> for zinc oxide.

### References and Sources

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. *Toxicological profile for Zinc*. Atlanta, GA: U.S. Department of Health and Human Services.

OSHA, Health Guidelines – Zinc, <http://www.osha.gov/SLTC/healthguidelines/Zincoxide/recognition.html>

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