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**COBALT**  
CAS # 7440-48-4

This fact sheet answers the most frequently asked health questions (FAQs) about cobalt. 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. 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.

**SUMMARY: Everyone is exposed to low levels of cobalt in air, water, and food. Exposure to higher levels of cobalt occurs in the workplace. Cobalt has both beneficial and harmful effects on health. At low levels, it is part of Vitamin B<sub>12</sub>, which is essential for good health; at high levels, it may harm the lungs. This chemical has been found in at least 336 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.**

**What is cobalt?**

(Pronounced kō'bôlt')

Cobalt is a compound that occurs in nature. It occurs in many different chemical forms. Pure cobalt is a steel-gray, shiny, hard metal. Cobalt is not currently mined in the United States.

All cobalt used in industry is imported or obtained by recycling scrap metal that contains cobalt. It is used in industry to make alloys (mixtures of metals), colored pigments, and as a drier for paint and porcelain enamel used on steel bathroom fixtures, large appliances, and kitchen wares.

Small amounts of cobalt naturally occur in food. In addition, vitamin B<sub>12</sub> is a cobalt-containing compound that is essential for good health.

Some important natural sources of cobalt in the environment are soil, dust, and seawater. Cobalt is also released to the environment from burning coal and oil, and from exhaust from cars and trucks.

**What happens to cobalt when it enters the environment?**

- Cobalt enters the environment from natural sources and from the burning of coal and oil.

- Cobalt stays in the air for a few days.
- Pure cobalt does not dissolve in water, but some of its compounds do.
- Cobalt can stay for years in water and soil.
- It can move from the soil to underground water.
- Cobalt is taken up by plants from the soil.

**How might I be exposed to cobalt?**

- Everyone is exposed to cobalt at low levels in air, water, and food.
- People who live near hazardous waste sites containing cobalt may be exposed to higher levels of this chemical.
- Food is another source of exposure to cobalt.
- Workers may be exposed to cobalt in industries that process it or make products containing cobalt.

**How can cobalt affect my health?**

Cobalt has both beneficial and harmful effects on human health. Cobalt is beneficial because it is part of Vitamin B<sub>12</sub>. Cobalt has also been used as a treatment for anemia, because it causes red blood cells to be produced.

Exposure to high levels of cobalt can harm your health. Effects on the lungs, including asthma, pneumonia, and



ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

wheezing, have been found in workers who breathed high levels of cobalt in the air.

In the 1960s, some breweries added cobalt to beer to stabilize the foam. Some people who drank large quantities of the beer experienced nausea, vomiting, and serious effects on the heart. However, effects on the heart were not seen in people with anemia or pregnant women treated with cobalt.

Animal studies have found problems with the development of the fetus in animals exposed to high concentrations of cobalt during pregnancy. However, cobalt is also essential for the growth and development of certain animals.

### How likely is cobalt to cause cancer?

The International Agency for Research on Cancer has determined that cobalt is a possible carcinogen to humans.

Studies in animals have shown that cobalt causes cancer when placed directly into the muscle or under the skin. Cobalt did not cause cancer in animals that were exposed to it in the air, in food, or in drinking water. Studies on people are inconclusive regarding cobalt and cancer.

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

Tests are available to measure cobalt levels in the urine and blood. These tests are only accurate for up to a few days after exposure because cobalt leaves the body fairly quickly.

These tests are not usually performed in most doctors' offices because special equipment is needed to conduct them. These tests cannot determine if adverse health effects will occur from exposure to cobalt.

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

The Environmental Protection Agency (EPA) requires that discharges or accidental spills into the environment of 1,000 pounds or more of cobalt be reported.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 0.1 milligrams per cubic meter (0.1 mg/m<sup>3</sup>) for cobalt in workplace air for an 8-hour workday, 40-hour workweek.

The American Conference of Governmental and Industrial Hygienists (ACGIH) has recommended an occupational exposure limit of 0.02 mg/m<sup>3</sup> for cobalt for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) has recommended an occupational exposure limit of 0.05 mg/m<sup>3</sup> for cobalt for a 10-hour work-day, 40-hour workweek.

### Glossary

Alloy: A mixture of metals.

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance that can cause cancer.

Milligram (mg): One thousandth of a gram.

### References

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Toxicological profile for cobalt. 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 E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. 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.

