

Cobalt and Cobalt Compounds Air Guidance

OCTOBER 2026

Cobalt is a naturally occurring metal that is found in all parts of the environment – air, soil, dust, and water. It is also present in various mining, agricultural, and industrial processes. Cobalt doesn't break down in the environment. Instead, it becomes attached to or separated from other particles or chemicals. When released to the atmosphere, it is deposited onto soil or water surfaces.

Cobalt enters the body primarily through food, but also from low levels in air and drinking water. Cobalt is a key part of the essential vitamin B₁₂, which is important for the human body to stay healthy, but being exposed to too much cobalt in the air may lead to harmful health effects.

Sources of cobalt exposure in the air



Natural environment

Breathing in naturally occurring cobalt and cobalt compounds in the air around us.



Industrial emissions

Working or spending time in an area impacted by cobalt and cobalt compounds as part of an industrial or manufacturing process.

Potential health concerns from breathing cobalt

Breathing cobalt and cobalt compounds may cause breathing difficulty and cause damage to your nose, throat, and lungs over time. Cobalt is also found to be an allergen for some people.

Animal toxicity studies show that breathing cobalt and cobalt compounds at higher concentrations can also cause issues with the immune system, central nervous system, reproduction and fertility, and blood cell levels.

Cobalt and soluble cobalt compounds, like cobalt sulfate and cobalt chloride, are suspected to be human carcinogens based on evidence from human and animal studies. However, the cancer-causing potential of some highly insoluble cobalt compounds, like tricobalt tetraoxide and cobaltous sulfide, are still not known.

Cobalt Health-Based Values

Sufficient toxicity data was available for MDH to develop Health-Based Values (HBVs) for acute 1-hour, acute 24-hour, intermediate, and chronic exposures, as well as cancer lifetime risk (see table). HBVs are levels in air that

are likely to pose little or no risk to human health over that time period. These values are protective for the public, including people who are at higher risk. However, people who are allergic to cobalt may still have symptoms at or below these values.

Breathing an amount of cobalt or cobalt compounds that is above the HBV does not mean health effects will occur; however, the risk for health effects can increase as the level of exposure and / or time of exposure increases. When HBVs are exceeded, MDH recommends taking steps to reduce or avoid exposures.

Duration	2026 HBV ($\mu\text{g}/\text{m}^3$)	Health Endpoint
Acute_{1hr} (1-hour)	1	respiratory
Acute_{24hr} (24 hours or less)	0.1	respiratory
Intermediate (>24 hours - 1 year)	0.02	respiratory
Chronic (> 1 years - lifetime)	0.02	respiratory
Cancer (lifetime)	0.001	lung cancers

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