



The Damaging Effects of Excessive Cadmium Levels in Humans

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DESCRIPTION

Cadmium is a heavy metal that occurs naturally in the Earth's crust but has become a significant environmental pollutant due to industrial processes, mining activities, and the use of cadmium-containing products. While the human body requires trace amounts of certain metals for optimal functioning, excessive levels of cadmium can have severe and lasting health consequences. This article explores the detrimental effects of excessive cadmium exposure on human health, shedding light on a critical environmental and public health issue. One of the most common ways people are exposed to cadmium is through their diet. Cadmium accumulates in crops like rice, vegetables, and grains, primarily from contaminated soil and water sources. Smoking is another significant dietary source of cadmium, as tobacco plants readily absorb this metal. Individuals working in certain industries, such as mining, smelting, and battery manufacturing, are at a heightened risk of cadmium exposure due to the nature of their jobs. Cadmium can leach into the environment from industrial facilities, landfills, and sewage sludge, contaminating soil and water sources. This contamination can affect nearby communities. Perhaps the most well-documented effect of excessive cadmium exposure is kidney damage. Cadmium accumulates in the kidneys over time and impairs their ability to filter waste products from the blood. This can lead to a condition called cadmium-induced nephropathy, which may result in chronic kidney disease or even kidney failure. Excessive cadmium levels have been linked to bone diseases such as osteoporosis. Cadmium can replace calcium in bones, weakening their structure and increasing the risk of fractures. Long-term exposure to cadmium has been associated with an increased risk of cancer, particularly lung cancer in individuals exposed to cadmium through smoking. The International Agency for Research on Cancer (IARC) classifies cadmium as a Group 1 human carcinogen. Some studies suggest that cadmium exposure may contribute to cardiovascular diseases by promoting inflammation and oxidative stress. Elevated cadmium levels have

been linked to high blood pressure, heart disease, and stroke. Cadmium exposure can harm reproductive health in both men and women. It may lead to reduced fertility, erectile dysfunction, and complications during pregnancy. In children, prenatal exposure to cadmium can result in developmental delays and learning disabilities. Inhalation of cadmium fumes or dust can irritate the respiratory tract and lead to chronic obstructive pulmonary disease (COPD) or other lung conditions. Emerging research suggests that cadmium exposure may have adverse effects on the nervous system, potentially contributing to cognitive decline and neurodegenerative diseases like Alzheimer's and Parkinson's. To mitigate the harmful effects of cadmium exposure, regulatory bodies around the world have implemented measures to limit cadmium emissions and ensure safe levels in consumer products. For example, the European Union has set strict limits on cadmium in toys and jewellery, while various countries have established standards for cadmium levels in drinking water and food. Consuming foods low in cadmium, especially if you live in areas with known contamination, can help reduce exposure. Since tobacco is a significant source of cadmium exposure, quitting smoking is a crucial step in minimizing risk. Excessive cadmium exposure poses a significant threat to human health, affecting various organ systems and increasing the risk of chronic diseases. Preventing cadmium exposure requires collective efforts, including stricter environmental regulations, safe work practices, and public awareness campaigns. By understanding the detrimental effects of cadmium and taking proactive measures to reduce exposure, individuals and society as a whole can work towards a healthier and more sustainable future.

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CONFLICT OF INTEREST

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