

Heavy Metal Toxicity: Understanding their Harmful Impact on Human Health

As industrialization and environmental contamination increase, exposure to heavy metals becomes unavoidable. Mining, burning of fossil fuels, and industrial processes release heavy metals that contaminate water, air, soil, and marine life. At least 23 million people around the world are affected by toxic waste from metal-mining activity, living on flood-plains contaminated by potentially harmful concentrations of these pollutants (Gill 2023 Sep 21). These metals are part of the connection between environmental factors and public health. Diseases including Alzheimer's, Parkinson's, and Huntington's have been linked to heavy metal intake, and it is important to better understand the link between heavy metal exposure and disease at the molecular level. This literature review looks into the complex relationship between heavy metal exposure and the molecular processes that lead to metabolic syndrome and cognitive impairment. It provides evidence of a correlation between heavy metal exposure and impaired functions as well as diseases. Th review also explains the molecular mechanisms involved, which support the development of targeted treatments that can repair or prevent the harmful health effects of heavy metal exposure. The comprehensive analysis highlights the importance of stricter environmental laws and pollution controls to reduce heavy metal exposure. Additionally, early detection and intervention plans are crucial in mitigating the harmful effects of heavy metals.