

Decreasing mercury contamination by preparing Peruvian artisanal gold diggers

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Received: 01-May-2023; Manuscript No: JAEFR-23-106594; Editor assigned: 03-May-2023; Pre QC No: JAEFR-23-106594 (PQ); Reviewed: 17-May-2023; QC No: JAEFR-23-106594; Revised: 22-May-2023 (R); Manuscript No: JAEFR-23-106594 (R); Published: 29-May-2023; DOI: 10.3153/JAEFR.9.5.041

Introduction

Mercury pollution is a grave environmental concern that poses significant threats to ecosystems and human health worldwide. Mercury, a naturally occurring heavy metal, is released into the environment through various industrial processes, coal combustion, and artisanal and small-scale gold mining [1-3]. Once released, it can persist in the environment for long periods, accumulating in ecosystems and magnifying its harmful effects. This article aims to explore the causes and consequences of mercury pollution, its impact on human health, wildlife, and the environment, and the measures being taken to mitigate this global problem. Mercury pollution originates from both natural and human-related sources. Natural sources include volcanic eruptions, weathering of rocks, and degassing of the oceans. However, anthropogenic activities are the primary contributors to the significant increase in mercury pollution. Industrial processes such as coal-fired power plants, metal smelting, cement production, and waste incineration release substantial amounts of mercury into the atmosphere. Artisanal and small-scale gold mining, particularly in developing countries, also release significant mercury emissions due to the use of mercury in the extraction process. The consequences of mercury pollution are far-reaching and devastating for the environment. Mercury released into the air can travel long distances before settling into bodies of water, where it undergoes a process called bio magnification. It enters the food chain through aquatic organisms, accumulating in larger predatory fish, including popular seafood choices such as tuna and swordfish.

Description

As a result, humans who consume contaminated fish are exposed to high levels of mercury, leading to severe health issues. Furthermore, mercury pollution disrupts aquatic ecosystems, harming fish, amphibians, and other wildlife. It impairs their reproductive systems, affects their behaviour, and can lead to reduced population sizes and biodiversity

loss. Mercury contamination also affects plants and microorganisms, altering the delicate balance of ecosystems and impairing their ecological functions. Mercury is a potent neurotoxin that can have severe health effects on humans, particularly fetuses, infants, and children. It affects the central nervous system, leading to developmental disorders, cognitive impairments, and learning difficulties. Prenatal exposure to mercury can result in neurodevelopmental issues and even cause developmental delays in children. Additionally, mercury exposure affects adults, leading to cardiovascular problems, kidney damage, and adverse reproductive outcomes. Occupational exposure to mercury in industries such as mining, dentistry, and chemical manufacturing poses a significant risk to workers if proper safety measures are not implemented. Recognizing the gravity of mercury pollution, international efforts have been made to mitigate its adverse effects. The Minamata Convention on Mercury, adopted in 2013, is a global treaty designed to protect human health and the environment from mercury emissions [4,5]. It aims to reduce mercury supply and trade, promote mercury-free alternatives, and improve safety measures in industries using mercury.

Conclusion

Mercury pollution remains a global concern due to its long-lasting effects on ecosystems and human health. The continuous release of mercury into the environment demands urgent action to mitigate its impact. International collaboration, as seen through the Minamata Convention on Mercury, provides a framework for collective efforts to address this issue. However, individuals, communities, and industries must also actively participate in reducing mercury emissions and promoting sustainable practices. Education and awareness programs play a vital role in preventing exposure to mercury and promoting responsible consumption. Innovations in technology and research are crucial for developing effective methods to remove mercury from industrial emissions and contaminated sites. By

recognizing the magnitude of mercury pollution and taking proactive steps, we can protect our ecosystems, preserve biodiversity, and safeguard human health. With concerted efforts and a commitment to sustainable practices, we can pave the way for a cleaner and safer future, free from the perils of mercury pollution.

Acknowledgement

None.

Conflict of Interest

The author declares there is no conflict of interest in publishing this article.

Reference

1. Akagi H, Castillo ES, Maramba NC, et al. Health assessment for mercury exposure among schoolchildren residing near a gold processing and refining plant in Apokon, Tagum, Davao del Norte, Philippines. *Sci Total Environ.* 2000; 259(1-3):31-43.
2. Bose-O'Reilly S, Lettmeier B, Gothe RM, et al. Mercury

as a serious health hazard for children in gold mining areas. *Environ Res.* 2008; 107(1):89-97.

3. Cordy P, Veiga MM, Salih I, et al. Mercury contamination from artisanal gold mining in antioquia, Colombia: The World's highest per capita mercury pollution. *Sci Total Environ.* 2011; 410-411:154-60.
4. Guimaraes JRD, Betancourt O, Miranda MR, et al. Long-range effect of cyanide on mercury methylation in a gold mining area in southern Ecuador. *Sci Total Environ.* 2011; 409(23):5026-33.
5. Hilson G. Abatement of mercury pollution in the small-scale gold mining industry: Restructuring the policy and research agendas. *Sci Total Environ.* 2006

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