Environmental impact assessment of lead-zinc battery production

The potential social economic impact of China"s lead-zinc production increased by 49% from 2008 to 2018. Direct emission was the primary contributor in most environmental impact categories (i.e., freshwater ecotoxicity, particulates formation, non-carcinogens, and carcinogens), except for global warming, in which electricity generation was ...

Sullivan and Gaines reviewed and compared lead-acid, nickel-cadmium, nickel-metal hydride, sodium-sulfur, and lithium-ion battery production technologies via LCA ...

studies to assess the environmental impact of lead metal pro- duction and two of the products that make up approximately 90 % of the end uses of lead, namely lead-based batteries and

The study demonstrates that the technological capabilities of innovative advanced lead batteries used in start-stop vehicles significantly offset the environmental impact of their...

A study was carried out to compare the environmental impacts of a number of process routes for lead and zinc metal production from sulphide ores using Life Cycle Assessment methodology and based ...

Purpose Large stocks of many kinds of zinc smelting solid waste have been generated; moreover, the disposal process consumes high amounts of energy and takes low output rate of metal resources, which seriously endangers regional ecological environment and human health. The purpose of this study is to compare the environmental impact of the ...

than zinc for metal value (replacing virgin material) is important for reducing environmental impact and technologies involving high temperature are energy intensive. The principal drivers of end-of-life environmental performance of batteries vary depending on the metrics of impact assessment. Findings

2006. Abstract The environmental assessment of various electric vehicle battery technologies (Lead-acid, Nickel-Cadmium, Nickel-metal hydride, Sodium nickel-chloride, Lithium-ion) was performed in the context of the European end-of-life vehicles directive (2000/53/EC).

Battery production contributes highest GHG (Yudhistira et al., 2022) 2022: Compare lifecycle assessment of LIBs and lead acid batteries: Usage phase contributes to high climate change and fossil resource depletion at 30%. Increasing renewable mix decreases environmental impact of use phase in battery production.

Heavy metal pollution from human and natural activities poses significant environmental and health concerns for wildlife and humans, with lead and zinc being particularly threatening. This study focuses on Sebkha el Kalbia in Tunisia, highlighting the challenges faced by local communities in addressing heavy metal pollution. The area is prone to contamination ...

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This paper presents a comprehensive and systematic analysis of the environmental impacts (EI) produced by novel nickel-zinc battery (RNZB) technology, which is a promising alternative for energy storage applications. ...

The environmental impact evaluation through life cycle assessment (LCA) is an arduous job. It involves the effects from the production of the elements at whole lifetime that are raw material extraction to the end of life recycling (IEA, 2016).At first, a considerable literature review was conducted considering keywords LCA, environmental impact, Li-ion, NaCl, NiMH, ...

Ecosystem service loss, CO2 emissions, and emissions" impact are quantified, evaluating the comprehensive performance of a lead and zinc production system in ...

China is the largest lead-acid battery (LAB) consumer and recycler, but suffering from lead contamination due to the spent-lead recycling problems. This paper ...

Heavy metal contamination stemming from lead and zinc mining and processing operations is a prevalent and pressing environmental issue. This review article explores the multifaceted dimensions of this problem, examining the primary sources of contamination, which encompass mining activities, production and processing processes, waste management ...

such as lead-acid and lithium-ion batteries. ... Production of the zinc-bromide flow battery exhibited environmental and human health impacts at a level between the other two battery ... flow battery, energy storage, life cycle assessment, environmental impact health impact, economic costs.

Semantic Scholar extracted view of "Environmental impact and economic assessment of secondary lead production: Comparison of main spent lead-acid battery recycling processes in China" by Xi Tian et al. ... CO2 emissions, and emissions" impact are quantified, evaluating the comprehensive performance of a lead and zinc production system ...

The impact of the production of batteries is examined and presented in order that future studies may be able to include the impact of batteries more easily within any system. ... for example copper, lead, zinc and iron, ... Life Cycle Assessment (LCA) is an environmental management tool that determines the environmental impacts of a product or ...

Ensure raw and refined resource availability, as well as alternative sources for essential minerals. Collaborate to generate [3] supplies of critical raw materials for batteries, as well as to enhance the safe and sustainable manufacturing capacity of critical battery materials (lithium, nickel, and cobalt) [4].The major elements whose world reserve and total ...

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The goal of this study is to quantify the potential environmental and economic impacts of lead-zinc production activities via a macro-level analysis, identify key factors, ...

Semantic Scholar extracted view of "Exploring the potential health and ecological damage of lead-zinc production activities in China: A life cycle assessment perspective" by Yu Jia et al. ... is a broadly used method for quantifying environmental impacts, and life cycle impact assessment (LCIA ... emerge to become one of the most widely used ...

Battery metals such as lead, cadmium, mercury, nickel, cobalt, chromium, vanadium, lithium, manganese and zinc, as well as acidic or alkaline electrolytes, may have ...

The lead battery LCA assesses not only the production and end of life but also the use phase of these products in vehicles. The study demonstrates that the technological ...

California adopted SB 100 as a strategic policy to transition California"s electricity system to a zero-carbon configuration by the year 2045. Energy storage technology is critical to transition to a zero-carbon electricity system due to its ability to stabilize the supply and demand cycles of renewable energy sources. The life cycle impacts of long-duration energy storage, ...

panied by environmental impact assessment data to provide . meaningful design strategies for the development of truly . ... The laboratory-scale production of zinc ion batteries modeled .

Lead and zinc production is one of the main predisposing factors of excessive greenhouse gases emissions, air pollution and water consumption. In this paper, the environmental problems of lead and zinc production in Calcimin plant are expressed and life cycle assessment of this plant is assessed. The data regarding the amount of induced global ...

Aqueous zinc ion batteries (AZIBs) are gaining widespread scientific and industrial attention thanks to their safety and potential environmental sustainability in comparison with other battery chemistries relying on organic electrolytes. AZIBs are good candidates for sustainable stationary storage, covering household energy needs or smoothing the ...

This study analyzed the environmental impacts due to lead production in China, which is the largest producer and consumer of lead in the world, by the method of life cycle assessment (LCA). Based on the Chinese refined lead ...

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