

Impacts of REE Mining

Rare-earth elements (REE) are a set of 15-17 compounds. Compounds containing rare earths metals have many applications in electrical and electronic components, lasers, glass, magnetic materials, and industrial processes. (USGS)

Location in Missouri and Primary Use

Location: Pea Ridge Mine as well as other mines potentially containing mine tailing byproducts from iron mining.
Uses: REEs are used in many high-tech devices such as cell phones, cameras, fluorescent and LED lights, and desktop monitors. (USGS)



NYTimes. U.S. Companies Vie for Funds in Race to Build Rare Earths Industry, Aug. 14, 2020.
<https://www.nytimes.com/2020/08/14/us/politics/rare-earths-american-companies.html>

Health Effects

- Yttrium, an REE believed to be most prominent in Missouri, is most dangerous for workers due to the fact that damps and gasses can be inhaled with air. This can cause **lung embolisms**, especially during long-term exposure.
- Yttrium can cause lung embolisms, especially with long-term exposure. It can also cause **lung cancer and damage to the liver**.
- Yttrium will gradually accumulate in soils and water soils and this will eventually lead to increasing concentrations in humans, animals, and soil particles.



Reuters. U.S. bill would block defense contractors from using Chinese rare earths. January 14, 2022
<https://www.nytimes.com/2020/08/14/us/politics/rare-earths-american-companies.html>

Environmental Effects

- Most danger comes from the waste-water discharge, **which usually contains acids, radioactive elements, and heavy metals** from processing and mineral residues
- Flora and fauna die-offs
- **Crop failures**
- Soil and water saturation with **toxic substances**
- **Ecosystem destruction**

Sources:

- BBC. (2012). What are 'rare earths' used for? <https://www.bbc.com/news/world-17357863>.
- USGS. (2014). The Rare Earth Elements--Vital to Modern Technologies and Lifestyles. <https://pubs.usgs.gov/fs/2014/3078/pdf/fs2014-3078.pdf> /
- LennTech. Chemical properties of Yttrium - Health effects of yttrium - Environmental effects of yttrium, <https://www.lenntech.com/periodic/elements/y.htm#>.

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