# Article information:

Anomalous concentrations and environmental implications of rare earth elements in the rock-soil-moss system in the black shale area - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0045653522022639>

# Article summary:

1. Black shales serve as a geogenic source of rare earth elements (REEs) with elevated concentrations.

2. Acidized soil substrate temporarily reserves REEs and is highly phytoavailable, resulting in high levels of REEs in moss Pohlia flexuosa.

3. Moss Pohlia flexuosa can be used as a biomonitor of REEs pollution in black shale areas and reflects the content and composition of REEs in the rock-soil-moss system.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article titled "Anomalous concentrations and environmental implications of rare earth elements in the rock-soil-moss system in the black shale area" provides insights into the release, transportation, and environmental exposure of rare earth elements (REEs) in black shale areas. The study found that black shales serve as a geogenic source of REEs, with elevated levels of REEs released into acidized soil substrate. The study also found that moss Pohlia flexuosa is a robust biomonitor of REEs pollution in black shale areas.

The article provides a detailed analysis of the distribution patterns, migration, fractionation, and bioaccumulation of REEs in the black shale parent rock - soil - moss system. However, there are some potential biases and missing points of consideration that need to be addressed.

Firstly, the article focuses solely on natural geological sources of REEs pollution and does not consider anthropogenic sources. While it acknowledges that anthropogenic activities can cause REEs pollution, it does not provide any data or analysis on their contribution to overall REEs contamination.

Secondly, the article presents only one side of the argument regarding the ecological risks posed by REEs in black shale areas. While it notes that these risks are assuredly enhanced by elevated levels of REEs in moss Pohlia flexuosa, it does not explore any counterarguments or potential benefits associated with these elevated levels.

Thirdly, while the article notes that mosses are efficient at retaining and accumulating heavy metals including REEs from atmospheric depositions due to their high surface/volume ratio and cation-exchange capacity, it does not provide any evidence for this claim or explore any potential limitations or biases associated with using mosses as biomonitoring tools.

Overall, while the article provides valuable insights into the distribution patterns and bioaccumulation of REEs in black shale areas, there are some potential biases and missing points of consideration that need to be addressed.

# Topics for further research:

* Anthropogenic sources of rare earth element pollution
* Environmental benefits of rare earth elements in black shale areas
* Limitations of using mosses as biomonitoring tools for heavy metals
* Health risks associated with exposure to rare earth elements
* Remediation strategies for rare earth element contamination in soil
* Economic and geopolitical implications of rare earth element mining and production

# Report location:

<https://www.fullpicture.app/item/4a9b2be3584b334fe7f8bd736355e852>