

Environmental science

with Dr Naira Ibrahim

Talking points

Knowledge and Comprehension

1. What is phytoremediation and how can it help to clean up pollution?
2. What is enhanced weathering and how can it support phytoremediation?

Application

3. Where would pollution-removing plants be most useful, and why? How could this research be adapted to help communities in different parts of the world?
4. If you were studying the phytoremediation properties of plants, what research questions would you want to investigate?
5. A typical day for Naira could include carrying out research in a laboratory, teaching, mentoring students, engaging with communities, analysing data, writing research papers and collaborating with other scientists. What skills do you have already that would support you in any of these tasks?

Analysis

6. What challenges might scientists face when using phytoremediation on a large scale?
7. Naira says, "Community engagement is an essential part of my research philosophy. I believe scientific discoveries should directly benefit the communities facing environmental challenges." To what extent do you agree with Naira? What do you think might be the challenges of engaging with communities? What would be the benefits?

Evaluation

8. How should we balance the need for industrial activity with the need to protect the environment?

Activity

Naira believes in the importance of community engagement and is currently collaborating with communities in Mississippi to tackle toxic metal contamination.

In a small group, think about how you would introduce phytoremediation and enhanced weathering to a community. Design a communication campaign that tells local people about the science behind the techniques, the benefits they could bring and how community members could get involved.

Choose a format of communication that you think will work best for reaching people from a wide range of backgrounds. For example, you could create an educational leaflet, a local radio show, a short video on social media, or even plan an in-person question-and-answer session. Think carefully about how to appeal to everyone in your audience, as their levels of scientific understanding or educational backgrounds may vary widely.

Share your work with your fellow students and ask for their feedback. Consider the following questions:

- To what extent did you explain the science clearly, accurately and in an engaging way?
- Having shared your work with your fellow students, what would you change before sharing it with community members?
- What did you find easy about the task and why? What did you find difficult?

More resources

- Listen to the Costing the Earth podcast (bbc.co.uk/programmes/b006r4wn/episodes/downloads) and the Ask MIT Climate podcast (climate.mit.edu/ask-mit-climate-podcast) to learn about a range of environmental topics.
- Watch this series of TED Talks to explore different ideas and research on the topic of environment: ted.com/topics/environment
- Watch this YouTube video which explains more about phytoremediation: youtube.com/watch?v=Oyu5HiilpeQ