

Seminar 2

Emerging Environmental Pollutants

Overview:

A small town is experiencing a decline in biodiversity in its local river ecosystem. Initial studies reveal the presence of previously undetected pollutants, including microplastics, pharmaceutical residues, and per- and polyfluoroalkyl substances (PFAS). These emerging pollutants are not regulated under current environmental policies and are challenging to analyze due to their low concentrations and complex interactions in the ecosystem.

Key questions for discussion:

1. *Understanding emerging pollutants*

- What are the key characteristics of emerging pollutants that differentiate them from traditional pollutants?
- How do emerging pollutants impact ecosystems and human health in ways that might not be immediately apparent?

2. *Detection and monitoring challenges*

- What advanced analytical techniques can be used to detect emerging pollutants effectively?
- How can QA/QC protocols be adapted to handle the complexities of analyzing these substances?

3. *Policy and regulation*

- Should emerging pollutants be prioritized in current environmental policies?
- How can environmental monitoring data influence the creation of new regulations?

4. *Public awareness and action*

- What role does public education play in mitigating the introduction of emerging pollutants?
- How can local communities participate in monitoring and reducing pollution?

5. *Interdisciplinary Solutions*

- How can fields such as nanotechnology, bioengineering, and artificial intelligence contribute to addressing emerging pollutants?

- What are the ethical implications of using these technologies for environmental remediation?

Seminar format:

- **Introduction (10 minutes)**
- **Group brainstorming (40 minutes):** Participants form groups to discuss the provided questions, focusing on detection, regulation, and mitigation.
- **Panel insights (20 minutes):** Experts (simulated by participants) share insights on technical, policy, and community approaches.
- **Action plan development (20 minutes):** Groups outline strategies to address emerging pollutants in the given scenario.
- **Conclusion (10 minutes)**

Expected outcomes:

- Enhanced understanding of the challenges posed by emerging pollutants.
- Identification of innovative tools and methods for detection and analysis.
- Awareness of the importance of integrating policy, technology, and public participation in tackling new environmental challenges.