

Relating Chemical Speciation to Dissolution Kinetics and Bioaccumulation

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Overall Goal: to determine how chemical forms of metals affect their mobilization to the aqueous phase and their bioavailability to algae and toxicity to insect larvae.

The Results may lead to improved predictive models of mobility and toxicity, and thus better risk assessments, based on chemical characteristics of fly ash.

Chemical Speciation

- X-ray absorption spectroscopy
- X-ray diffraction
- Electron and X-ray microscopy

Bioaccumulation

- Uptake of metals from solution by periphyton
- Accumulation of metals by mayfly larvae grazing on periphyton from uptake experiments

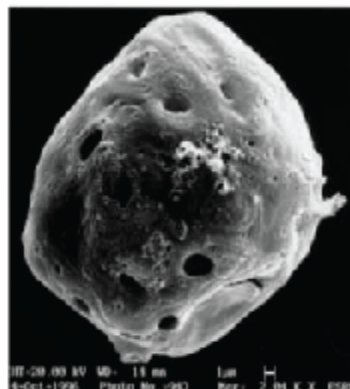
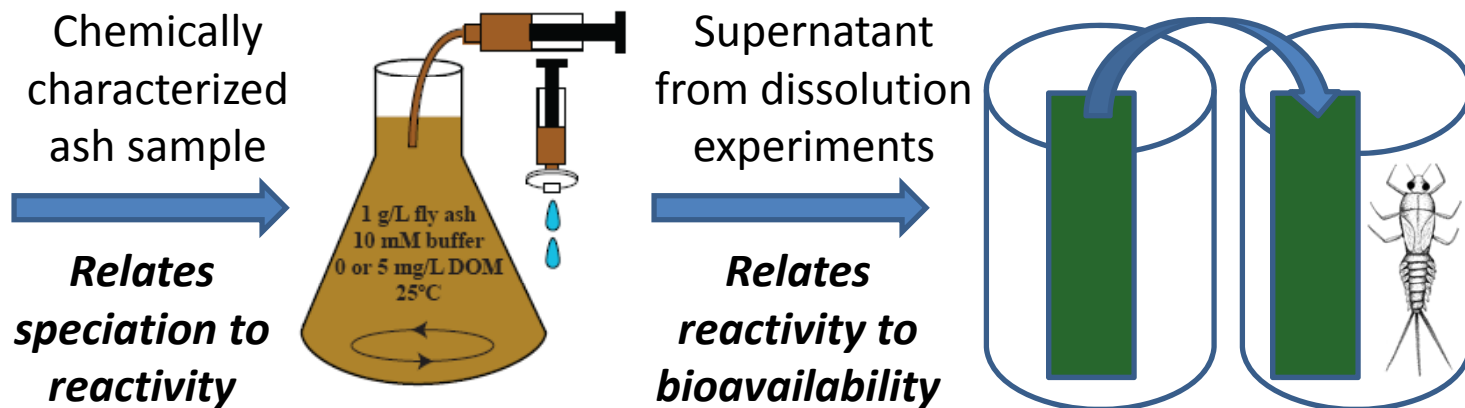


Image: Rindby et al. (2003)



Dissolution

- Kinetic profiles of metal solubilization
- Batch dissolution approach to simulate oxic and anoxic riverine environments