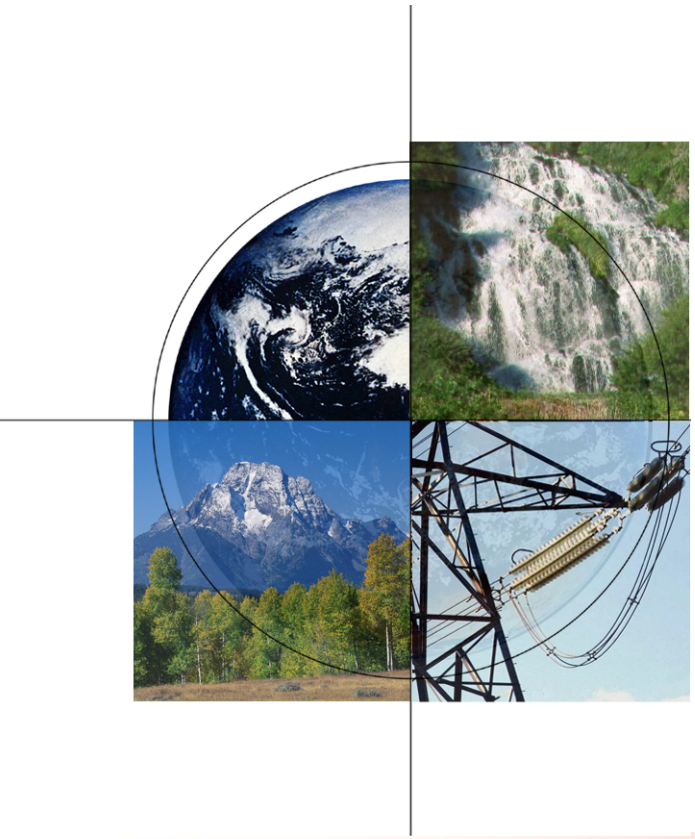
Panel Discussion on Mercury in Coal Utilization Byproducts



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Question

What is Necessary and Sufficient to predict the extent of future mobilization of mercury into the environment under condition X

Leaching parameters

- Particle size
- Leachant identity: anion effects (acetate)
- Leachate pH
- Liquid / Solid ratio (L/S)
- Contact time
- Solution conductivity
- Eh (ORP)

Environments

- Cement / Concrete
- Landfill
- Agriculture
- New applications

Comments

- Most batch leaching tests designed to give equilibrium values for the as-received material
- Time effects: mineralogical changes (high Ca ashes), mass transfer, reaction rates
- ORP influences element speciation
- Leaching chemistry depends on the speciation, not just the element
- Biological and microbiological processes will be important in real environmental systems

What is Necessary and Sufficient ?

- Multiple parameters
- Multiple end-use / disposal environments
- Multiple interactions

Implications for mercury leachability

- Prediction of Hg leaching in the environment based on a simple test or set of tests without an understanding of the underlying chemistry will be risky.
- Full descriptions of the Hg chemistry will probably require geochemical modeling in addition to laboratory tests.
- However, the full chemistry need not be defined for every material but rather classes of materials.