The NCEH/ATSDR Office of Science Invites You to a

Special Seminar & Networking Opportunity
Sponsored by the Superfund Research Program, NIEHS
In Partnership with NCEH/ATSDR

Phytostabilization of Mine Tailings in Arid Environments: Plant Establishment and Tailings Characterization

Raina Maier, PhD
Professor of Environmental Microbiology
Department of Soil, Water, and Environmental Science
University of Arizona

Wednesday April 21, 2010
10 – 11:30 am
Building 106 Rooms 1A/1B

Agency for Toxic Substances & Disease Registry
National Center for Environmental Health
Chamblee Campus
4770 Buford Highway NE
Atlanta, GA 30341-3717

Abstract: In arid and semi-arid parts of the world, including parts of the western United States, mine tailings and their associated contaminants are prone to wind and water erosion. These problems are extensive and can persist for decades because these sites lack normal soil stabilization processes including the establishment of a plant cover and the associated development of soil structure. These sites can have profound health and environmental consequences especially for children in nearby communities or for sensitive riparian or wildlife refuge areas. In arid environments it appears that aerosolization of tailings is a major exposure pathway for tailings contaminants including arsenic and lead. Thus, while these contaminants originate outdoors they may enter nearby homes, where people spend a majority of their time, either as aerosols or tracked in as soil particles.

Phytostabilization is a technology that is being investigated for remediation of mine tailings sites in arid and semi arid environments. The goal is to create a vegetative cap using native plants that will 1) prevent wind and water erosion of the tailings, 2) stabilize metal contaminants in the rooting zone, and 3) avoid shoot uptake of metal contaminants. This seminar will provide a discussion of strategies to achieve successful establishment of native plants in mine tailings. This includes consideration of the tailings type (pH, metal content), plant type, the minimum organic amendments required for plant germination and growth, the potential for accumulation of metals into above-ground tissues, the supporting rhizosphere microbial community, and changes in metal speciation following plant establishment. The discussion will also include approaches and indicators that can be used to evaluate the success of phytostabilization.
Dr. Maier is the project leader for a long-term research project funded by the Superfund Research Program, NIEHS: Phytostablization of Mine Tailings in the Southwestern United States: Plant-Soil-Microbe Interactions and Metal Speciation Dynamics. She has a Ph.D. in

Dr. Maier's interdisciplinary research is focused on developing a fundamental understanding of the biological factors and processes that influence the transport and fate of both microorganisms and chemical contaminants in the environment.

Microbiology from Rutgers University and trained as a post-doctoral research associate in Biochemistry at Iowa State University. She has served as the Associate Director of the University of Arizona NIEHS Superfund Basic Research Program since 2002 and is a co-Director of the University of Arizona Water Sustainability Program which provides science-based technical, economic, legal, and policy expertise for water development, use, and conservation in Arizona. Dr. Maier's interdisciplinary research is focused on developing a fundamental understanding of the biological factors and processes that influence the transport and fate of both microorganisms and chemical contaminants in the environment. The information gained from this research is used in the development of innovative remediation approaches and techniques. Dr. Maier has over 90 scientific publications representing this body of work. She is also is the lead author on the widely-used textbook "Environmental Microbiology."

For more information about her publications and to see the specific Superfund sites on which she works see our website.

Opportunities to Network with Dr. Maier

Lunch: 11:30 am - 1 pm

Join her table in 106 cafeteria to share your environmental health experiences. This is an opportunity to lobby her for help with your Superfund site & environmental health related research needs!!! Note that the University of Arizona's SRP multi-investigator group focuses on the hazardous waste and public health issues currently confronting the Southwestern region of the United States, specifically arsenic, chlorinated hydrocarbon, and mine tailings contamination. Learn more about what they can do for you at: **http://superfund.pharmacy.arizona.edu/**.

Afternoon meetings *by appointment*

Please e-mail Olivia Harris with a phrase or sentence describing your topic, your own scientific discipline, Division, & preferred time.

1 - 1:30 pm
1:30 - 2 pm
2 pm - 2:30 pm
2:30 pm- 3 pm
3 pm – 3:30
3:30 pm- 4 pm
4 pm – 4:30 pm

Questions about the seminar.
Contact Olivia Harris
NCEH/ATSDR Office of Science
770-488-0597
OHarris@cdc.gov.

Non-CDC employees who wish to attend the seminar should contact Ken Davis (KDavis1@cdc.gov) for security clearance (US citizens: 1 week notice; non-citizens: 2 weeks) & escort on Chamblee campus.

WEBCAST
This seminar will not be ENVISIONED. Employees outside Atlanta & state/local partners may participate via web broadcast with audio conference.

Please contact Sandra Gosnell (SGosnell@cdc.gov) for instructions on access details.

The number of web ports is limited, We ask that Chamblee Campus employees please attend in person.