

Abstract Book

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International Society of Exposure Analysis

“Partnerships: Exploring Innovative
Approaches in Exposure Assessment”

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n Sulfide Concentrations and

Dayton²; ¹Agency for Toxic
Substances and Hazardous Waste
Investigation, ²Eastern Research Group,

Sulfide were continuously measured in three
rural community concerns about odors and
evaluated air quality impacts from different
manufacturing facilities, and oil and gas
community members often perceived that
ambient air concentrations of hydrogen
sulfide were lower during the daylight hours when
the sun is out. Generally, hydrogen sulfide
concentrations (which reached several hundred
micrograms per cubic meter) were higher
levels within 2 hours after sunrise. The
concentration decreased after sunrise and subsequent increase after
sunrise. While the diurnal variations
pattern. While the diurnal variations
occur in every setting, their presence in
implications for future exposure assessments
likely be underestimated when they are
based on samples or samples collected during
the day. These samples are best suited for capturing short-term
ambient air concentrations of hydrogen
sulfide, when people are typically at or near
home. Daytime hydrogen sulfide concentrations
consideration should be given to monitoring
that can be formed by photochemical reactions

ated Risk Communication

Fishers

Shake; RTI International,

Food Choices: Balancing Benefits and
to partner with state, local, and private
with consumers to make sure they work.”
Department of Health Education and
Promotion’s Division of Health Education and
Promotion to increase the subsistence fishers’
awareness of environmental exposures to methylmercury
through an experimental design - African American,
Cumberland River Basin of southeastern North
Carolina. RTI is studying subsistence fishing behaviors. RTI
is studying risk elements and developing culturally-
appropriate methods of consuming fish contaminated with
mercury. RTI is studying communities’ perception of threat, approach to
risk management through informal and formal interviews.

The concept of the cultural risk model was tested on each community and demonstrated to yield a substantial improvement in threat appraisal accuracy, some improvement in coping appraisal, and minimal improvement in information-seeking behaviors of the communities.

Abstract 242

Environmental Risk Associated with Pharmaceuticals in Wastewater Effluent Discharged to Surface Waters

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Antibiotics and other pharmaceuticals have been detected at trace levels (ng/L or low µg/L) in wastewater effluent, surface waters, sediment, and even drinking water. These pollutants commonly enter waterways through manufacturing processes, improper disposal, metabolic excretion, and most notably from wastewater effluent. It has been found that these pharmaceuticals are only partially removed by wastewater treatment processes, and in many instances wastewater effluent is discharged into streams that feed directly into drinking water reservoirs. The potentially detrimental effects of consuming daily doses of sub-therapeutic levels of pharmaceuticals and the synergistic effects of these compounds within the human body are largely unknown, but there are indications of the development of antibiotic resistance in microorganisms.

The fate and transport of 26 common human and veterinary antibiotics, four anti-inflammatories (ibuprofen, diclofenac, ketoprofen, and naproxen), the antiepileptic drug carbamazepine, and a widely-used X-ray contrast agent, iohexol, have been investigated in a small, urban watershed that is impacted by wastewater discharges from a community that includes a major hospital, several large residential nursing homes. This watershed ultimately links an impacted reservoir to a downstream drinking water source and the levels of these pollutants in the aqueous phase have been evaluated in order to begin an environmental risk assessment associated with residual pharmaceutically active compounds in surface waters.

A risk assessment is being performed for these compounds by comparing the Predicted Environmental Concentration (PEC) and the Predicted No Effect Concentration (PNEC). Factors such as the predicted market volume of these compounds, percent removal by wastewater treatment processes, water consumption of the target population, and a dilution factor accounting for the dilution of the wastewater effluent that reaches the target population are taken into account when calculating the PEC. Toxicity data from the EPA database ECOTOX and published literature are combined to determine the PNEC in waters.

Abstract 298

Residential Area Development and Potential for Public Exposures around Manhattan Project and Early AEC Sites

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In response to the atomic weapons race of WWII, the Manhattan Engineer District (MED) was created in 1942 by the Army Corps of Engineers to take full responsibility for the development of the atomic bomb under what became known as the Manhattan Project. In response, a number of large research labs and production plants were quickly established in areas around the United States. After WWII, additional production plants were built by the Atomic Energy Commission (AEC) to scale up weapons production and further research applications of nuclear technologies. At each location, residential areas had to be constructed for thousands of workers and their families. A review of historical reports, correspondence, books, maps, photographs, interviews, videos, and dose-reconstruction project reports was performed to collect information about early residential areas around the Oak Ridge, Los Alamos, Hanford, Idaho National Engineering Laboratory, Savannah River, and Rocky Flats sites. Information summarized for each site has focused on characteristics relevant to public exposures that might have occurred. These include

the proximity of residences to operational areas, whether buffer zones were considered necessary, significant terrain features, air and surface water flow patterns, and segregation practices. Locations of expected highest public exposures have been identified. Important similarities and significant differences between sites are discussed. *Work supported in part by the Centers for Disease Control and Prevention under Contract 200-2004-10204.

Symposium

1B: Exposure Science for Community-Based Cumulative Risk Assessment

Individuals and communities want to know what their health risks are from environmental pollutants and how to prevent or mitigate those risks. How pollutants interact, and how exposure to multiple pollutants affects health, are not well understood at present. Given the importance of this emerging area, various Federal programs and efforts are being developed and applied to better understand cumulative (multiple stressor) risk and develop effective measures for protecting human health from exposures to environmental pollution. Within these programs, guidance tools are being developed to: (1) help communities build partnerships; (2) identify and rank stressors and sources within communities; (3) conduct projects to reduce risks, and (4) track progress for risk reduction. Models, databases, methods, strategies, and GIS mapping tools are being developed to enhance the science of risk prioritization, risk reduction and progress tracking. Various guidance documents and workshops have identified research needs relevant to community-based cumulative risk assessment. A collective understanding of these programs, tools, and research needs is important to advance the science for protecting public health.

EPA/ORD/NERL is developing a new research program to develop, apply, and provide exposure assessment tools (e.g., information, strategies, exposure models, databases, sampling/analytical methods, and GIS maps) for advancing the science and understanding of cumulative risk to communities and individuals. To identify how this project can have the greatest impact, a review of relevant programs, tools, literature, and research needs is being conducted, and input is being solicited from stakeholders. This Symposium will include presentations to summarize relevant programs, exposure assessment tools, and research needs to enhance cumulative risk assessments in communities. In addition, two panel discussions will be held to discuss a collective prioritization of research needs in this area.

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EPA/ORD/NERL Research Program on Exposure Tools to Advance the Science and Understanding of Cumulative Risk to Communities and Individuals

V. G. Zartarian¹, B. Schultz¹, J. Quackenboss², L. Sheldon¹; ¹U.S. Environmental Protection Agency, RTP, NC, ²U.S. Environmental Protection Agency, Las Vegas, NV.

EPA's Office of Research and Development (ORD), National Exposure Research Laboratory (NERL) is developing a research program, "Exposure Assessment Tools for Advancing the Science and Understanding of Cumulative Risk to Communities and Individuals." The primary objectives are: (1) To develop new and/or enhance existing tools for estimating human exposures most likely to impact cumulative risks to particular health outcomes; (2) To apply, evaluate, and

demonstrate the exposure tools through research findings and provide the tools systematically identify and prioritize key develop individual cumulative exposure community level distributions of exposure management/mitigation strategies? How reduction actions, exposures, risks, and The focus of the tools in this program is outcomes human health risk paradigm. T on non-chemical stressors and on the s and risk-to-outcomes components. Tools models, databases, sampling/analytical communities. Specific exposure tools to inform risk mitigation and accountability a comprehensive literature review, feed understand and address the critical expo and program office risk assessors, EPA/O teams (e.g., CARE, Accountability), Na Disclaimer: Although this work was rev necessarily reflect official Agency polic

Abstract 611

EPA's CARE Program: Developing Communities Understanding and H. Topper; U.S. Environmental

The USEPA has begun a new program. C to build local community capacity to un offers funding and technical assistance priorities, and take actions to reduce r program that integrates Agency resourc are now enrolled in the CARE program to complete CARE applications. Mult regions to work directly with commu: priorities, and identify and make use of work. CARE has organized a cross pro communities use risk screening to idei program and describe the work that CA The presentation will also describe the help communities identify risks and cc

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Environmental Health Assessment Research Needs for Communities M. Lakin; U.S. Environmental P

EPA is currently supporting over fifty take action to reduce toxics impacts in Renewed Environment (CARE) progr: As part of these efforts, EPA and our s to gather environmental data relevan difficult to access and difficult to und