

November 2014 Annual Meeting

Abstracts for Posters

Partnerships for Research Translation and Community Engagement in the Superfund Research Program



Dartmouth Toxic Metals Superfund Research Program



LSU Superfund Research Program



MICHIGAN STATE UNIVERSITY



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Twenty Years of Research at the Tucson International Airport Area Superfund Site

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Chlorinated solvents are among the most common groundwater contaminants in the United States. These compounds are classified as known or suspected human carcinogens and hence their presence in groundwater is of continuing concern. Over 20 years of applied research by the University of Arizona Superfund Research Program (UA SRP) at the Tucson International Airport Area (TIAA) Site has advanced understanding of contaminant properties and cleanup remedies. For example, this work has demonstrated that understanding how a contaminant is released from its source can determine the efficacy of cleanup efforts at these sites. Research has also focused on developing new ways of assessing the broader-scale impacts of chlorinated-solvent contaminated sites on local communities and metropolitan water resources (using Tucson, Arizona as a case study). At every stage of the research, partnerships have influenced investigator-initiated research translation and community engagement efforts. Project partners comprise local, state, and federal agencies in addition to private consulting firms, affected community members, and local civic organizations. Research translation outcomes include development of novel metrics, low-cost technologies, and an improved understanding of how these contaminants travel through environmental systems. Community engagement outcomes include development of culturally relevant materials, preparation of community-requested presentations, and establishment of the UA SRP as a trusted source of information. Lessons learned at this site have been applied to similar Superfund sites in Arizona. Ultimately, the research has informed decision-making and provided less uncertainty and greater relevance for risk-based management and closure at TIAA and other sites.

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EPA and Berkeley Researchers Collaborate to Develop NexGen Risk Assessment Methods

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Chemical risk assessment methods rely to a large extent on traditional toxicity data from experimental animals and human epidemiology studies. Current approaches are inadequate to identify risks at the low levels of environmental exposure that affect many people. It is widely agreed that risk assessment could be improved by incorporating data from newer high-throughput and “omics” technologies. Berkeley Superfund investigators are working with EPA on its “Next Gen” initiative to broaden assessment methods to incorporate such data.

This continues a longstanding collaboration related to assessment of chemicals including benzene and formaldehyde. EPA has relied on findings from Berkeley Superfund research including comprehensive reviews of toxicity of these chemicals and omic data on disease-causing mechanisms particularly at low environmental exposure levels.

The NexGen project began with a workshop to identify issues and discuss approaches, for which UCB worked with EPA to contribute a case study on benzene. EPA finalized a document entitled **Next Generation Risk Assessment: Incorporation of Recent Advances in Molecular, Computational, and Systems Biology** in September 2014. The chapter on Major Scope Assessments- Benzene-Induced Leukemia was co-authored by four scientists from US EPA, six from the Berkeley Superfund program (including two cores as well as one research project), and two from the National Cancer Institute. It cites multiple papers by Berkeley investigators.

We expect this collaboration to continue and to influence assessment of individual chemicals as well as the field of chemical risk assessment as a whole.

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Building Capacity for Community Engagement in Environmental Health Sciences

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The UC Davis Superfund Research Program (SRP) has collaborated with the UC Davis Center for Regional Change (CRC) to develop frameworks for community engaged research initiatives in California's Central Valley. The CRC produces innovative and collaborative research to build healthy, sustainable, prosperous, and equitable regional change in California and beyond. The CRC offers the SRP expertise in community participatory methods and diverse networks of environmental justice and health equity advocates as well as environmental regulatory agencies. The SRP offers the CRC with opportunities to apply these areas of expertise in the context of an internationally-renowned environmental health science program. The goals of the pilot were to: 1) Identify opportunities for applying SRP technologies to protect public health in vulnerable communities; 2) Develop SRP capacity for community engaged research to effectively develop, share and apply new research/technologies; and 3) Initiate dialogue between SRP researchers, EJ advocates, and public agencies about future research collaborations. The research questions were:

- What are potential alignments between SRP research and EJ advocate and agency interests?
- What are potential challenges in aligning SRP research with community needs?
- What kind of a pilot project would help achieve alignment between the SRP and EJ communities?

Methods included a survey and small group consultations to identify SRP researcher interests, collaboration opportunities and potential roadblocks, hands-on training in community participatory research for SRP researchers, and consultations with environmental justice advocates. The poster presents the findings and innovations of this pilot.

Submitted by Jonathan London <http://regionalchange.ucdavis.edu/>



Building Community-University Partnerships: Brownfields as Sites for Urban Agriculture

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Interest in Urban Agriculture (UA) as a way to address food disparities and improve social, environmental and health conditions in disadvantaged communities is increasing worldwide. The EPA has programs supporting UA as a means for improving local, sustainable food systems. One such program involves the use of Brownfields for Community Gardens. The use of Brownfields for UA can protect the environment, reduce blight, and help lower income families gain access to fresh fruits and vegetables. The UC San Diego Superfund Research Center's Brownfield project is building a community-university partnership that includes EPA support for testing Brownfield sites for environmental toxicants. The UCSD SRC partnership is focusing on a 20,000 sq. ft. Brownfield site that local neighbors now call the *Ocean View Growing Grounds* (OVGG). The Global Action Research Center (Global ARC), a nonprofit organization, has successfully helped completed Phase I of this project. The Global ARC worked with UCSD's SRC and Urban Studies and Planning Program, local residents, community organizations, a private landowner, and the City of San Diego (which is sharing EPA funds to help move the UCSD SRC Brownfields Project forward) to turn the Brownfield site into a community garden, food forest and neighborhood asset in the form of an environmental learning center. Phase 2 of the project will engage more local residents and develop a Neighborhood Food Network making Superfund science and technology more readily available. This poster will illustrate the process of the metamorphosis of a brownfield into a community and regional asset through community-university partnerships.

Submitted by Catherine Larsen calarsen@ucsd.edu



EPA's Pilot Partners in Technical Assistance Program (PTAP), Collaboration to Meet Community Technical Assistance Needs: The Black Butte Mine Superfund Site Project

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The purpose of EPA's pilot Partners in Technical Assistance Program (PTAP) is to expand opportunities for cooperation between EPA and colleges, universities or nonprofits with the shared goal of assessing and addressing the unmet technical assistance needs of impacted communities. Through PTAP, colleges, universities, and nonprofit organizations cooperate with EPA and *voluntarily* commit to assist communities with their unaddressed technical assistance needs. Some examples of technical assistance that could be provided through PTAP include but are not limited to: training on environmental issues; researching public health and risk; redevelopment planning; community outreach and involvement; researching scientific/technical issues; and building capacity of community groups.

Oregon State University's (OSU) Superfund Research Program embarked on the first partnership with EPA through the pilot PTAP, in December 2013, to help expand upon the community outreach capabilities surrounding the Black Butte Mine site in Cottage Grove, OR. Through PTAP, OSU SRP collaborated with the EPA site team and the London School Principal, between December 2013 to September 2014, to create a modular package of educational materials and videos enabling teachers to select and adapt activities for their individual classroom. The modular design allows for informal and formal education opportunities, expanding the use of the package outside of London School.

The PTAP pilot initiated partnerships between regulatory agencies, Superfund Centers and a local community. The program created a framework to

- Leverage existing resources to support community education
- Incorporate environmental health literacy into K-8 programs
- Expand local knowledge regarding a historical environmental contaminant and human exposure.



The Iowa Superfund Research Program, Ecolotree, and the Town of Altavista Begin a New Partnership

Craig Just and David Osterberg, Iowa Superfund Research Program, Community Engagement & Research Translation Core, University of Iowa, Iowa City, Iowa

Louis Licht, President, Ecolotree, Inc., North Liberty, Iowa

A new collaboration has been formed between the Town of Altavista, Ecolotree, Inc., the Iowa Superfund Research Program (isrp) Projects 4 and 5, and the isrp CEC and RTC. Altavista, Virginia, is a town of 3,425 people representing 1,502 households. Altavista is also the location of a PCB-contaminated lagoon that has emerged as a desirable site for studying the field-scale use of poplar trees for PCB remediation (isrp Project 5). Altavista is seeking isrp guidance on how to remediate the PCB-contaminated lagoon to minimize airborne exposures (isrp Project 4) and to save millions of dollars compared to traditional remediation strategies. Ecolotree, Inc. is an Iowa-based engineering company that designs, installs, and maintains engineered forests at regulatory-permitted sites, such as landfills and chemical spill sites. With over 60 sites installed across the United States and one in Europe, Ecolotree is the most experienced phytoremediation company in America. The stakeholders in the partnership include isrp researchers, the isrp engagement coordinator, the isrp research translation coordinator, a small business, town facilities managers, elected officials and state regulators. The hope is to engage in a sustainable and mutually beneficial relationship that promotes fundamental research while solving a real environmental problem that will protect human health and enhance a small business.

Submitted by Craig Just <http://www.craigjust.org>



Partnerships in Environmental Conflict Resolution in a Public Environment

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Traditional attempts to acquire public input on environmental issues using a democratic model are frequently constrained by a meeting format that too often permits a few individuals to monopolize or co-opt sessions for their own purposes or agendas. Such experiences in past public meetings subsequently drive community expectations for future meetings, frequently resulting in decreased attendance and a less representative participant base. Consequently, regulators or decision-makers can come to view public meetings as a regulatory obligation of high contentiousness and little utility that must be endured, while other community stakeholders adopt a cynical perspective that assumes final decisions already have been pre-determined.

To help address such challenges, researchers at the University of Kentucky have developed a multi-step, multi-directional democratic stakeholder engagement methodology that includes citizen stakeholders at the very beginning of the decision process. The methodology incorporates both qualitative and quantitative methods drawing on principles from Community-Based Participatory Communication (CBPC) and Structured Public Involvement (SPI). CBPC uses interviews, focus groups, and projective techniques to identify varied community groups and to discover the value systems, risk perceptions, and preferences among these groups. SPI employs anonymous Audience Response Systems (ARS) in large-scale public meetings to identify democratic solutions to complex issues while resisting co-optation of the process by a single interest group.

This poster describes and compares the application of the proposed methodology to two different case studies involving future land-use decisions at a nuclear facility near Paducah Kentucky and nutrient management decisions in the Floyds Fork watershed near Louisville Kentucky along with the partnerships with DOE and EPA that were involved in implementing the engagement process. Key insights derived from the application of the methodology, as well as make recommendations for application of the methodology to other problems involving stakeholder input into public decisions will be provided.

Submitted by Lindell E Ormsbee lindell.ormsbee@uky.edu

LSU Superfund Research Program Community Partnerships for Research Translation and Community Engagement

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While scientists regularly communicate directly with their peers, limited researcher capacity to engage other audiences can potentially limit the reach and impact of research findings. To promote the mission of communicating research findings to lay audiences, the LSU SRP Research Translation Core (RTC) and Community Engagement Core (CEC) have established community education partnerships with two Louisiana non-profit organizations. The LSU SRP RTC has collaborated with the Big Buddy Program, a nonprofit youth organization that offers services that provide educational programs for youth in Baton Rouge, La. In the summer of 2014, the LSU SRP RTC hosted 136 K-4 students who learned and participated in hands on activities and demonstrations about environmental health science, household hazardous chemicals, and respiratory health. All objectives were aligned with Louisiana Grade Level Expectations for science. The LSU SRP CEC partnered with the Louisiana Environmental Action Network (LEAN), a non-profit alliance of grassroots environmental organizations, to develop educational materials in response to the needs of residents and to “lead the leaders” of local environmental groups. The LSU CEC developed a resource book, the Louisiana Citizen’s Guide to Environmental Engagement, for local organizers to address questions posed to LEAN. Topics addressed include strategies for reducing exposure risks, how to communicate with industry and public agency representatives, and tools for gathering and recording data about local environmental conditions. The CEC team is also utilizing geo-spatial methodologies to provide LEAN with additional insight into the demographic and socioeconomic attributes of all Superfund communities in Louisiana.



Connecting the Pipes: Improving Public Health One GIS Map at a Time. Studying risk of birth defects in a population exposed to tetrachloroethylene (PCE) in drinking water

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From 1968 to 1990 families in New England were exposed to tetrachloroethylene (PCE) when it leached into their drinking water from the vinyl-lining of asbestos cement water distribution pipes. Animal and human studies have found that prenatal exposure to PCE, the related solvent trichloroethylene (TCE), and their break-down product, trichloroacetic acid (TCA), increase the risk of birth defects in the children of exposed women but existing data have many limitations. The Children's Health Study (BU SRP Project 1) investigates the association between prenatal exposure to PCE and several types of birth defects.

The study staff is working with local water companies to create maps (GIS schematics) of the water systems, including water source locations, pipe characteristics (length, diameter, composition), and housing locations. The GIS schematics, coupled with a PCE-leaching algorithm and water flow modeling software, is being used to estimate the mothers' relative delivered dose of PCE during pregnancy. This work has involved the active participation of local water companies, the Massachusetts Department of Environmental Protection (MA DEP), and other federal and state agencies.

All maps and GIS data created for the study will be shared with the water companies and government agencies. They, in turn, can use these data to inform where they may want to flush the system and update their water testing program to protect public health.

Submitted by Komal Basra komalb@bu.edu



Building Partnerships to Address Environmental and Social Determinants of Maternal and Child Health in Puerto Rico, with Focus on Environmental Factors in Preterm Birth

Liza Anzalota del Toro (University of Puerto Rico), Julia Brody (Silent Spring Institute), Phil Brown (Northeastern University), Christine Gordon (Northeastern University), Monica Ramirez-Andreotta (Northeastern University), Carmen Milagros Vèlez Vega (University of Puerto Rico)

Preterm birth rates in Puerto Rico are twice that of the US; the PROTECT (Puerto Rico Testsite for Exploring Contamination Threats) Center explores the role that environmental contaminants like phthalates and chlorinated solvents play in preterm birth, the fate and transport of these contaminants in groundwater systems; and green, sustainable water contaminant remediation approaches. In collaboration with community stakeholders in northern Puerto Rico, our Community Engagement (CEC) and Human Subjects Cores work together to recruit participants from multiple community health centers and clinics, gather pertinent data, and sustain community support. The CEC also builds strong relationships with community groups like Ciudadanos del Karso, COTICAM (Puerto Rico Environmental Quality), March of Dimes, and other health research/advocacy organizations. We participate in health-based events to support research on preterm birth and other negative birth outcomes. We share information and research findings with our participants through report-back to ensure that the process is democratic in nature and useful to participants and their communities. The CEC generates written materials and media outputs to help people reduce their exposure to contaminants of concern. With our Research Translation Core (RTC), we present PROTECT progress and findings to a broad array of audiences at conferences, such as the EPA Citizen Science Conference in September 2014, and develop educational materials on reproductive health for health professionals, government agencies, and the general public. In collaboration with the Training Core and RTC, we provide training in Social Determinants of Health and Environmental Health to graduate students in MPH and PhD programs.

Submitted by Christine M. Gordon, MPH, PROTECT Program Manager c.gordon@neu.edu

A Partnership between the Michigan State University Super Fund Research Program and the Community of Midland, MI to Address Local Environmental Contamination Issues

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The Michigan State University-Super Fund Research Program Center (MSU-SRP) conducts and translates research addressing fundamental questions relevant to our understanding of the molecular mechanisms by which dioxin and dioxin-like compounds contribute to human diseases, as well as the environmental fate of these compounds. The MSU-SRP Research Translation Core works closely with the MSU-SRP Community Engagement Core to engage the Midland community in Michigan, which is affected by some of the highest dioxin concentrations in the world. Our interaction with the Midland community has led to the initiation of a community-based participatory research project (CBPR) where students, teachers and parents will begin a project with potential outcomes that will help the research investigators of our center to identify potential microorganism that can potentially degrade dioxin and dioxin-like compounds. Our research team will use such organisms to understand how to optimize the conditions by which these microorganisms can decontaminate soil sediments that can ultimately lead to better clean-up options for this affected community.

Submitted by Jie (Jackie) Zhuang

Bruce Stanton, Ph.D., Director

Celia Chen, Ph.D., Research Translation Core Leader

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Arsenic is a known carcinogen and its presence in private well water in New Hampshire (NH) is undisputed. Forty-six percent of NH's population receives their drinking water from private wells, and 20% have arsenic above the federal standard for public drinking water of 10 parts per billion (ppb). For years, the Dartmouth Toxic Metals Superfund Research Program (SRP) has engaged in partnerships with the US Environmental Protection Agency (EPA), US Geological Survey, NH Department of Environmental Services (NHDES) and the NH Department of Health and Human Services to increase testing and treatment of NH private wells.

In 2000, together with our partners, our SRP initiated the NH Arsenic Consortium to provide a forum for exchange of research and coordinate risk messaging as part of the collective development of strategies to reduce exposure for NH residents. Our scientific expertise on endocrine disruption informed EPA's decision to reduce the Maximum Contaminant Level for arsenic in public drinking water from 50 to 10 ppb. More recently, we collaborated with our partners to produce the video, *In Small Doses: Arsenic*, an important educational tool used for ongoing state and federal outreach efforts taking place through NHDES's Private Well Initiative. Our current report on arsenic in private wells in NH will provide these partners with a better understanding of arsenic health impacts and exposure rates in the state and enable them to strengthen risk messaging and target interventions to help communities and individuals understand and address the health risks associated with chronic, long-term exposure to arsenic via well water.

Submitted by: Laurie Reynolds Rardin, Laurie.rardin@dartmouth.edu



Building Partnerships between Local and State Government Agencies and the RTC and CEC-- Time, Effort and Outcomes.

Steven Chillrud(1), Stuart Braman(1,2), James Ross(1), Yan Zheng(1,2), Sara Flanagan(1,2) and government partners

1 Research Translation Core, Columbia University Superfund Research Program

2 Community Engagement Core, Columbia University Superfund Research Program

Government partnerships at state and local levels are built between individuals, providing opportunities for engaging communities and translating Superfund science. Our overall poster theme is that government partnerships are very possible but develop over time by working on multiple small projects and being responsive to government managers. We will review the history and evolution of our efforts in New Jersey with agencies responsible for groundwater arsenic issues.

- October 2010: RTC identifies northern NJ as ripe for arsenic-related RTC work
- January 2011: RTC begins visiting Trenton and surroundings using SRP EAB contacts.
- January 2011: CEC plans private well-owner surveys in Maine.
- September 2011: RTC and a series of NJ partners begin developing educational arsenic videos with Barnard's sustainable development classes. Hunterdon County DOH was the client for the first 2 videos, followed by NJDEP Office of Science and Geological Survey.
- September 2011: In parallel SRP scientists work with NJDEP geologists using XRF core analysis to study NJDEP hypotheses about spatial pattern of arsenic occurrence with ultimate goal of providing guidance to well drillers.
- November 2013: NJ partner attendance at monthly Columbia SRP seminars exposes them to survey work in Maine.
- December 2013 – October 2014: Collaboration on joint NJ – RTC – CEC project surveying private well owners in NJ using same methodology as in Maine. Results will inform ongoing awareness/educational work underway in NJ.

Building successful partnerships takes time. It is based on building trust and respect between groups/individuals and needs long-term continued support.

Submitted by flanagan@ldeo.columbia.edu

Research Translation with the NC Pesticide Safety Education Program

Eileen Thorsos, Duke University, Superfund Research Center, Research Translation Core

The Duke Superfund Research Center is partnering with the North Carolina Pesticide Safety Education Program, an office of the NC Cooperative Extension that educates thousands of pesticide applicators about proper pesticide procedures and safety. Together, we are deepening the program's educational products about potential health outcomes from low-dose exposure to pesticides. Our current work focuses on content for the website PesticideStewardship.org.

How the collaboration developed:

- * Duke SRC researchers study how being exposed to organophosphate insecticides and other neurotoxins early in life may affect brain development. The RTC desired to reach out to pesticide users.
- * A farmworker nonprofit directed RTC staff to the Pesticide Safety Education Program (Wayne Buhler) and the NC Agromedicine Institute (Julia Storm). We emailed, spoke by phone, and met in person to learn about each others' programs.
- * Our collaborators identified that their existing programs provided limited education about chronic risks from low-dose exposure to pesticides that they welcomed deeper education on this topic.
- * The Duke RTC investigated primary research about pesticide education and low-dose exposure.
- * At a second in-person meeting, we brainstormed needs and identified two opportunities: Continuing education credits for applicators and the Pesticide Environmental Stewardship website, which compiles information about pesticide handling and management.
- * Duke RTC staff drafted text about how scientists study health effects from low-level exposure, limitations to what we know, and potential risks from this type of exposure.
- * We are collaboratively revising this text based on our partners' knowledge and experience communicating with this audience.

Submitted by Eileen Thorsos <eileen.thorsos@duke.edu>



Evaluating the Effectiveness of Educational Materials on Fish Consumption Advisories around Lake Crabtree, Morrisville, NC

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The UNC Superfund Research Program Research Translation Core has engaged with community partners to develop educational materials for Spanish-speaking recreational anglers and their families about a fish consumption advisory (FCA) on dangerous polychlorinated biphenyl (PCB) levels in fish found in Lake Crabtree County Park and its tributaries, popular fishing sites located near the Ward Transformer Superfund site in Morrisville, North Carolina. We developed a prototype map of safe fishing sites, which included a guide to safely consuming locally-caught fish, by drawing on expertise and feedback from our stakeholders and community partners, including a local environmental non-profit, local government agency and several contacts within the state Department of Health and Human Services. Now, we are piloting this material with the target audience (particularly Spanish-speaking anglers, who are least likely to be aware of the FCA) with four objectives: 1) to understand anglers' perceptions of PCB risk; 2) to solicit feedback on the material; 3) to evaluate our material's impact on participant knowledge and intent to change behavior; and 4) to identify possible outlets for disseminating the material. This research represents an integral step for our long-term process of developing responsive community-based educational programs to disseminate FCA information.

This work is supported by the National Institute of Environmental Health Sciences through a grant to the UNC Superfund Research Program (grant number P42ES005948)

Submitted by Sarah Yelton <http://sph.unc.edu/srp>



Tribal-OSU SRP Partnerships for Evaluation of Chemical Exposures to Improve Community Health

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A key partnership fostered by the Superfund Research Center (SRP) at Oregon State University (OSU) is with Native American Tribes in the Pacific Northwest including the Confederated Tribes of the Umatilla Indian Reservation, the Swinomish Tribal Indian Community and the Samish Indian Nation. By partnering with Tribal nations impacted by Superfund Sites, it is possible to account for unique exposures potentially contributing to environmental health disparities experienced by Native Americans. This Tribal-University partnership connects OSU SRP cores and projects with the united focus of measuring and evaluating the toxicity of polycyclic aromatic hydrocarbons (PAHs). These research capabilities are well suited to address Tribal concerns regarding historic and current contamination. These reciprocal partnerships have been sustained through a concerted effort to increase cultural and scientific capacity, targeted use of community-based participatory research, and the use of data sharing agreements. Together, we have instigated collaborative projects that: (1) use passive sampling technologies to sample traditional foods in an effective and less-resource-intensive manner; (2) evaluate exposure to PAHs following consumption of traditionally smoked salmon and; (3) evaluate indoor air exposures. Overall this mutual partnership seeks to support Tribal capacity building and knowledge of possible PAH exposures and increase university scientist cultural sensitivity through relevant research that can inform effective and culturally appropriate risk reduction and health promotion strategies. Through our partnerships, we have sought to protect Tribal health, preserve cultural practices, and honor Tribal sovereignty and ethics.

Submitted by Diana Rohlman <http://ehsc.science.oregonstate.edu/>



Community Engagement in Research on Asbestos Exposure

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SRP # P42 ES023720

Faculty from the University of Pennsylvania, School of Medicine and Ambler, PA residents partnered to explore the range of community concerns about asbestos. Salient concerns elicited during this period informed the content of research projects proposed in our newly funded SRP. **METHODS:** We used an ethnographic approach with a purposively drawn sample of former factory workers, family members of former workers, and past and current residents of Ambler PA; the site of a former asbestos manufacturing industry and 1.5 million cubic yards of asbestos waste. **RESULTS:** We conducted 46 open-ended, semi-structured interviews and participant observations in the community to understand community priorities for research. Engaging “the community” in discussions about exposure and remediation is difficult because there are multiple constituencies in Ambler, often with competing interests. There is dissension about whether there is a benefit to making the magnitude of the problem public. Significant problems exist with communication and trust, often along lines of race and class. There is disagreement about future use of the remediated site. Some constituencies feel that their interests are not represented by the official Community Advisory Group. Some community members locate the asbestos problem as one of a changed and stigmatized community identity (with economic implications) rather than a threat to health. Others deny the impact of asbestos exposure, citing the danger to be historic rather than current. **DISCUSSION:** Eliciting multiple perspectives informed the range of research priorities among residents and formed the basis for the topics that are currently being investigated in our SRP.

Submitted by

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BROWN

Rapid Sharing of Advanced SRP Research with Local Stakeholders: The Brown-NEWMOA Partnership

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The Brown University SRP is involved in strong academic-government-community partnerships related to environmental health and contaminated site characterization and remediation. The Brown SRP Research Translation Core (RTC) and Community Engagement Core (CEC) are involved in bidirectional exchange of information with government partner agencies, on the state level as well as regionally. The Northeast Waste Management Officials' Association (NEWMOA) has been an effective partner in research translation activity. In collaboration with NEWMOA, cutting-edge research results from SRP projects are made available to relevant stakeholders, including environmental and health regulatory officials from throughout the northeast US, environmental consultants, and representatives of impacted communities. The Brown SRP with NEWMOA has co-organized seven workshops for over 700 attendees. For example, Brown SRP investigators Hurt and Kane presented their work on nanomaterials toxicity and safe design in a NEWMOA webinar. Two workshops on vapor intrusion, another major Brown SRP research theme led by Eric Suuberg, were co-organized with NEWMOA over the past year. Also in 2014 Brown SRP and NEWMOA co-organized a workshop on risk communication that included speakers from Brown (including Center Director Boekelheide and CEC Leader Vanderslice), as well as presenters from Boston University and Dartmouth SRPs. Brown's partnership with NEWMOA represents a channel for dissemination of research results to an engaged stakeholder audience on a very short timescale and with a deeper reach than traditional publication channels. This same partnership facilitates our SRP learning about stakeholder needs of immediate concern. These workshops are a unique opportunity for sharing information on current problems.

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University of Washington SRP Partnerships Built around Research Translation

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Olfaction, or the ability to detect environmental cues via the sense of smell, is critical for fish survival. Olfactory sensory neurons detect chemical cues in the environment that guide fish homing, prey and predator responses. Industrial pollution in waterways may affect these key responses in fish, impacting survival rates. Dr. Evan Gallagher's Superfund supported research focuses on investigating the mechanisms of metals and pesticide olfactory injury and developing biomarkers that can better assess the ecological health of Superfund site. His research has been guided by local concerns regarding complex chemical mixtures in aquatic environments around Puget Sound. Scientists and environmental managers from federal, state and regional agencies have worked with Dr. Gallagher to develop appropriate research designs and provide access to field sites for his project. Stakeholders who are heavily invested in the abundance and health of regional fish such as tribal, subsistence, commercial and recreational fishers have also been involved. The project's field site is the Lower Duwamish Waterway (LDW) Superfund site. The Research Translation Core has partnered with the site's recognized Technical Advisory Group (TAG) since 2006. The Core and Dr. Gallagher have worked with the TAG on boat tours of the LDW and other local Superfund sites in the Puget Sound for high school educators, Tribal elders, community members and agency staff. Superfund trainees have been involved in these activities helping to address questions regarding human and ecological health risks from site associated contaminants. Field studies on the LDW site will provide tools to assess remediation outcomes.

Submitted by Katie Frevert