

## Our Mission

**We investigate how arsenic and mercury, two of the top three environmental chemicals of concern in the U.S., affect ecosystems and human health.**

In 1986, the Superfund Research Program (SRP), administered by the National Institute of Environmental Health Sciences (NIEHS), was established to seek solutions to complex health and environmental issues associated with the nation's Superfund hazardous waste sites. The SRP supports practical research that improves our understanding of environmental contaminants to lower environmental cleanup costs through science-based remediation methods, reduce risks of public exposure to hazardous substances, and improve human and environmental health.

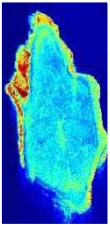
**Dartmouth has one of the longest-running Superfund Research Programs in the country.**



Collaborators David Salt and Keeve Nachman and project leaders Mary Lou Guerinot and Margaret Karagas.

## Our Research

**Filling in critical knowledge gaps...**



### **How does rice uptake, transport, and store arsenic?**

We are investigating how rice moves arsenic into its seeds during development using advanced elemental mapping techniques and genetic analysis. By understanding the mechanisms of arsenic accumulation, we hope to learn how to grow arsenic-free rice.

Project Leader: Mary Lou Guerinot, Ph.D., [mary.lou.guerinot@dartmouth.edu](mailto:mary.lou.guerinot@dartmouth.edu)

### **How does arsenic affect the immune system and bacterial infections in the lungs?**

We are studying how very low levels of arsenic found in well water and rice products affect the immune system's ability to fight bacterial infections in the lungs. This research will help communities understand arsenic risk and aid our stakeholders, including the Food and Drug Administration, as they consider setting standards for arsenic in food.

Project Leader and Director: Bruce Stanton, Ph.D., [bruce.a.stanton@dartmouth.edu](mailto:bruce.a.stanton@dartmouth.edu)



### **How does arsenic exposure during pregnancy affect mothers and children?**

We are researching how low levels of arsenic exposure during pregnancy may increase risks for heart disease and diabetes by measuring blood pressure and glucose metabolism. Working with over 1,600 mother-infant pairs, our New Hampshire Birth Cohort Study represents one of the only investigations of early life exposure to arsenic in the U.S.

Project Leader: Margaret Karagas, Ph.D., [margaret.karagas@dartmouth.edu](mailto:margaret.karagas@dartmouth.edu)

### **How do changes in the environment affect mercury in aquatic ecosystems?**

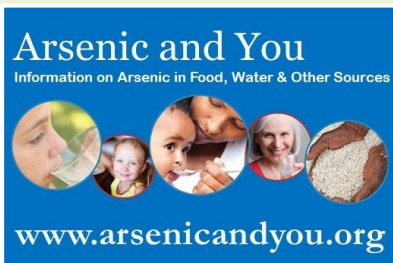
Through a combination of field and laboratory studies at mercury-contaminated sites along the east coast, we are learning how different environmental factors like temperature, salt content and organic matter composition affect how methylmercury moves through the aquatic food chain. This knowledge helps policymakers set standards to reduce mercury entering our ecosystems and reduce levels of methylmercury entering the seafood we eat.

Project Leader: Celia Chen, Ph.D., [celia.y.chen@dartmouth.edu](mailto:celia.y.chen@dartmouth.edu)



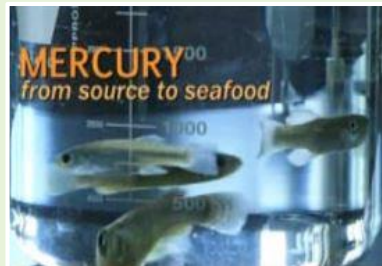
# Connecting with Communities

Informing lifestyles and policy to protect public health...



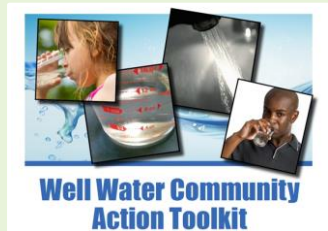
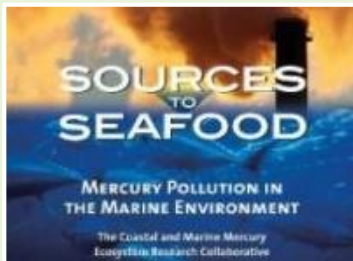
Visit Arsenic and You, a user-friendly website that informs the public about sources and risks of arsenic exposure and provides steps to lower their risk.  
[www.ArsenicandYou.org](http://www.ArsenicandYou.org)

The Collaborative on Food with Arsenic and associated Risk and Regulation (C-FARR) papers inform policymakers about the science and risks surrounding arsenic in food.



Watch our two short videos to inform the public about arsenic and mercury exposure.  
[www.source2seafood.org](http://www.source2seafood.org)  
[www.insmalldoses.org](http://www.insmalldoses.org)

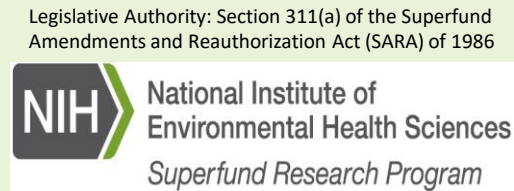
The Coastal and Marine Mercury Ecosystem Research Collaborative (C-MERC) papers inform policymakers and the public about mercury's effects on marine ecosystems and people.



Since 2001, we have worked with the New Hampshire Arsenic Consortium and other stakeholders to inform the public and increase testing and treatment for arsenic in private well water.

## For more information, please...

Visit our Dartmouth Toxic Metals SRP website:  
[www.Dartmouth.edu/~toxmetal](http://www.Dartmouth.edu/~toxmetal)  
Contact Laurie Rardin, Research Translation Coordinator:  
[laurie.r.rardin@dartmouth.edu](mailto:laurie.r.rardin@dartmouth.edu) phone: (603) 650-1523



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Laurie Rardin and Tracy Punshon during Environmental Health Fest.

Our **Community Engagement Core** builds partnerships with target communities including private well owners, consumers, parent groups and science students to help them understand the health risks posed by toxic metals in the environment.  
Shannon R. Rogers, Ph.D.,  
[shannon.r.rogers@dartmouth.edu](mailto:shannon.r.rogers@dartmouth.edu)

Our **Research Translation Core** translates the findings of Dartmouth scientists into user-friendly information that helps state and federal agencies, non-profits and grassroots organizations make informed decisions on issues that affect the health of their communities.  
Celia Y. Chen, Ph.D.,  
[celia.y.chen@dartmouth.edu](mailto:celia.y.chen@dartmouth.edu)

Our **Trace Element Analysis Core** provides vital access to state-of-the-art instruments, resources and expertise to support our research projects and those of other research institutes as well as government agencies.  
Brian Jackson, Ph.D.,  
[brian.jackson@dartmouth.edu](mailto:brian.jackson@dartmouth.edu)

Our **Training Core** gives early-career scientists access to teams of diverse professionals and encourages innovation to develop solution-oriented approaches to complex problems, building the next generation of environmental health scientists.  
Bruce Stanton, Ph.D.,  
[bruce.a.stanton@dartmouth.edu](mailto:bruce.a.stanton@dartmouth.edu)