



Reuse In Rhode Island
a state-based approach to complex exposures



SUPERFUND TRAINING CORE

Core Director: Agnes B. Kane, M.D., Ph.D., Department of
Pathology and Laboratory Medicine

NIEHS P42 ES013660-07



Goals and Objectives

- To provide a unique interdisciplinary didactic, research, and community engagement experience for Brown University undergraduate and graduate students and postdoctoral research associates.
- To inspire our students to pursue advanced training in environmental sciences and engineering with the goals of prevention and remediation of industrial and environmental pollution through partnerships with communities, public agencies, universities, and industry.

Specific Aim 1

To develop and implement a sequence of didactic courses, workshops, and laboratory experiences related to environmental contaminants, human health effects, and rehabilitation of Brownfield and Superfund sites.

- Environmental Technologies and Human Health (BIOL 2840/EN 2920)*
- Environmental Health and Disease (BIOL 1820)
- Human Reproductive Biology and Toxicology (BIOL 2840)
- Cancer Biology (BIOL 1290)
- Topics in Cancer Biology (BIOL 2840E)
- Small Wonders- Science, Technology and Human Health Impacts of Nanomaterials (EN 2920/BIOL 2840)
- Human Health, the Environment, and Public Policy (BIOL 28401)*
- Instrumental Analysis with Environmental Applications (CHEM 1660/GEOL 1660-S01)
- Chemical and Transport Processes in the Environment (EN 2910L)
- Environmental Ethics Workshop (Spring 2011 and 2012)*

*required of all Superfund trainees

Specific Aim 2

To organize interdisciplinary research teams of undergraduate, graduate students, and postdoctoral research associates based on the biomedical and engineering research projects supported by this Superfund Basic Research Grant.

- Gene Expression Changes in the Testis Following X-Radiation and 2,5-Hexanedione Exposure (Natasha Catlin, Sarah Champion, Devin Koestler, Kim Boekelheide)
- Biological Behavior of Graphene-Family Materials (Yang Qui, Agnes Kane, Robert Hurt)

Specific Aim 3

To provide opportunities for field work, community outreach, and communication.

- Yijun Yao, Vapor Intrusion Gorham Site, Providence, RI
- Rui Shen, Analysis of Field Data, Somerville, MA
- David Ciptet, Sociology Graduate Student



Dioxins
TCE, PCE
Metals (Pb, Cd, Cu, As)
SVOCs: PAHs
PCBs

October 28, 2011: The Environmental Protection Agency issued a proposed \$101 million cleanup plan for the Centredale Manor Superfund site in North Providence. David Ciptet has been working with local community groups and councils related to toxic waste and Superfund sites in Rhode Island.

Community Environmental College

Create a shared knowledge base about environmental justice issues in the community and provide opportunities for teaching. This is an eight week summer program for local high school students.

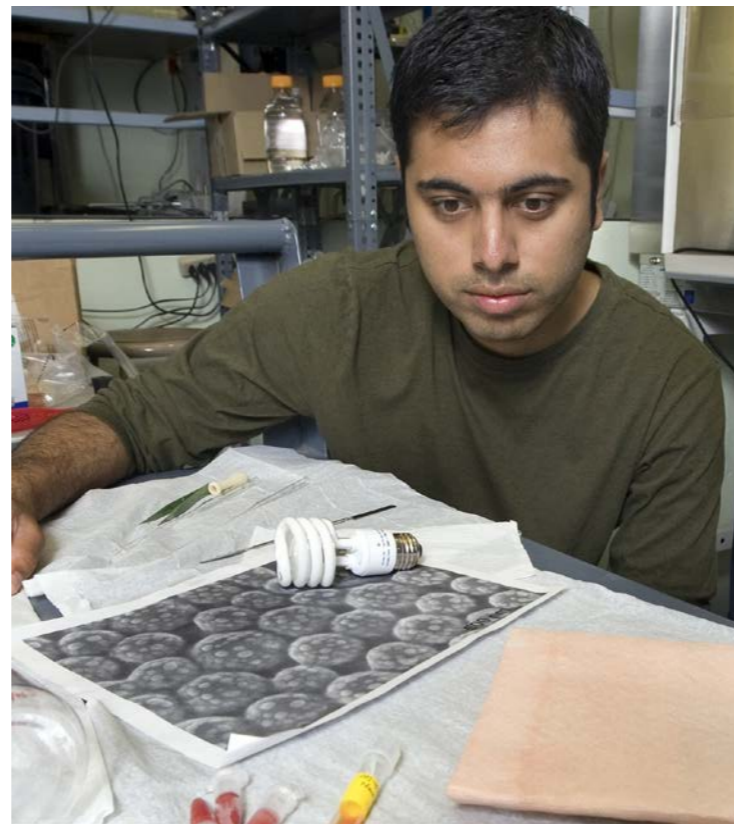


Success Stories

- Former postdoctoral research associate and state agency liaison, Kelly Pennell, Ph.D. is Assistant Professor of Engineering at the University of Massachusetts at Dartmouth.
- Former graduate student trainees in academia:
 - Elizabeth Hoover, Ph.D. Assistant Professor, American Studies, Brown University
 - Jillian Goldfarb, Ph.D. Assistant Professor, Chemical Engineering, University of New Hampshire
 - Laura Senier, Ph.D. Recipient of the Karen Wetterhan Award in 2008 and Assistant Professor of Community & Environmental Sociology and Family Medicine, University of Wisconsin.
 - Alison Cohen, M.P.H. Ph.D. student, University of California at Berkeley
 - James Rice, Ph.D. Postdoctoral Research Associate and state agency liaison, Brown Superfund program
- Former graduate student trainees in industry:
 - Xinyuan Liu, Ph.D. Materials Chemist, Corning Incorporated

Success Stories

Banyan Environmental Inc., *Science for Sustainability*
One Davol Square, Providence, RI



Love Sarin '05, '10, PhD, CEO, Founder and President of Banyan Environmental, Inc.

Ruben Spitz, '09, ScM, Research Engineer

Robert Hurt, PhD, Co-Founder and Chief Scientific Advisor

Impact in Rhode Island and Future Directions



- Revive the Rhode Island economy and provide new jobs in nanotechnology and environmental remediation.
- RI Consortium for Nanoscience and Nanotechnology (RIN2): enhance human resources and research infrastructure.
- Help Rhode Island make the transition from traditional manufacturing to a knowledge-based economy.