

W&M GIG takes transdisciplinary look at mercury pollution

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Science alone cannot solve the pressing environmental problems threatening the world. Nor can the humanities. In order to make effective assaults against a wide range of ills, trans-disciplinary approaches are vital. Consider mercury. William and Mary did.

During a three-year span, the College's Global Inquiry Group (GIG), funded by the Reves Center for International Studies, examined the problematic liquid metal from scientific, historic and artistic perspectives. Its research extended outward from Williamsburg to Latin America, China and Japan. Essential treatments included the Minamata photographic exhibition at the Muscarelle Museum of Fine Arts, a sculpture exchange between the College and Musahino University in Tokyo and Dan Cristol's groundbreaking research involving mercury transfer from streams and rivers to the surrounding land. Recently the entire GIG has been chronicled in [Mercury Pollution: A Transdisciplinary Treatment](#), a book co-edited by GIG architects Michael Newman and Sharon Zuber.

"Mercury pollution is a problem for our generation," said Newman, an eco-toxicologist and the A. Marshall Acuff Jr. Professor of Marine Science at the College's Virginia Institute of Marine Science (VIMS).

"This is not my grandfather's time," he explained. "One hundred years ago, mercury was associated with particular occupations or neighborhoods, such as the felting industry with its mad hatters, or the gold-mining industry. Unfortunately the sources of mercury have

become very diffuse; a little bit of mercury comes out of coal power plants continuously, globally.”

Although the gradual build-up in background levels of mercury is not yet something to be “alarmist” about, it is something, according to Newman, that “we need to be informed about.”

“You have to make intelligent decisions,” he said. “That’s one of the reasons we wrote this book.”

Zuber, visiting professor of English and director of the Writing Resource Center at the College, agreed with her co-editor.

“Our original conception of this book to use mercury as a case study for addressing [environmental problems](#) from a variety of angles,” Zuber said. “Our belief was that it would yield new ways of thinking about the issues.”

As editors, each professor found that dealing with material produced outside his or her individual area of comfort taxing but rewarding. Working with the science-based chapters made Zuber realize the extended complications involved in dealing with the substance. For instance, new high-efficiency light bulbs can reduce coal-based mercury emissions by reducing energy consumption but, if improperly disposed, create their own mercury contamination, she said.

Overall, immersion in the science-based chapters enabled her to see that “there are certain forms of mercury that are much more dangerous than others,” she said. She recalled playing as a child with the small balls of mercury that rolled around on the floor after a household thermometer broke. The memory spurred her to ask Dan Cristol, a professor of biology at the College and a GIG contributor, what would happen if such a thermometer broke in her mouth. “He said it would just pass through

my system before it had time to methylate,” she said. “On the other hand, I learned that mercury, when exposed to water and bacteria, methylates and becomes extremely hazardous.”

She also learned about “biomagnification,” the special property of mercury that enables it to accumulate within topline predators. The information has turned her away from eating foods such as tuna, shark and swordfish.

Newman found editing chapters dealing with the humanities “exasperating” at first.

“In science you try very hard to remove your personality and your beliefs from things,” he said. “There is no ‘first-person.’” As he encountered chapters about puppet shows and environmental writing, he kept running into the pronoun “I.” In some cases, there were no footnotes, he commented.

“Some of these were very emotional accounts,” he said. “They were powerful because they were so personal.”

Newman, who has spent his career conducting research on and writing about eco-toxins, including mercury, cadmium, arsenic, lead and, most recently, oil in the Gulf of Mexico, came to realize that science, alone, cannot tell such stories.

“This generation enjoys its wonderful technology, its wealth, its wonderful development, but one of the things that comes with that is byproducts—pollution,” Newman said. “[Mercury](#) is one of those things that is linked to our lives, and different people link things together in different ways; some through numbers, some through art and some through images. That’s what we tried to achieve.”

Zuber concurs on the need to address readers on the basis of their primary interests. Her hope is that English teachers utilize the book to help teach writing by focusing on environmental issues, that science teachers use it to bring substance to their lectures and that government agents will use it when considering environmental hazards from local, regional and international vantages.

“We all have to work together, and we have to work together globally in order to address these problems,” Zuber said.

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