

Environmental Justice: A Leadership Role For Environmental Chemists

Good Afternoon!

I would like to begin by thanking the American Chemical Society and the Camille and Henry Dreyfus Foundation for the special honor that carries with it the opportunity to make this presentation before members of the ACS Division of Environmental Chemistry. I would like to take advantage of this special occasion to offer my perspective on the increased leadership role I believe that environmental chemists can play in bringing about Environmental Justice. I need to acknowledge up front that my background does not include direct experience in this area.

Over the last several years, support from the National Science Foundation's Tribal Colleges and Universities Program has enabled the Quality Education for Minorities (QEM) Network to work with faculty, staff, and students at Tribal Colleges and Universities on leadership development and on enhancing the mathematics and science programs at their institutions. This has occurred/is occurring through leadership development institutes and workshops for faculty and staff on proposal development; financial management; the integration of mathematics and biology; culture and curriculum; and assessment and evaluation as well as through summer internships for students from Tribal Colleges and Universities.

Although issues related to environmental hazards have arisen during our work with Historically Black Colleges and Universities, it was a project undertaken three summers ago on hazard waste dumps located on or near tribal lands by one of our interns from a tribal college that heightened our staff's awareness and concern about Environmental Justice. It was the work of this student that made clear the impact on the well-being of tribal communities of the lack of forethought regarding the locations of such dumps and the lack of sustained monitoring once these sites were selected.

As you know, research on environmental health and its link to socioeconomic status clearly shows that residents of high-poverty neighborhoods are disproportionately exposed to environmental hazards that adversely affect their health and quality of life. Overexposure to toxic environments such as asbestos, lead, mold, arsenic in drinking water, power plants, and toxic waste dumps pose significant health risks that disproportionately affect communities of color and the poor. The persistent disparity in the health status of racial and ethnic populations when compared with the overall health status of the U.S. population is evident.

Simply put, the problem is as follows: an already vulnerable population is disproportionately exposed to environmental hazards that adversely affect their health and quality of life. My purpose (and my challenge) is to convince you to use your expertise to help bring about increased Environmental Justice.

I want to begin with a definition of Environmental Justice. According to the United States environmental protection agency, "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means no racial, socioeconomic, or ethnic group should bear a disproportionate share of the negative environmental consequences resulting from the operation of industrial, municipal, and commercial enterprises or from the execution of federal, state, and local programs and policies. (United States Environmental Protection Agency Frequently Asked Questions: <http://www.epa.gov/compliance/resources/faqs/ej/index.html#faq2>)

As environmental chemists, you are concerned with the potential negative impact of chemicals on the environment. You seek to apply chemistry to understanding and solving environmental and sustainability issues. Many of you also investigate the health effects associated with exposure to various hazards. So, what better group is there, to which to turn, than one with the knowledge and, hopefully the passion, to enhance the nation's awareness about environmentally caused health disparities and to spur greater action to reduce these disparities? You have the expertise needed to

help shape and provide leadership to such action.

While a multi-faceted effort is required at the community, state, and national levels to bring about the necessary changes in environmental policies and practices, you are in a unique position to move this effort forward.

You can help ensure that low-income and minority communities are equipped to address these issues at both the local and national levels. You can help to ensure that these communities understand that science and technology advancements, though beneficial on the whole and exciting to scientists, often come with a myriad of concerns as related to the public good (e.g., nuclear power plants). Environmental hazards sometimes result from the use/applications of these advancements.

Underserved communities are particularly vulnerable to the negative impacts of policies and practices related to these advancements. Environmental Justice concerns need to be addressed in advance, whether the topic is the impact of emerging technologies like nanotechnology; whether it is safe and effective water treatment; the placement of nuclear power plants and toxic waste dumps; or the abatement of lead in paint or in the soil. You can play a leadership role in seeing to it that such concerns are addressed in advance.

However, before being more specific about what you as an individual scientist can do, I want to briefly give a few examples of what has been done by others in response to the issues raised. These examples are from government, national organizations, and higher education.

Let us look first at the Federal Government. For many years, the general public was less aware of how dumping chemical wastes might affect public health and the environment. On thousands of properties where such practices were intensive or continuous, the result was uncontrolled or abandoned hazardous waste sites, such as abandoned warehouses and landfills.

In response to citizen concern over the extent of this problem, the Congress established the Superfund Program to locate, investigate, and clean up the worst sites nationwide. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, generally referred to as Superfund, authorizes the U.S. Environmental Protection Agency (EPA) to respond to releases or threatened releases of hazardous substances that may threaten public health or the environment.

Over 1,300 Federal Superfund sites are scheduled for cleanup and are on the so-called national priorities list. These are the nation's worst toxic waste sites, and are first in line to be cleaned up. Contamination at superfund sites results from improper handling of waste and toxic materials, often spanning many decades. EPA administers the Superfund Program in cooperation with individual states and tribal governments. [HTTP://WWW.EPA.GOV/SUPERFUND](http://www.epa.gov/superfund).

In addition to congressional action, there has been action by the Executive Branch. President Bill Clinton, In 1994, Signed Executive Order Number 12898 that was entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order called for, among other things, the establishment of the Interagency Working Group (IWG) on Environmental Justice.

The Working Group's charge was to:

- Provide guidance to federal agencies on criteria for identifying disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Serve as a clearinghouse for each federal agency as the agency developed an environmental justice strategy as required by the executive order;
- Assist in coordinating research as well as data collection;
- Examine existing data and studies on Environmental Justice;
- Hold public meetings; and
- Develop interagency model projects on Environmental Justice.

In May 2000, the IWG developed the “Integrated Federal Interagency Environmental Action Agenda” to incorporate Environmental Justice into the policies, programs, and activities of federal agencies. To help implement the agenda, the IWG, in June 2000, established 15 demonstration sites in collaboration with state, tribal, and local governments and with community organizations, and industry representatives.

EPA’s Office of Policy, Economics, and Innovation conducted an evaluation of this collaborative approach. Six case studies were developed, based on interviews of partnership members for six of the demonstration projects, followed by a cross-case analysis. One of the core findings was that multi-stakeholder collaborations could be transformative. Nearly 80 percent of the individuals interviewed indicated that the issues facing their communities would not have been addressed or would not have been addressed to the same extent, without the collaborative effort.

In March 2003, 15 more Environmental Justice Demonstration Projects were identified by the IWG through a national competition (Environmental Justice Fact Sheet, August 2004).

In addition to congressional and presidential leadership on the issue of Environmental Justice, there is the work of the National Council for Science and the Environment. The Council works in collaboration with groups that create and use environmental knowledge to make and shape environmental decisions. It promotes science for the environment by working with academic institutions to enhance their environmental science programs; it provides the general public with science-based information; and helps to develop science solutions for environmental challenges. (National Council for Science and the Environment: <http://ncseonline.org/>)

At the college and university level, major centers focused on Environmental Justice are in place on campuses across the country. For example, there is the Environmental Justice Initiative at the University of Michigan, a predominantly white institution. There is the Environmental Justice Resource Center at Clark Atlanta University, a predominantly black institution, and there is the Uranium Education

Project on the Shiprock Campus of Dine College, a tribal college. (Clark Atlanta University Environmental Justice Resource Center: <http://www.ejrc.cau.edu/>; Uranium Education Project: <http://www.dinecollege.edu/institutes/uranium.php>)

When President Barack Obama took the oath of office, one of the challenges he gave to the nation was clear when he said: **"What is Required of Us now is a New Era of Responsibility."** This challenge must be applied to Environmental Justice. To address his challenge in this area, we could take steps to increase awareness of the issues, identify the challenges, develop a plan of action, and build capacity at the community, state, regional, and national levels to carry out the plan of action.

STEP I: INCREASING AWARENESS OF THE ISSUES. This means answering such questions as: What are the benefits and risks associated with environmental science applications and related technologies? Do the benefits outweigh the risks? What policies are needed to ensure equity? How can our answers protect society/our communities and, at the same time, enable science to move forward and provide life-enhancing discoveries? And, very importantly, who should be involved in making these decisions?

You can help to increase awareness of these risks and related research (1) within ACS; (2) in collaboration with the agencies (EPA, DOI, DOJ, USDA, HHS, and DOE) responsible for protecting public health and the environment; and (3) within the communities affected. You can provide the scientific data to help citizens and communities understand the health effects of exposure to toxins in their environment as well as help them to develop strategies to mitigate these effects.

It also is important to overcome the mistrust of science, distrust of scientists and policy-makers often present within low-income and minority communities.

STEP II. IDENTIFYING THE CHALLENGES. This step is essential to developing a comprehensive plan of action. However, such a plan also must be based on the progress that is being made. The challenges involve recognizing the environmental realities facing low-income and minority communities, realities such as:

- The fact that the poverty rates in areas surrounding the 413 hazardous waste facilities in the u.s. are higher (18%) than those in areas without them (12%); (Toxic Waste and Race at Twenty: 1987 – 2007: A Report Prepared for the United Church of Christ Justice and Witness Ministries: www.ucc.org/assets/pdfs/toxic20.pdf)
- The fact that minorities represent 56 percent of people living within two miles of a hazardous waste facility; (Toxic Waste and Race at Twenty: 1987 – 2007: A Report Prepared for the United Church of Christ Justice and Witness Ministries: www.ucc.org/assets/pdfs/toxic20.pdf)
- The fact that lead, mercury, arsenic, vinyl chloride, benzene, cadmium, polychlorinated biphenyls (pcbs) and polycyclic aromatic hydrocarbons (pahs) are but a few of the substances commonly found at waste sites; (Agency for Toxic Substances and Disease Registry 2007 CERCLA Priority List of Hazardous Substances: <http://www.atsdr.cdc.gov/cercla/07list.html>)
- The fact that exposure at high levels of these substances can cause nausea, adverse birth outcomes, and/or brain and kidney damage; (Agency for Toxic Substances and Disease Registry ToxFAQs: <http://www.atsdr.cdc.gov/toxfaq.html>) and
- The fact that prolonged exposure can lead to cancer, liver damage, the loss of bone marrow, and even death. (Agency for Toxic Substances and Disease Registry ToxFAQs: <http://www.atsdr.cdc.gov/toxfaq.html>)

Recognizing the progress being made means acknowledging that the development and use of innovative technologies have led to cleaner air, cleaner water, and better waste prevention and management. While such technologies hold the promise of being more effective and less costly than traditional methods, EPA, and other groups seeking to improve the environment, acknowledge, however, that major challenges remain, that new technologies and strategies are needed to address the complex environmental problems many communities face.

STEP III. DEVELOPING A PLAN OF ACTION. This step entails designing a multi-pronged effort at the community, state, and national levels to bring about the needed changes in environmental policies and practices. *Such a plan should be based on research, on policy, and on community outreach.*

In *Research*, for example, we must be innovative about technologies that eliminate or reduce health risks, and that are reliable, cost-effective, as environmentally benign as possible, and that are sustainable.

In *Policy*, we could follow the recommendations of the National Conference of State Legislators and call for greater attention to the way we design our communities; to decisions about zoning, community design, and land use and their impact on the daily choices people make and on the quality of the air and water in the environment. This would mean, for example, that planners and policymakers should take health and livability into account when retrofitting old developments or building new ones. (National Conference of State Legislatures- Linking the Environment to Racial and Ethnic Health Disparities:

<http://www.ncsl.org/programs/environ/envHealth/EnvRacial.htm>)

Another Policy area involves the *collection and use of statistics* to assess the health of affected communities and to track changes. The National Center for Health Statistics conducts surveys and has established data systems that provide fundamental public health and health policy statistics. The work of the Center is critical. Its reports and data can be used by Congress and the Administration to formulate policy as well as by medical researchers and others in the health community to track changes in health and health care.

In *Community Outreach*, we could study the strategies used by the Environmental Justice Resource Center at Clark Atlanta University in education, training, information dissemination, technical assistance, and other forms of community outreach. Or again, we could learn from the findings of the National Conference of State Legislators.

The Conference notes that state and federal policymakers are partnering with local stakeholders, including residents, businesses, the public health system and community-based organizations to close the disparities gap. Many of these efforts focus on the environmental stresses that are particularly prevalent in economically disadvantaged areas. By addressing and increasing public awareness of environmental concerns, these partnerships may hold the key to closing the gap between low-risk populations and populations that are at increased risk for chronic diseases. (National Conference of State Legislatures- Linking the Environment to Racial and Ethnic Health Disparities

<http://www.ncsl.org/programs/environ/envHealth/EnvRacial.htm>)

In addition to developing a plan that recognizes and builds on the work of others, cross-cultural, multi-ethnic/racial, cross-SES coalitions of scientists, community residents, and policymakers could be established to help develop strategies for addressing the myriad of environmental concerns faced disproportionately by communities of color and the poor.

Jason Corburn and Emily Monosson, in a 2007 article entitled “Community Knowledge in Environmental Health Science,” appearing in the Encyclopedia of Earth discussed the benefits of the involvement of the affected communities. They observed that the inclusion of these communities would provide policy makers with data and information that is grounded in the realities of the local environment. Community knowledge can help to identify previously ignored questions and hazards; provide hard to gather data; involve often difficult to reach populations; and expand the possibilities for intervention alternatives. (Corburn, J. & Monosson, E. (2007). Community Knowledge in Environmental Health Science:

http://www.eoearth.org/article/Community_knowledge_in_environmental_health_science)

STEP IV: BUILDING CAPACITY. Clearly, there are ways that groups such as the ACS Division of Environmental Chemists can further the development of a comprehensive plan to achieve Environmental Justice. For example, *the Division*

could advocate for an Environmental Justice Corps comparable to the Peace Corps that would, after initial training, be dispersed within the U.S. to various low-income and minority communities where some of the hazardous waste sites exist.

However, I want to close by identifying ways you, as an individual scientist, can become involved or become more involved. You can assume a greater leadership role in helping to empower low-income communities and communities of color to make more informed decisions and to be in a stronger position to help shape or, if necessary, to challenge existing environmentally-related policies and practices that affect community well-being. You can help empower them through education, increased awareness, and the development of self-help strategies.

If you live in KS, MI, MN, MT, NE, NM, ND, SD, WA, or WI, you could, for example, offer to collaborate on efforts to address environmental hazards with a tribal government or with faculty at a tribal college or university in your state.

If you live in Texas, you could contact the principal investigator of the Center on Environmental Sustainability of Semi-arid Coastal Areas at Texas A&M-Kingsville. The Center seeks to become a major research resource and partner for environmental sustainability with institutions and industry in the South Texas-Mexico border region as well as to increase the Hispanic environmental engineering graduate pool.

If you live in the South, you could meet with faculty at Historically Black Colleges and Universities such as Clark Atlanta University in GA where the Environmental Justice Resource Center is housed; or Xavier University in LA where the Deep South Center for Environmental Justice exists; or Jackson State University in MS that has a Center for Environmental Health. You could discuss ways you can collaborate to help ensure that community members and leaders have the information they need to take the action necessary to minimize the negative impact on health that environmental threats in your state or region may pose.

To address President Obama's challenge to act responsibly in the area of Environmental Justice (that is, to develop a plan to eliminate the disproportionate impact of toxic waste on low-income communities and communities of color), clearly must involve the broadest spectrum.

However, this task cannot be left to political, government, or administration leaders to solve. The scientific community in general, and environmental chemists in particular, must provide leadership to advance the development and application of technologies as well as methods of prevention to remove and control environmental risks to human health.

Your expertise and leadership are sorely needed to enhance the quality of training for those entering the environmental workforce and to help educate a more environmentally literate, culturally competent, diverse pool of students. The QEM Network can help to identify campus contacts, if you choose to work with colleges and universities.

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I hope you will accept this challenge!