

Hence, we have a dual role. Part of the complex is honorific societies, whereas the other part provides advice to the federal government. I want to emphasize that we are not part of the government. We are, in fact, fiercely independent. We see our role as providing highly independent, highly authoritative advice—and we do a lot of it. We produce about 200 reports a year, roughly one every working day. Each one of them tends to be a book about the size and type of the report that you will discuss during this symposium. At any given time, about 6,000 volunteers are working very hard on tough and complex issues such as the one you will focus on during the symposium. Contaminated sediments is an excellent example.

Generally speaking, the issues addressed by the National Academies are difficult problems with important societal consequences, and they often require that science and engineering expertise and opinion become part of the political process.

You all know a great deal more about the topic you will be talking about than I do. I was given a set of reading material to get myself up to speed on this topic and was asked to take on the job of describing the “CS problem.” I have to tell you, my background is as a computer scientist, so I felt I knew the “CS problem” very well. Then I started to read this material, and it did not match at all.

The fun part of my job is that I get to learn about all kinds of new things. Sometimes the things I learn are exciting and enlightening; sometimes they are scary. What I learned in preparing these remarks falls more into the latter category.

As I said earlier, you know this topic much better than I do, but the notion that 10 percent of the surfaces

underlying our waterways are seriously contaminated, sufficiently contaminated to pose risks, is pretty scary. The fact that some 3 million to 12 million yd³ (2.3 million to 9.2 million m³) of what is dredged up every year in clearing our waterways is sufficiently contaminated to require special handling is pretty scary. The societal consequences are pretty scary in terms of damage to the ecosystem, propagation of these contaminants up the food chain, and implications for the loss of recreational waterways.

These are things to which I have given little attention. If I had, I probably would have realized that contaminants hang around for a long time under the surface of the water. I thought that, after Rachel Carson and *Silent Spring*, dichloro-diphenyl-trichloroethane was no longer a problem. Well, I learned that it still is a problem in sediments. I learned that few parts of the country are unaffected. It was no surprise to learn that the problem is further complicated by a tangled web of legislation, multiple federal agencies with responsibility, and overlapping state and local jurisdictions.

This is a perfect example of the types of issues that the National Academies take on—a really important societal problem that requires that science and engineering inform the political process and that policies be put in place. You have been asked here today to help us make some sense out of this difficult situation.

On behalf of the presidents of the two other honorary societies, Bruce Alberts, president of the National Academy of Sciences, and Ken Shine, president of the Institute of Medicine, let me once again welcome you here.

SUCCESS THROUGH CONSENSUS BUILDING

Louis J. Thibodeaux

I am a professor of chemical engineering at Louisiana State University and had the privilege of not only serving as the co-chair of the TRB Symposium Steering Committee but also serving on the NRC study committee that prepared the report we will be discussing. I will begin by giving you a brief history of how the NRC got involved in the issue of contaminated sediments.

It began in 1988, when a Committee on Contaminated Sediments was formed under the Marine Board, which is a unit of the NRC Commission on Engineering and Technical Systems. I recall very well the first meeting in Tampa, Florida, where I had been invited as a workshop participant. This commit-

tee produced a report in 1989 entitled *Contaminated Marine Sediments: Assessment and Remediation*.^{*} (I will summarize briefly some of the findings contained in that report and offer comments on where we stand today.

• *Adequate data do not currently exist for comprehensive pinpointing and prioritization.* As evidenced by an

^{*} *Contaminated Marine Sediments: Assessment and Remediation*. National Academy Press, Washington, D.C. 1989. Available via the Internet at <http://www.nap.edu/readingroom>, or call the National Academy Press (1-800-624-6242).

inventory recently released by the Environmental Protection Agency (EPA), this problem is being addressed.

- *In terms of risk to human health, transfer of contaminants from marine sediments to humans is poorly documented and underassessed.* As a researcher in this area, I know that over the last 10 years this problem has been at least partially resolved.

- *Despite the widespread extent of contaminated sediment problems, remedial actions directed at excavating, treating, or otherwise manipulating contaminated sediments have been extremely rare.* In the last 10 years, a number of technologies have been applied, including dredging, capping, and some other in situ technologies.

- *Little or no weight is given to sediment-mediated contamination of edible fish and shellfish in the hazard ranking system.* At that time, the hazard ranking system was strongly biased to groundwater problems, but since that time it has been amended to provide a better ranking for contaminated sediments.

After that report was published in 1989, contaminated sediment problems continued to come to the fore. At the urging of the EPA, National Oceanic and Atmospheric Administration, U.S. Army Corps of Engineers, and U.S. Navy, a second report was commissioned aimed at trying to assess what technologies existed to clean up contaminated sediment.

A second Committee on Contaminated Marine Sediments was formed in 1993 to produce the report before us today. The Executive Summary of the second report, *Contaminated Sediments in Ports and Waterways: Cleanup Strategies and Technologies*,* has been provided to all symposium participants. This 1997 report concluded that technologies alone will not solve the problem; there must be a strategy. Although technologies are available, it is also necessary to factor cost-benefit, human health, and risk considerations into the decision process.

This symposium acknowledges that the success of contaminated sediment remediation projects depends heavily on consensus building. Although there are many stakeholders—including port managers; transportation officials; industry, federal, state, and local environmental regulators; environmental groups; and competing users for all these marine resources—there are few venues in which these stakeholders can address the issues collectively in a nonadversarial setting. We hope this symposium provides such a venue.

* *Contaminated Sediments in Ports and Waterways: Cleanup Strategies and Technologies*. National Academy Press, Washington, D.C. 1997. Available via the Internet at <http://www.nap.edu/readingroom>, or call the National Academy Press (1-800-624-6242).

TECHNICAL FORUM FOR PRODUCTIVE IDEAS

Spyros P. Pavlou

My co-chair summarized how we got here. I will offer a brief look into the future, which I believe can begin with this symposium.

The Symposium Steering Committee tried to develop concepts and issues that we would like to see propagated and discussed. The first is the issue of risk reduction; the second is sustainable management, or adaptive or continuous management; the third is reuse. Throughout the next two days, you will see these three terms being discussed, embellished, defined, and perhaps even rejected. However, the committee felt this would be an appropriate starting point. The symposium has been configured as a technical forum for the exchange of productive ideas, with members of the audience as contributors and partners in cooperative problem solving.

There are many issues to be addressed and solved. The two reports that Lou Thibodeaux discussed offered recommendations; however, they do not offer solutions to the problems. Through this symposium, we hope to take advantage of your collective experience and expertise to provide direction for the best way to deal with these problems now and in the future. We want to hear stakeholder response to the study report. We want to hear war stories, test cases, stories of successes and failures, and what should be done to promote better management of contaminated sediments. We want to hear your perspectives, your ideas, and your constructive criticisms. Above all, we want you to play an active role in contributing to this process.