

PAHs and those types of things? One approach is to let the Comprehensive Environmental Response, Cleanup, and Liability Act (Superfund) wend its way through the regulatory maze.

But another approach, now that we have some good pilot studies on decontamination technologies, would be to put out a request for proposals and ask the relevant firms, some of which may be represented here at the symposium, what they would suggest we do with these sites up the Hudson River where there are significant concentrations of PCBs in the sediments. Do you have a technology or process for removing or destroying those PCBs? Can you do this without transporting that sediment long distances and imposing on a community by putting that contaminated sediment in its landfill? Is there a technology, what will it cost, what would you propose, and what would this do in terms of reducing the downstream transport of PCBs over a period of years?

Rather than setting up another independent panel of experts, we should go to private-sector companies that have developed these technologies and know about the costs and benefits (because they are for-profit firms), and we should ask these questions and see what the answers are. If the answers are unsatisfactory, then maybe we cannot do anything; however, if we cannot do anything, then the question still remains as to who should bear the cost.

The incremental cost of disposing of contaminated dredged material in New York Harbor—the cost may be similar in other harbors—is on the order of \$35 to \$50/yd<sup>3</sup> (\$46 to \$65/m<sup>3</sup>). Multiplying 3 million to 4 million yd<sup>3</sup>/year (2 million to 3 million m<sup>3</sup>/year) by \$40/yd<sup>3</sup> (\$52/m<sup>3</sup>) or more is \$120 million to \$150 million—a huge cost. The question posed earlier by Tom Wakeman was who bears that cost? Should upstream industrial polluters—who allowed, and profited from, the discharge of contaminants—have to share in that cost? That seems a reasonable question. Otherwise who does pay? The shippers, port authority, environmental

community, various land-based communities, and countless others.

I think one can reasonably say that a firm like GE should pay for one-fifth to one-sixth of that total cost. I cannot explain where that figure comes from, but it is a modest and discernible amount between \$20 million and \$25 million/year. It is a contribution to a cost that is being borne today. This is not an abstract cost, but rather a real-world cost that the states, federal government, and cities of New York, Newark, Elizabeth, and others are struggling to find a way to pay.

As I indicated earlier, the report also discusses the regulatory framework. The discussion of federal and state laws that apply to water is more extensive and, in a way, more satisfactory than is the discussion of federal and state laws and regulations that apply to land. It is true that dredged material comes from water, but the disposal sites for contaminated dredged material can be in bays (covered by the CWA; the Ocean Dumping Act; or the Marine Protection, Research and Sanctuaries Act) or upland sites, where the Resource Recovery and Conservation Act (RCRA) comes into play. But RCRA is not a very satisfactory statute in terms of dealing with on-land disposal of contaminated dredged material.

New York and New Jersey are among the states that have had to struggle with what types of standards should apply. What has happened, to some degree, is that the upland disposal sites have tended to be located in proximity to low-income communities, which brings us back to the question about risk. Who bears the risk when contaminants get handed around? In terms of the regulatory framework, we need to figure out a way of developing standards that can apply in some comparable sense to upland disposal as well as to in-water disposal. When there has been talk about disposing of contaminated material in upland sites, we suddenly start hearing about PCB (or some other type of organic chemical) volatilization, which simply was not an issue with in-water disposal.

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## REGULATORY PERSPECTIVE

Tony MacDonald

I enjoy this opportunity to get the discussion going, because that suggests I do not necessarily need to be fair or even accurate. Accordingly, I am prepared to throw out some thoughts and ideas. If you find my com-

ments a little schizophrenic, it is because I read this report from two different perspectives. When it was being written, I was special counsel and director of environmental affairs at the American Association of Port Authorities. I am currently the director of the Coastal States Organization, representing governors of coastal states, including the Great Lakes states and U.S. island territories, on natural resource management issues and policy matters here in Washington, D.C. As you might

imagine, that makes for a mixed perspective. Some of the things I say may annoy my former employers and colleagues.

I would like to start out by saying this is a great panel. Joe Zelibor, Frank Bohlen, and Don Hayes did a great job of outlining the key issues to be addressed over the next two days, and my fellow panelists have offered their perspectives on these issues. Tom Wakeman wants action, and he wants it now—not surprising coming from someone who has spent most of his life looking at San Francisco Bay and New York Harbor. John Haggard wants more and better information and a better understanding of the problems; a cynic might interpret that as wanting inaction.

Jim Tripp, who represents the environmental community and has been involved in these issues for a long time, wants a little bit of everything. He definitely wants the stakeholders to be involved, as he represents a very broad public. He definitely wants source control; he definitely thinks that technology may be less expensive than it seems to be. He thinks these costs are high, so he is sympathetic with the ports, but he certainly thinks someone (such as John, perhaps) might want to step up and bear some of those costs.

I am here representing the states. In a generic sense, my reaction is to say, “I am not quite sure what I want. You guys work it out.” Therein is the nub of the problem, and perhaps that is why you will get federal reactions and will continue to get these reports. I will respond to the report in part from a state perspective and in part based on my own personal views.

I think Tom’s call for action is great; in general, there is a lot of support for that. The report supports some of his objectives. Although it covers some very broad issues, it is actually a narrow report. It does support and give a scientific imprimatur to some issues that the port community has been espousing for a long time, most notably a greater recognition that source control is important; that in situ management does make sense in many cases and is scientifically and environmentally defensible; and that technology, although we want to look at it, is not a magic wand that will make things go away. One needs to look at this report in the context of when it was developed and the types of problems it was trying to solve. You also need to look at the introduction to the report.

It was enlightening to listen to Frank Bohlen’s discussion of site assessment issues. This was not a report about assessment issues, and it specifically says that it will not address spatial and temporal variations, the definition of clean versus contaminated, and the comparison of bioavailability-based to concentration-based decision making. These issues are all beyond the scope of this report, but they are exactly the types of things that most of the folks here are paid to do on a day-to-day basis. They will continue to be the grist for dis-

agreement among the stakeholder groups. Therefore, we need to address those issues to a degree, but we also need to recognize a couple of other things.

The recommendations in this report are the types of things around which it is easy for people to rally, even though they may interpret them differently. It is not unlike our support for sustainable economic development or sustainable environmental protection, because we all disagree on what those terms mean. We often pretend that we agree on risk-based assessments, but it is a very complicated business. Are we talking about comparative risks or scientific risks? Are we talking about what I am most interested in within the context of decision making—perhaps helping Tom with a decision or John with a decision (or perhaps indecision)?

There is more to risk communication. What do we know that will help the most important stakeholder (i.e., the public) better understand why we take a particular course of action? How do we engage people, such as governors and other state officials, to get more involved? Once we have a better assessment of that, we still may not agree on outcomes, but we are more likely to agree that this is the universe within which we will make decisions. Until we reach that point, I doubt there will be significant progress in this area. I also would like to point out that the people in the audience today have much more knowledge about these issues than even the panelists, and certainly more knowledge about these issues than either the public or the decisionmakers.

In my view, what Dr. Bohlen called the “geopolitical world” is, in many cases, the world in which the decisions get made. In that context, there is a misunderstanding or lack of understanding about the extent to which science, as some of you apply it in your work setting, is comfortable with uncertainty. From a geopolitical viewpoint, science is used to provide certainty for decision making. This is a fundamental philosophical difference that is not addressed by decision makers. They look to you, particularly those of you who are scientists, to provide the “hard science” so that they can make decisions. Meanwhile, you say, “Well, I am not sure, but this is the best we can do with a particular level of statistical confidence.” Most people do not care about the details of quality assurance and quality control, although they want you to have it. My point is that, from the perspective of a state entity, I think we need to address these geopolitical issues up front and recognize both the limits of science and the long-term possibilities. We need to move toward action.

In my view, what is not addressed in this report—and must be recognized as we discuss the recommendations—is the assortment of institutional issues that underlie the decisions. There are real institutional problems, such as the ongoing issue of the respective roles of the USACE and EPA with regard to the management of dredged

material. There are fundamental issues of institutional commitments, ethics, and other things that I think will be more of a problem in the long run. We can discuss the scientific and public policy legitimacy of cost-benefit analysis as it relates to decision making, but we also must recognize that this type of analysis is very different from the USACE's internal cost-benefit considerations affecting whether and how it moves forward with projects. We must consider how the USACE identifies a viable disposal alternative using its internal cost-benefit analysis approach, which is a mind-numbing exercise.

There is a failure to recognize what problem we are trying to manage. What is it that we are trying to manage? Institutionally, the USACE perceives itself more as managing a program, which is dredging harbors and channels. The USACE does not necessarily view this as a problem specifically of managing the sediments; the programmatic approach is much broader. You find within USACE regulations a great deal of forced consistency among the various programs, including inland navigation and flood control, which also creates institutional constraints to solving this problem.

Similarly, the EPA traditionally has focused on managing problems through a regulatory perspective, although increasingly the EPA is divided against itself. It is adopting the rhetoric of watershed management planning, the rhetoric of working with the states on performance partnership agreements to establish cross-programmatic priorities to adopt, at least in a generic sense, some of the recommendations that Tom Wakeman mentioned about environmental controls. Yet the EPA mission is fundamentally regulatory, and most agreements with the EPA have a clause at the end that says, "This is not to give up any of our traditional regulatory authority, but thank you very much for working with us on these issues." These things will continue to plague us as we try to address these issues.

I will conclude by making a couple of general observations. First, with regard to the states, I am paid to say that the states do not perceive themselves as "just

another stakeholder." We have a very significant role to play, not only in regulating but also in trying to manage these problems and respond to the public concerns about these problems. This point is not recognized in the report, which contains inaccurate descriptions of the states' role with regard to water quality certification and particularly state consistency determinations under coastal zone management programs. From the outset, the report takes a federal and academic perspective. I think the decisions on management of sediment, contaminated or otherwise, will be made—and are being made—most effectively at the local level by local decision makers, including state and county governments. For example, the Great Lakes region is way out in front in addressing some of these issues on a regional and state-specific basis. That is where the action will be, and I urge you, when looking at these recommendations, to think in terms of how you can facilitate decisions at that level.

Second, I often see diagrams of the myriad environmental and state controls and regulations and so forth, accompanied by statements about what a problem that is. Presented like that, this issue becomes like the "simple" questions John Haggard presented earlier. They are simple as he presents them, because he knows what answers he wants. When you present those issues in a certain way, they are not complex. But we get what we want; we get what we ask for. At the moment, that is still what the public wants. They want to be able to respond to specific problems, and those regulations are probably the best way to do that.

Despite all the discussion about wanting to respond to things in more broad-based ways, I think our decisions will continue to be driven by media specifics, storm surges, and so forth. We must recognize that reality and deal with it in the short term while also coming up with a long-term scientific and regulatory approach to address those issues. In the long term, that is the real issue for the environment. The real public health issue is the insidious, creeping nature of these problems.

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## LEGAL PERSPECTIVE

Konrad Liegel

I am a practitioner in Seattle, Washington, EPA Region 10, a region of the United States that has had, for more than a decade, a comprehensive, joint federal/state program for managing contaminated sedi-

ments. We in the Northwest like to think we are on the cutting edge of sediment management, whereas others around the country may feel that we are far more on the lunatic fringe.

From the previous members of the panel, we know that contaminated sediments profoundly affect ports, municipalities, industries, and transportation entities that have to work with sediments as part of dredging, source control, natural resource damage, and environ-