Chemical Manufacturers Perspective

Richard Schwer

I represent not only my company but also the Chemical Manufacturers Association, a leading voice for the chemical industry. I will summarize the situation in the chemical industry regarding sediments. I liked Jim Keating's reference to "chemically challenged" sediment, because that is really what we have.

Many of our issues, as most of you know, result from practices of 50 or 75 years ago, or maybe even before that. The main constituents about which we are concerned are metals, such as lead, zinc, copper, and mercury; and a wide array of organics, such as polychlorinated biphenyls (PCBs). Everyone has these types of problems. But there are also fluorinated hydrocarbons, polyaromatic hydrocarbons (PAHs), and so forth that are unique to the chemical industry. The contamination is often on older manufacturing sites located in highly industrialized areas. The companies accept responsibility for both current manufacturing sites and sites that are no longer operating but for which they still have environmental liability and responsibility.

We are very supportive of the approaches taken by the NRC report. We think it points us in the right direction, and that its systematic process for evaluating and addressing sediment problems will lead to sound management decisions, which we all seek. I wanted to emphasize the key points that we pulled out of the report, mostly from Chapter 6, the conclusions and recommendations. These are key in terms of our industry's response to the needs addressed in this report.

First, we feel that three approaches identified in the report are basic to technically sound and effective decision making. Partnership formation is one. We put a lot of emphasis on this too, because we believe that forming partnerships in this day of limited resources is very critical. In this way, we can pool our limited resources and share information that is so important to making sound decisions.

I am disappointed that I have not heard more at this symposium about one partnership that is really exciting and involves the chemical and other industries. The Remediation Technology Development Forum (RTDF) was formed in 1992 by EPA to facilitate public-private partnering to develop cost-effective remediation technology. The participation formats are flexible, ranging from formal consortia to cooperative research and development (R&D) agreements, work groups, and information-sharing groups. The key is to focus on a technology problem that needs to be solved, go about developing a solution, and then publish enough information to give that solution credibility.

The group that we are interested in here is called the Sediments RTDF. It has three basic objectives. One is to develop and evaluate passive, in situ techniques to address contaminants such as PAHs and metals, two constituents that are important to the chemical industry. It also is taking a look at confined disposal facilities. Another objective is to investigate the mechanisms and rates of natural biological degradation and other forms of natural recovery. The third objective is to enhance and develop assessment procedures to evaluate the need for successive remedial activities. This is in line with many of the concerns of the people at this conference. I certainly hope that we can put effort into this, because the RTDF could accomplish a lot.

The two other approaches identified in the NRC report also are key to a lot of what has been said at this symposium. One is early stakeholder involvement. There is no substitute for it. You have to get all of the stakeholders together to gain an understanding of the objectives of the remediation project and get their buy-in. If you do not develop this consensus, you get nowhere in terms of accomplishing the remediation objective. The third approach, also extremely important, is risk analysis, which involves risk assessment, methods to reduce risk to acceptable levels, and communication to improve decision making.

We also focused on remediation technology. The report did an excellent job of describing the pros and cons of the various options; it suggests a reasonable decision-making hierarchy, starting with a review of the possibility for natural recovery to be effective in reducing the risk to reasonable levels within an acceptable time. This is the first place to look, as far as we are concerned. Capping is the next option to consider for situations in which it is appropriate and will hasten and improve opportunities for risk reduction. We believe that the last alternative to look at, if the first two are not appropriate, is dredging. When this is necessary, dredging should be done in a surgical manner to remove only the material that absolutely must be removed to reduce risk. Please note that we are talking about environmental dredging, as opposed to navigational dredging.

Where do we think the R&D emphasis should be placed? These are issues particular to the chemical industry. We understand that we have to go ahead, make decisions, and do the best job we can in terms of resolving real environment problems by making optimal use of the technology. However, we need to keep pushing the envelope to develop new and better approaches, which hopefully will be available in the not-too-distant future.

Dredging can continue to be an important option, but we need to develop sound dredging approaches that are more precise, more cost-effective, and environmentally sound. Dredging often involves large volumes of material, so we need to develop cost-effective treatment technologies. I was encouraged to hear some of the earlier presentations indicating that less costly treatment-combination technologies are on the horizon. That is important. Finally, site assessment is where it all starts, because these are site-specific problems. We need to improve site assessment techniques.

I want to leave you with recommendations on where to focus future efforts. Although we believe that sustainable management and beneficial use are very important, we would keep focusing on risk analysis. Our three recommendations all are geared in that direction. We need to develop risk analysis techniques that have broad acceptance across a broad array of stakeholders and that lead to decisions. A lot of us give lip service to risk analysis, but when it comes down to making a decision, how often does that carry the day? Maybe this approach lacks credibility in terms of whether it will get us where we want to go. Some comments at this symposium certainly indicate concern about the present techniques.

We need to quantify the relationship between contaminant availability and the real risk to people and the environment. I appreciated the presentation by John Connolly about the possibility of developing a prognostic model. I think we need these types of models to look at the cause-and-effect relationship, which is key. Monitoring is also important. If we want to give credibility to the long-term risks, capping technologies, and the effectiveness of natural recovery, we must do the long-term monitoring that can show us what happens.

Forest Products Industry Perspective

C.L. (Skip) Missimer

Before getting to recommendations, I would like to do a little storytelling. Contaminated sediments are not a pervasive concern in the forest products industry, either in the forestry or wood products segments of the industry or in the pulp and paper segments. That is not to say, however, that individual mills and companies have no specific sites where they have issues. Rachel Friedman-Thomas spoke about a site contaminated with mercury from a pulp and paper facility, and several speakers have referred to the sediment capping project that took place outside the Simpson Tacoma mill in Washington State.

However, we are interested in a few issues. Perhaps the single largest contaminated-sediments issue in the forest products industry involves the manufacturing and recycling of carbonless copy paper. Between 1954 and 1971, carbonless copy paper was manufactured using Aroclor 1242 as the primary constituent of the ink-containing capsules on the back of the sheet. Mills that recycled waste paper and converted trimmings containing carbonless copy paper or off-spec carbonless copy paper were not aware until later that these papers contained PCBs. Therefore, PCB contamination from recycling operations is a concern at three or more Comprehensive Environmental Response, Cleanup, and Liability Act (Superfund) sites and one other large site that is not under Superfund.

Given that this recycling activity ended more than 25 years ago, the overwhelming majority of sediments containing PCBs from recycling have been covered with more than 25 years of "uncontaminated" sediments. At these sites, therefore, we see a sediment profile showing low-to-moderate concentrations of PCBs at depths of 1 to 3 ft (.3 to .9 m), with very low concentrations of PCBs near the surface, usually less than 5 parts per million. Furthermore, the tissue monitoring conducted since the mid-1970s reveals an unabated decline in fish tissue concentrations of PCBs. For example, lipid-normalized tissue concentrations in fish from the Fox River near Green Bay, Wisconsin, are decreasing by 50 percent every five to seven years for most species.

Most of the contaminated sediment sites associated with the forest products industry are not in ports and waterways, where navigational dredging is a primary objective. Because these sites are located in nonnavigational waters, the primary objective should be risk reduction. This raises several questions concerning human health and ecological risk. For example: What are the true human health and ecological risks currently at these sites? How are these risks changing over time, and what is the effect of natural recovery on reducing risks? I echo what John Connolly said about modeling, suggesting that we can use models to answer this question.

Other questions include the following: Are there remedial actions (e.g., mass removal, hot-spot removal, capping) that will accelerate significantly the current rate of natural recovery and lower the risk, or does it just make us feel better because we did something about it? What are the risks associated with mass removal? Are those risks greater or less than those associated with other remedial activities, including natural recovery?

Another question: What are the collateral risks associated with mass removal? These risks range from the volatilization of PCBs out of acid-watering facilities to