PROGRAMS TO ADDRESS CHALLENGES: WHERE WE ARE, WHERE WE NEED TO GO, AND HOW TO GET THERE

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INTRODUCTION

During the Application of Waste Remediation Technologies to Agricultural Contamination of Water Resources Conference, a forum was held to give participants an opportunity to examine priority issues identified during the course of the conference. Discussion focused on identifying research and educational needs to address barriers to using remediation approaches, methods of cooperating and communicating to solve problems, and funding sources.

To encourage discussion and participation by as many attendees as possible, the forum began with a short introduction of the goals of the event and the format, and then moved into small group discussions of prepared questions. Panel members were dispersed among the small groups to act as facilitators and recorders of group discussions. After spending 40 minutes in small group discussion, participants reconvened into a large group that focused on sharing thoughts and insights from the small groups, panelists, and general assembly. A summation of these discussions is presented below.

QUESTION ONE

Participants were asked to discuss information gaps with regard to implementing approaches discussed at the conference, topics not covered by the conference agenda, research areas, and workshops and technology transfer needs.

Topics Not Addressed by Conference Program

Forum participants identified several were not represented at the conference but that should have been. Chief among these were agricultural producers and representatives of the U.S. Department of Agriculture. Attendance and content could have been more oriented toward these groups' issues.

Participants identified several issues of relevance not addressed during the conference. These included pesticide residue issues, endocrine disruptors, feed additives, antibiotic use, fumigation of exotic and imported foods, labeling of agricultural products, arsenic and other small town issues driven by federal mandate, methods to identify parties responsible for contamination, sustainable farming and alternative

practices, such as low technology agriculture or organic products, methods to prevent contamination, and methods to deal with point sources for concentrated animal feedlot operations and other sources. Participants also questioned the conference's emphasis on Superfund cleanup, given that agricultural sites may face different issues than sites on the National Priorities List.

Research Needs

Participants identified the following research needs related to cleaning up sites contaminated with agricultural wastes: manure management processes and remediation, including dealing with point sources, degradation pathways, pathogens, and antibiotic resistances; methods to identify contamination sources; economic cost benefits focusing on costs of clean water and human health; and risk, toxicity, fate and detection limits for nitrogen and pesticides. Participants also identified a need for a basic research program on issues surrounding contamination from agricultural wastes.

Workshop and Technology Transfer Needs

According to forum participants, there is a great need for a repository of information on cleaning up sites contaminated by agricultural waste. A database or national clearinghouse needs to be established, which should also contain case studies. Participants also felt there was a need for a program like SITE with follow-through. There also needs to be a way to filter research to the applicators, as well as funding for small quantity agriculture from USDA with the $\$2x10^9$ farm bill. Funds are also needed for small wastewater treatment plants.

Barriers to Implementing Approaches

One of the barriers to implementing the approaches presented at the conference was cost. Participants felt that solutions at agricultural sites need to be sensitive to cost since the responsible parties at these sites aren't large corporations, as with many Superfund sites, but are state cleanup programs or small businesses. Because of this, good information on remediation strategy costs is essential.

Another barrier is the inability to identify parties responsible for the contamination. Because a significant portion of contamination at agricultural sites is from non-point source pollution, responsible parties may not be easily identified. Therefore, it's difficult to require remediation from a sole source.

It was also noted that it's difficult to persuade others that contamination needs to be addressed when the USDA has not addressed their liabilities at contaminated sites.

Other barriers identified included detection-limit issues, a need for risk and toxicology information, the inability of small towns to achieve maximum contaminant levels (MCLs), enforcement of total maximum daily loads (TMDLs), and the need to know what drives cleanup for nitrates and other contaminants.

There was also concern regarding the reliability of technologies and whether they could be applied cost-effectively to agricultural sites.

QUESTION TWO

Participants were also asked to discuss current and developing programs in order to address issues and brainstorm on ways to collaborate and communicate with each other in solving agricultural remediation problems.

How/who to Collaborate With

Participants discussed developing a team approach to collaboratively resolve issues related to agricultural contamination. Collaborators should include universities, regulators, extension programs, consultants, community representatives, technology developers, and responsible parties. Private companies should be involved in research. There is a gap between pure research and practical application, which could be addressed by team approaches and partnerships. Participants also noted that bankers and underwriters are key stakeholders, and identified a need for legal analysis of responsibility and liability relief tools.

In addition, participants felt that team approaches should also be used at demonstration projects for new technologies. Consultants need education on new technologies, and the technology's innovators should also be involved at the demonstration level. Engineers are reluctant to present new technologies that have not been thoroughly demonstrated. Demonstration projects may be present a role for extension programs and universities.

Additional funds are needed to promote introduction of innovative technologies. Innovative demonstration projects could be funded through state water programs or water funds, but one problem is finding sites. The Interstate Technology Regulatory Council (ITRC) could also benefit by expanding into agricultural issues.

How to Communicate

Communication is a challenging issue. There are many cleanup projects and information on them does exist, but it's difficult to retrieve and access it. Participants stressed the need for a clearinghouse for information related to agricultural remediation. In addition, a funded repository for information on concentrated animal feedlot operations is needed.

It was noted that distributing information through Internet sites would be very useful, but shouldn't be the only method of providing information and communicating about these issues. Conferences and trade shows are important communication pathways for private industry. ITRC and the Remediation Technology Development Forum (RTDF) should be involved in communication efforts on these issues. The Hazardous Substance Research Centers (HSRCs) also need to focus more on agricultural remediation.

A community-based education and awareness program should be developed. It should emphasize the public cost of cleaning up agricultural contamination, with the hope that the public would be moved to political action or pressure to address these issues.

QUESTION THREE

Participants discussed possible sources of funding for addressing needs identified during the conference and forum.

For Sites

Three states have agricultural remediation funds (ARF) to assist with cleanup costs. The funds for these programs come from fees, taxes, and licensing costs for pesticide, grain storage, and fertilizer providers and users. All three states with ARF programs have had funds removed to meet other state needs. In Kansas, not many people access the fund. Kansas also has a low-interest loan program, which has also not been utilized.

EPA has a program which could provide funds for projects at contaminated sites. The Regional Geographic Initiative Fund/Environmental Partnership Program provides funding for results-based, community-based projects. Each region has $650,000 per year, with awards ranging from $20,000-$80,000 per award. In addition, potentially responsible parties can use a portion of their fines or judgments as Supplemental Environmental Projects. There needs to be a nexus between the violation and the project.

The Environmental Quality Incentives Program (EQIP) may be a source of potential funds. EQIP is a voluntary USDA conservation program that promotes agricultural production and environmental quality as compatible goals. Farmers and ranchers may receive financial and technical assistance to install or implement structural and management conservation practices on eligible agricultural land.

Incentives are needed to stimulate remediation and waste management and minimization on a voluntary basis. These expenses should be viewed as a cost of doing business.

In order to use Superfund money for agricultural remediation sites, a pilot study is needed. Use of innovative technology at these sites may stimulate EPA funding.

Partnerships with others, such as consultants or universities, could provide additional pathways to funding for sites. Some factory farms, such as Premium Standard Farms, are becoming more proactive in addressing waste issues. We should also look to leverage partnerships and involve community resources in projects. Social, economic, technical, and scientific issues must all be addressed in order to effectively solve environmental problems.

For Research

Agricultural contamination issues are Resource Conservation and Recovery Act (RCRA) issues. Work is needed to get agricultural contamination issues addressed in this manner.

Mission statements for federal agencies should be amended to address contamination issues. The U.S. Department of Agriculture is a polluter but is not funded to address clean-up issues. Agricultural remediation and waste management needs to be large part of budgets and missions for university research and federal agencies. USDA's agricultural contamination cleanups should be funded from subsidies. A percentage of subsidies could be earmarked for research and remediation.

SUMMARY AND NEXT STEPS

At the close of the forum, participants interested in serving on a working group to address issues raised were invited to submit their names and contact information. As a result of this forum, the Agricultural Remediation Work Group has been formed. Goals of the work group are to advance the process of cleaning up contaminated agricultural sites in a cost-effective manner, and to establish preventative measures and best practices to prevent contamination. This group will share information through conference calls and a listserv. Those interested in participating should contact the authors for more information.