

Forum Session:

Open Exchange Among Participants

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FORUM SESSION: Open Exchange Among Participants

Wednesday, September 1, 1999

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Facilitator: M. Elizabeth Daniel - USGS

An open forum was held at the close of the Nutrients Session to allow a free flow of information, questions, and discussion. Approximately 120 attendees participated in the 2-hour Forum Session. The forum did not restrict or program any topics of discussion, but five questions (listed below) were posed to meeting attendees. Responses to these questions and major points in the ensuing discussion are summarized below in italics. These comments express the opinion of the participant and do not represent a position of the U.S. Geological Survey.

1. What are the major scientific questions/topics lacking information that could significantly add to the overall understanding of the environmental implications of AFOs?

- **Wildlife and habitat health: environmental assessment**
 - *Characterization and measurement of the occurrence and magnitude of nutrient, pathogen, and pharmaceutical concentrations and their relation to AFOs and effects on wildlife (amphibian, fish, bird, mammalian) health and habitat viability.*
 - *Effects of specific AFO management practices (such as feed storage, feed amendments, and lagoons for waste storage) on the health and habits of migratory birds and other animal species.*
- **Manure and other animal-residuals management**
 - *Study of the efficacy and efficiency of various lagoon- and other AFO manure-management strategies and the potential risk of surface-water or ground-water contamination.*
 - *Research on use of solar or wind power for aerobic or other types of treatment of animal residuals.*
 - *Assessment of and research on handling animal carcasses.*
- **Pathogens and other microorganisms**
 - *Environmental assessment – Microbiological profiles of surface water and ground water receiving AFO wastes.*
 - *Research – Antibiotic resistance in pathogens associated with AFO solid/liquid manure in soil, air, and water bodies.*
 - *Methods development – Develop standardized methods for detection and monitoring of source, transport, and fate of microorganisms.*

- **Pharmaceuticals (antibiotics, hormones, endocrine disruptors)**
- Environmental assessment – *Occurrence, distribution, concentration, and loading of animal pharmaceuticals in streams, ground water, soil, and the atmosphere.*
- Research and methods development – *Analytical methods for identifying pharmaceuticals at environmental concentrations.*
- Methods development – *Standardize field methods for monitoring source, transport, and fate of animal pharmaceuticals.*
- **Nutrients and trace elements**
 - Methods development – *Methods for standardizing the identification of nutrient/trace element sources to distinguish among land uses.*
 - Research – *Export/transport fluxes and cycling processes of nutrients and trace elements from AFOs to streams, ground water, air, soil, and vegetation.*
- **Air quality**
 - Methods research and development – *Scientific methods to characterize and quantify gaseous emissions from AFOs.*
 - Environmental assessment – *Effects of gases and other emissions from AFOs on air quality and human and animal health.*
- **Integrated, multidiscipline site studies: environmental assessment**
 - Holistic approach at multidiscipline sites – *Multidiscipline data collected at the same location can be used to understand contaminant transport processes that link biology, microbiology, hydrology, chemistry, geology, and the atmosphere.*
 - Tools – *Development and application of new or existing tools to understand sources, sinks, and processes governing contaminant mobility, concentration, and toxicity: for example, use of isotope geochemistry, ribotyping (RNA and DNA) of microorganisms, analysis, computer models, organic and inorganic tracers.*
 - Human health – *Incorporate in environmental studies the data-collection strategies needed to address human health issues.*
 - Economics – *Economic data and analysis should be a component of environmental and human health studies.*
- **Pollution treatment and prevention: methods research and development**
 - *Effluent control and treatment.*
 - *Research and development of effective remediation programs for existing large-scale AFO-generated pollution of ground water and soils.*

2. Can you provide examples* of successful interagency (State and Federal) and government/ private collaborative efforts concerning AFOs?

- California:

The California Dairy Quality Assurance Program (CDQAP) that trains dairymen in environmental stewardship was cooperatively developed by the California Department of Food and Agriculture, various State, Federal, and regional agencies, and the University of California-Davis.

- Florida:

The Florida Department of Environmental Protection and the USGS have worked together to identify the potential for environmental degradation from Florida's dairy, poultry, and pig industries.

* Although these were the only examples described in the open Forum Session, several other examples were mentioned in the course of the meeting, citing collaboration with university researchers and among agencies such as the USGS, Centers for Disease Control and Prevention (CDC), U.S. Environmental Protection Agency (USEPA), various agencies within the U.S. Department of Agriculture (USDA), various State environmental and health and natural resources departments, and the U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), and National Forest Service (NFS).

3. What do you see as inhibiting collaborative efforts on AFOs?

▪ Communication issues

- *Poor communication among scientists doing similar work.*
- *Lack of networking to include different areas of expertise.*
- *Lack of awareness of expertise within and among agencies.*
- *AFO operators tend to mistrust government and have a perception that pro-environment agendas necessarily result in anti-business regulation.*
- *Agricultural trade groups fear government intervention and environmental controls. The Agriculture/Dairy industry, for example, has enormous economic and political clout that can target scientific efforts if such efforts have not been adequately explained.*
- *Negative attitudes/mistrust/misunderstanding among industry, the public, and government agencies is prevalent and problematic. Outreach and education efforts are inadequate.*
- *The USEPA Clean Water Act language requiring "no discharge" is inhibiting innovative solutions. The USEPA should work with the agricultural industry when drafting sections of the Clean Water Action Plan (CWAP).*

▪ Lack of funding

- *Funding barriers exist across agency/institution lines.*
- *Competition for money among researchers both in and out of government.*
- *Restrictions on funds by the USEPA and by State regulations.*
- *More information and education is needed on the real and complete economic costs of AFOs.*

4. What changes or improvements do you recommend to increase collaborative partnerships among government and non-government interests in AFOs?

- *Build trust through partnerships among individual scientists, managers, regulators, and operators, instead of with groups/agencies who are associated with competing agendas or positions. Mistrust can be avoided when the core of collaboration is between scientists dedicated to understanding the issues and the systems being studied.*
- *Try involving environmental managers on the State level.*
- *Get early involvement of AFO/CAFO owners and operators on environmental or human-health issues that will require scientific investigation and possible regulation. Communicate that it is not the agenda or desire of government agencies, nor is it in the national interest, to put owners and operators out of business, but rather to help them operate in an environmentally friendly way.*
- *Develop incentive and reward programs for operators who implement practices to protect the environment; encourage collaborative efforts between AFO operators and scientific investigators; offset economic loss from conscientious efforts to implement environmentally friendly practices.*
- *Policies regulating agricultural industries should follow the same regulations for accountability as that dictated for other industries.*
- *The USGS should redouble efforts to achieve the state-of-the-art in microbiological sampling and to incorporate microbial data collection and analysis as routine components of water-quality studies.*
- *Disseminate the information presented at this conference to members of the industry as well as to other stakeholders.*
- *Work toward getting support from industry groups and advocates (such as the fast-food industry, Pork Producers Association, Cattlemen's Association, National Association of State Departments of Agriculture).*

5. Where do we go from here?

- **Follow-up workshop(s) and/or training**
 - *Continue to periodically hold meetings such as this one. Additional topics should include mortality, protein recovery, and rendering issues.*
 - *As part of a future workshop, hold a session on medical issues and how environmental studies can help in collecting the data needed to make assessments with regard to human health.*
 - *Develop primers, courses, and forums to help learn about and address subtopic issues, and enhance interdisciplinary exchange.*
 - *A USGS course on microbial source tracking would be very useful.*
 - *A forum is needed on tracer technology.*

- **AFOs e-mail list and web site** – Develop an e-mail list and/or maintain the current web site for updates on AFOs activities and to promote information sharing and dialog. Publish the proceedings from this meeting on the web site and provide links to data sources.
- **AFOs interest group** – An AFOs multidisciplinary interest group could be established, modeled after that of the USGS-sponsored Abandoned Mine Lands interest group. This could provide a foundation for trust building.
- **Analytical methods** – The USGS should keep an up-to-date web site that provides information about the analytical methods that are approved and that are being developed for emerging contaminants (such as pesticides, pesticide degradation products, antibiotics, hormones, mercury, arsenic, and selenium), the method detection limits, and who is developing the method or providing the analytical services. This should include USGS work being done by its National Research Program scientists; Water, Geology, Biology, and Mapping Division scientists; as well as that of its National Water Quality Laboratory.
- **Multidiscipline collaboration and outreach**
 - *Identify 2 to 3 geographic study locations that could be used as a point of focus and collaboration for a consortium of stakeholders, including government scientists. Possible locations with monitoring infrastructure and/or ongoing studies: Delmarva Peninsula paired watersheds; the Arkansas-Savoy watershed study area; Shoal Creek, Missouri, investigation; or a National Water-Quality Assessment (NAWQA) Program study site.*
 - *Use the U.S. Department of the Interior National Irrigation Water Quality Program as a model to set up a similar effort for CAFO/AFOs.*
 - *Begin efforts to jointly fund studies among agencies specializing in different and complementary areas of expertise.*
 - *Multi-agency collaboration is needed to identify problems associated with AFOs and the actions needed to address the problems; for example, work with the U.S. Food and Drug Administration to help prevent problems resulting from feed additives.*
 - *Implement the suggestions listed in question 4 (above).*
 - *Work for funds, legislation, and public awareness that will bring about a change in attitudes between public and private sectors. Focus on outreach education for local politicians and the public, showcasing specific areas of expertise (for example, hydrologic modeling).*
- **Science and technology**
 - *Develop contaminant remediation technologies and prevention strategies.*
 - *Develop a multi-agency plan to address the scientific questions and needs identified in question 1 (above).*
 - *Do not reinvent/re-research. Examine the literature and learn from investigations, research, and practices implemented in Asia and Europe. For example, there is a huge database and wealth of information from the 7th International Symposium on Animal, Agricultural, and Food Processing Waste (American Society of Agricultural Engineers).*

- **Policy**

- *A mechanism, such as Superfund, should be considered by the regulatory agencies to address remediation of sites that already are heavily impacted.*

