

principles are effectively translated into practice.

2. The Agency's Response to the Survey Category

How EPA Plans To Address NRC Survey Recommendations

The Agency believes that a comprehensive survey of pollutants in biosolids may provide useful information, but it is not likely the most pragmatic survey option available at this time. EPA has developed a proposed survey approach based on experience gained from the 1988 National Sewage Sludge Survey (NSSS), limitations of available analytic methods, knowledge of effects and routes of exposure, and suggestions by the NRC, among other factors (see Planned Strategy for the Survey Category below). The 1988 NSSS was ultimately limited in utility by shortcomings in available analytical methods and limited information of pollutant effects and/or means of exposure. While some advances in these areas have been made since 1988, these same limitations still exist for many pollutants, especially for pathogens and many of the new or emerging chemicals identified by the NRC. Therefore, EPA has concluded that a less comprehensive, more targeted, survey, to help fill data gaps and inform decisions regarding further studies, may be more useful to address uncertainties highlighted by the NRC. Information developed by national and international experts on pathogens and toxic chemicals may help produce a better informed survey design. The Agency believes that using such information may produce more valuable results than conducting a comprehensive national survey at this time. EPA is first planning to develop and initiate a targeted survey after considering the following sources of information:

Available data: The Agency has conducted a biosolids literature search and is reviewing the information for relevant data on chemicals and pathogens in biosolids. The literature search includes topics related to a survey of chemicals and pathogens in biosolids, management practices, and treatment efficacy. This information obtained may also assist EPA in responding to other NRC recommendations. For example, the Agency plans to use available information to prioritize future research and, if necessary, modify biosolids management practices to reduce risk.

Other sources of data include studies conducted by EPA regional offices, States, and universities. For example, EPA Region 8 is conducting a long-term

study of biosolids addition to soil and the potential effects on soil microbiology. The University of Arizona is conducting research on airborne pathogen exposure at various times and distance from biosolids application sites. Within the next six to nine months, the Agency plans to review and assess such studies for their contribution in determining the potential for exposure and adverse human health impact from land-applied biosolids.

Studies: Ongoing EPA studies address many technical uncertainties related to pollutants in biosolids. For example, the adequacy of current analytical methods for selected priority pathogens and the development and/or validation of new methods are also being studied. In addition, field studies are being used to provide site-specific occurrence data.

While study emphasis is being placed on pathogens to address areas of uncertainty and public interest, selected chemicals are also being addressed to help determine significant issues and identify information gaps that remain to be addressed in these areas.

Planned Strategy for Designing a Targeted Survey

During the next fiscal year the Agency plans to initiate or continue Studies devoted to:

1. Methods development and/or validation studies for enteric viruses and helminth ova (see Methods Development).
2. Continuation and/or expansion of field studies to determine environmental contaminant occurrence at selected sites (see Methods Development and Pathogens Categories).

In addition, during the next 18 to 24 months, EPA is proposing to design a targeted approach for a survey of pollutants that occur in sewage sludge. New and existing information from sources such as relevant published pollutant occurrence and effects data, State occurrence databases, and input received during the public comment period will be used to help in the development of the proposed survey.

To ensure the survey provides meaningful results and the effective use of limited resources, EPA is considering restudying some of the pollutants that were studied in the 1988–1989 NSSS. EPA is also considering including some new and emerging chemicals, taking into account the availability of adequate analytical methods and their associated analytical costs. As a result, the Agency may only be able to measure a limited number of pollutants.

B. Exposure

1. Summary of Exposure NRC Recommendations

The NRC made recommendations on how current exposure information and updated conceptual exposure models can be used to update and strengthen the scientific basis of the chemical and technology-based pathogen standards. This category also includes recommendations to evaluate exposure for the reasonable maximum exposure (RME) individual, updating fate and transport models that might affect exposure estimates, and conducting pre-planned exposure studies under certain situations for specific exposure groups.

2. The Agency's Response to the Exposure Category

How EPA Plans To Address NRC Exposure Recommendations

Understanding human exposure to chemicals and pathogens, including the concentrations and fate and transport through important exposure pathways, is key for risk assessments supporting the Part 503 rule. As discussed below in the Risk Assessment category, the Agency plans to use a risk assessment framework to evaluate the priorities for reassessing or updating underlying components (including exposure assumptions) of previously conducted risk assessments. The Agency plans to use this information to determine if new exposure and risk calculations may be warranted for pollutants not previously assessed. Such an evaluation would include a review of the exposure information used in the Round 1 and Round 2 rules in light of new exposure information.

To conduct this activity, the Agency plans to first collect and review currently available exposure information from published literature, Federal and State databases, the NRC report, and other relevant sources. The Agency anticipates that some of the NRC recommendations regarding exposure may be addressed in newly available information, while others may require completion of ongoing studies. The Agency plans to review currently available exposure information to help identify data gaps and to inform decisions about future risk assessments and the need for additional exposure studies.

In the mid-1990's, EPA conducted research on the land application of biosolids to disturbed and contaminated sites requiring reclamation or remediation. These studies, which focused on the ability of biosolids to help improve soil properties and