

to reduce or eliminate pathogens in sewage sludge and to reduce vector attraction. For incineration in a sewage sludge incinerator (SSI), EPA establishes limits for five metal pollutants in sewage sludge fired in a SSI and adopted standards under the Clean Air Act for two additional metal pollutants. The Agency has also established performance standards for SSIs through an operational standard for total hydrocarbons or carbon monoxide emissions that controls numerous organic compounds found in the emissions of sewage sludge incinerators. Part 503 also allows disposal of sewage sludge in a municipal solid waste landfill that meets the requirements of 40 CFR part 258. In addition, the final rule requires monitoring, record keeping, and reporting. Standards apply to publicly and privately-owned treatment works that generate or treat domestic sewage sludge and to anyone who uses or disposes of sewage sludge.

The Part 503 Standards consist of seven elements designed to work together to protect human health and the environment. These elements are:

- (1) General requirements,
- (2) Numerical limits for certain pollutants,
- (3) Management practices,
- (4) Operational standards,
- (5) Monitoring,
- (6) Recordkeeping, and
- (7) Reporting.

An example of a general requirement in the standards is the provision, applicable to all land-applied sewage sludge, for sewage sludge preparers to obtain information on the nutrient content of the sewage sludge and pass this information to land appliers so that the land appliers can comply with the requirement to apply the sewage sludge at a suitable agronomic rate. Numerical pollutant limitations for certain pollutants in land-applied sewage sludge are expressed as pollutant concentrations in sewage sludge or as cumulative or annual loading rates of pollutants applied on receiving soils. Management practices prescribe how the sewage sludge is to be placed on the land or otherwise managed in the environment. For example, one management practice prohibits the application of sewage sludge to land closer than 10 meters from waters of the United States. Operational standards are technology requirements such as process descriptions and performance requirements to reduce or eliminate pathogens from sewage sludge and to reduce vector attraction. These technology-based requirements, together with required crop harvesting restrictions and site controls, constitute

the approach for the control of pathogens in sewage sludge.

Under part 503, monitoring of chemical and microbial pollutants in sewage sludge and certification of certain actions by the preparer or land applier must be performed at a frequency commensurate with the annual amount of land-applied sewage sludge. Sewage sludge preparers and land appliers must keep records of these monitoring and certification activities. Finally, sewage sludge preparers and land appliers must report this information to the permitting authority (EPA or States authorized to administer the program) at least annually.

EPA has amended part 503 several times since its initial publication in February 1993. Following promulgation of the Round One rule, several petitions were filed that challenged various aspects of the rule. In one petition, mining and chemical concerns successfully challenged the land application molybdenum limits. EPA amended the numerical standards for molybdenum to delete the cumulative loading rate, annual loading rate, and the pollutant concentration in sewage sludge to be land-applied. 59 FR 9095 (February 25, 1994). The Agency retained the ceiling concentration value for molybdenum. Also, in the same **Federal Register** notice, EPA added to the sewage sludge incinerator requirements continuous monitoring of carbon monoxide as an alternative to continuous monitoring of total hydrocarbons. In addition, the court remanded several of the land application requirements as a result of petitions for review challenging various other land application standards (*Leather Industries of America v. EPA*, 40 F.3d 392 (D.C. Cir. 1994)). EPA deleted all numerical standards for chromium in sewage sludge to be land-applied and adjusted the limit for selenium as a result of that decision. 60 FR 54764 (October 25, 1995). In August 1999, EPA amended part 503 to make a number of technical amendments, provide regulatory flexibility, and make the sewage sludge incinerator standards self-implementing. 64 FR 42552 (August 4, 1999).

For a detailed discussion of the part 503 rule, see *A Plain English Guide to the EPA Part 503 Biosolids Rule (1994)*. A copy of the Plain English Guide is available at the EPA Web site at <http://www.epa.gov/owm/mtb/biosolids/503pe/index.htm>.

III. What Is the Purpose of Today's Notice?

In today's **Federal Register** notice, the Agency describes its final action plan to

address the NRC recommendations. In addition, EPA is stating the final results of its review under section 405(d)(2)(C) of the CWA and is identifying 15 additional toxic pollutants in sewage sludge that will be further evaluated for potential regulation. As described later, EPA has considered public comments and other factors in developing its action plan and in identifying additional toxic pollutants in its review of existing regulations under section 405(d)(2)(C).

IV. What Was EPA's Charge to the National Research Council?

EPA asked the NRC to evaluate the scientific basis of EPA's current regulations and standards for chemical pollutants and microbial pollutants (pathogens) in sewage sludge that is land-applied. Specifically, EPA asked the NRC to focus on the adequacy and appropriateness of the risk assessment methods and data that the Agency used in setting regulatory requirements to protect human health. The NRC convened the Committee on Toxicants and Pathogens in Biosolids Applied to Land ("the Committee"), which conducted the evaluation and prepared a final report. The Statement of Tasks included the following:

1. Review the risk assessment methods and data used to establish concentration limits for chemical pollutants in biosolids to determine whether they are the most appropriate approaches.
2. Review the current standards for pathogen reduction or elimination in biosolids and their adequacy for protecting public health.
3. Explore whether approaches for conducting pathogen risk assessment can be integrated with those for chemical risk assessment.

The April 9, 2003, notice (68 FR 17379) contains additional details regarding EPA's charge to the NRC.

V. What Were the National Research Council's Major Findings and Recommendations Concerning Land Application of Sewage Sludge?

The NRC Committee concluded that "There is no documented scientific evidence that the part 503 rule has failed to protect human health. However, additional scientific work is needed to reduce persistent uncertainty about the potential for adverse human health effects from exposure to [sewage sludge]." The Committee recognized that land application of sewage sludge is a widely used, practical option for managing the large volume of sewage sludge generated at waste water treatment plants that otherwise would