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Sewerage Agencies

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January 30, 2004

Robert Bastian
Senior Environmental Scientist
U.S. Environmental Protection Agency, 4204M
1200 Pennsylvania Avenue, NW.
Washington, DC 20460

VIA ELECTRONIC MAIL

Re: *Availability and Solicitation of Public Comments on Interagency Steering Committee on Radiation Standards' Reports on Radioactivity in Sewage Sludge and Ash, 68 Fed. Reg. 66503 (November 26, 2003)*

Dear Bob:

The Association of Metropolitan Sewerage Agencies (AMSA) appreciates the opportunity to provide comments on the reports prepared by the Sewage Sludge Subcommittee of the Interagency Steering Committee on Radiation Standards (ISCORS) relating to radioactivity in sewage sludge or biosolids and ash (68 *Fed. Reg.* 66503; November 26, 2003). As you know, AMSA and its nearly 300 member publicly owned treatment works (POTWs) have intently followed the activities of the Sewage Sludge Subcommittee for the past several years. AMSA understands the level of effort that went into developing these documents and appreciates the level of involvement and cooperation accorded to the POTW community in the development process.

AMSA's comments focus primarily on the third document released by ISCORS, *ISCORS Assessment of Radioactivity in Sewage Sludge: Recommendations on Management of Radioactive Materials in Sewage Sludge and Ash at Publicly Owned Treatment Works*, as it is likely to have the most direct impact on POTWs. Generally, AMSA believes the document is well written and covers the critical aspects that POTW operators need to understand in dealing with or assessing the level of radioactive materials in their biosolids. AMSA does, however, have a few specific concerns about the recommendations document as outlined below.

1. Current Guideline Level of 10 mrem/year is Overly Conservative.

The draft document recommends that where the estimated dose from all radionuclides exceeds 10 mrem, the POTW operator should consult with their state radiation protection agency. The document notes that this “conservative estimated dose” is provided solely as a recommendation for when the POTW operator should seek further consultation and that it is not a limit above which certain actions would be required. While AMSA supports providing POTWs guidance as to when further consideration is warranted, such a level is too conservative and could have major implications for POTWs.

A preliminary review of the results presented in the ISCORS document *ISCORS Assessment of Radioactivity in Sewage Sludge: Radiological Survey Results and Analysis*, indicates that elevated radioactive concentrations are primarily from naturally occurring materials. These natural materials are present in the POTW’s local environment and enter the waste treatment system from a variety of uncontrollable sources. Because of these circumstances, AMSA considers it essential that any guideline be no more restrictive than current thinking regarding residual radioactivity.

AMSA notes that in 10 CFR 20, Subpart E, the Nuclear Regulatory Commission (NRC) established a level of 25 mrem/year to designate a decommissioned facility suitable for unrestricted use and believes this level would be more appropriate as a screening level for biosolids operations.

In promulgating the 25 mrem/year standard for decommissioned facilities (*Fed. Reg.* 39058, July 21, 1997), the NRC stated that there were three broad considerations for the rationale in selecting the appropriate limit. The first two related to health and safety, i.e., level of risk and need for a constraint below the 100 mrem/year public dose limit of 10 CFR 20. In fact, further examination of the regulatory history behind the 25 mrem/year standard reveals that NRC initially considered a value of 15 mrem/year, but ultimately concluded that that level was too conservative. (*Fed. Reg.*, A.2.2.2) The NRC states that the risk associated with the 25 mrem/year dose is at the high end of the range suggested by EPA but lower than the NRC’s public dose limit. Furthermore, the NRC states that given the low potential for multiple exposures to the critical group, 25 mrem/year provides adequate margin to the public dose limit, 100 mrem/year.

In conclusion the NRC states that the 25 mrem/year dose level “appears reasonable from the standpoint of providing a sufficient and ample margin of safety in protection of public health and safety.” (*Fed. Reg.*, A.2.3.1)

AMSA further believes that the conservative nature of the exposure scenarios and assumptions, as outlined in detail in the Dose Assessment document, serves to compound the conservativeness of the 10 mrem/year level. Specifically, AMSA is concerned with:

- The assumption that 100% of the milk and meat consumed by the On-Site Resident are produced onsite.
- The parameter values used in the Biosolids Loading Scenario for the building height (2.5 m), the biosolids density (1.52 g/ cm³), and air exchange rate (1.5 per hour) which strongly influence the estimated radon exposures and would not be representative of the conditions at

most POTWs. For example, biosolids densities are typically closer to 1 g/cm³ and in an enclosed building used for biosolids storage and loading a significantly higher air exchange rate would be required to deal with odor and gas accumulation issues. The use of more realistic parameter values would result in significantly lower estimated radon exposures. Additionally, the use of a less conservative value for the biosolids density would significantly reduce the dose source ratios for external exposures associated with this scenario.

Furthermore, another layer of conservatism is added by the use of 95th percentile dose-source ratios which results in screening concentrations for some of the naturally occurring radionuclides that are indistinguishable from the background concentrations found in many soils.

2. Guidance Should Emphasize that Radon Issues Are Not Unique to POTWs

AMSA concurs with the conclusion that the higher doses tend to be associated with radon and that radon “exposures can be decreased significantly through the use of readily available radon testing and mitigation technologies.” However, we suggest that the guidance more clearly emphasize the following with respect to the radon estimates for the On-Site Resident and Biosolids Loading Scenarios:

- The conservative nature of the RESRAD indoor radon model
- The conservative radon-related parameter values used in the Biosolids Loading Scenario as outlined above
- The fact that radon issues are not unique to biosolids and that the ²²⁶Ra and ²²⁸Th levels at which the radon guidelines would be exceeded using the conversion factors for the Biosolids Loading Scenario are comparable to the natural background levels found in many soils throughout the U.S.

3. Recommendations Should Provide More Detail on How POTWs Can “Customize” the Guidance.

The draft document provides only the very basic information that a biosolids manager or plant operator may need to make decisions regarding their agency’s biosolids. AMSA believes that the guidance should more clearly state that POTWs can and in many cases should deviate from the suggested steps laid out in the document. For example, given that many POTWs will conduct one-time grab samples to evaluate levels of radioactive materials in the biosolids, AMSA suggests adding some language to the guidance that recommends the collection and analysis of additional samples to confirm the initial findings before contacting the state radiation control agency or taking further actions.

While AMSA recognizes that the state radiation programs can be a valuable resource for POTW managers when interpreting sample results and evaluating potential exposures, we believe the guidance should encourage POTWs (except in cases in which measurements significantly exceed the screening levels) to verify the need for such consultation through confirmatory sampling prior to contacting the state radiation regulatory agency. Also, the guidance states that these agencies can

“determine the appropriate standards for comparison” and inform a POTW as to whether “results are above the State’s acceptable radiation dose level.” AMSA is not aware of the situation in every state, but understands that many state programs may not have specific criteria or clear-cut guidance upon which they could evaluate radionuclide levels in biosolids or in disposal site soils. AMSA suggests that these statements be modified to acknowledge that every state may not be set up to deal with these types of requests from POTWs and that they will have to be handled on a case-by-case basis.

Furthermore, AMSA recommends that the language of the guidance document be strengthened to emphasize the fact that the screening concentrations and dose source ratios are most appropriately applied to the average radionuclide concentrations present in biosolids. This is especially important in the case of the nearly 300 POTWs who participated in the ISCORS survey and are now faced with interpreting those results.

AMSA also believes that the recommendations document should provide a more detailed explanation of how POTW managers can modify the screening approach to make it more applicable to their particular situation. One approach would be to provide correction factors that could be applied to the dose source ratios based on site-specific conditions. AMSA recognizes that the guidance document does provide an alternative calculation for estimating radon exposures for the Biosolids Loading Scenario and recommends that this approach be expanded to other scenarios as well. However, the screening approach for worker doses should be expanded to include alternatives to the dose source ratios associated with the Biosolids Loading Scenario. For example, at many POTWs, biosolids are handled in a liquid form up until the time they are dewatered and carried by conveyor belt directly into a truck for transport offsite. In these POTWs, workers are never “exposed to a large quantity of sewage sludge in a confined area” as is assumed for the Biosolids Loading Scenario. For workers in these plants, screening concentrations and dose source ratios based on the Sludge Processing Worker Scenario (i.e., the worker located adjacent to a conveyor belt carrying sludge cake) that is evaluated in the Dose Modeling Report would provide a more relevant point of comparison. However, this scenario is not included in the current screening process, nor discussed to any extent within the guidance document. Unfortunately, for some POTWs at which biosolids are both processed and transported in liquid form, all of the worker dose source ratios provided in the Dose Modeling Report are likely to significantly overestimate potential worker doses and may lead an agency to inaccurate conclusions relative to the need to take action.

4. Additional Explanation is Needed Regarding the Reporting of Isotopes in Survey Results and the Screening Tables.

There is confusion among participants in the ISCORS Survey regarding the results they were provided and the information presented in the recommendations document. When comparing survey results to the screening tables, a number of participants noticed that the two lists did not list the same isotopes. AMSA understands there may be several reasons for this discrepancy including:

- Differences in how the two participating laboratories reported isotopes that were determined to be below their detection level. One lab reported isotopes below detection as non-detects and the other simply did not report the results.
- The fact that screening results are not provided for some of the short-lived decay products of the uranium and thorium chains because the RESRAD code includes their contribution to dose in the dose source ratios calculated for the parent nuclide.

AMSA suggests that additional explanation be provided in the recommendations document to assist POTW managers in interpreting the results obtained from radioanalytical laboratories. This guidance would be helpful for both interpreting the ISCORS survey results and the results of other sampling efforts conducted in response to the recommendations of the guidance document. Specifically, a list should be provided that identifies those radionuclides that are likely to be reported by an analytical lab yet are not directly evaluated in the screening process. Additionally, some guidance as to the interpretation of radionuclide measurements with respect to the reported analytical uncertainties and an explanation as to why negative results are sometimes reported would be useful.

AMSA looks forward to continued discussions with the ISCORS Sewage Sludge Subcommittee as it works to finalize the recommendations document. If you have any questions about our comments please do not hesitate to call Chris Hornback, AMSA's Director of Regulatory Affairs at 202/833-9106.

Sincerely,

A handwritten signature in black ink, appearing to read "K Kirk". The signature is written in a cursive, somewhat stylized font.

Ken Kirk
Executive Director