

December 10, 1999

MEMORANDUM TO: File

FROM: Duane Schmidt, Health Physicist [Original signed by:]
Decommissioning Branch
Division of Waste Management, NMSS

SUBJECT: SEWAGE SLUDGE SUBCOMMITTEE OF THE INTERAGENCY
STEERING COMMITTEE ON RADIATION STANDARDS: SUMMARIES
OF OCTOBER AND NOVEMBER 1999 SUBCOMMITTEE MEETINGS
AND OTHER SUBCOMMITTEE DOCUMENTS

Attached are recently developed documents related to the joint Nuclear Regulatory Commission (NRC) and Environmental Protection Agency (EPA) survey of radioactivity in sewage sludge and ash. The Sewage Sludge Subcommittee of the Interagency Steering Committee on Radiation Standards (ISCORS) is assisting in the development of this joint NRC and EPA survey. The first two documents are summaries of the October 6, 1999, and November 9, 1999, meetings of the ISCORS Sewage Sludge Subcommittee. These summaries were developed by the Subcommittee.

The third document is highlights of the work being performed by the dose modeling workgroup of the Sewage Sludge Subcommittee. This workgroup is evaluating potential radiation exposures from the use and disposal of sewage sludge and ash. This effort will support the final guidance document for sewage treatment plants, which the Subcommittee will prepare.

The fourth document is the Quality Assurance Project Plan for the joint NRC and EPA survey. This plan will be followed by the laboratories performing the radioactivity analyses for the survey. The plan will be updated, as necessary, during the survey project.

The Subcommittee is placing these documents in NRC's Public Document Room to make them available to the public. These documents will also be available at the Subcommittee's public meeting on December 13, 1999.

Attachments:

1. Meeting summary for October 6, 1999
2. Meeting summary for November 9, 1999
3. Dose Modeling Workgroup Highlights
4. Quality Assurance Project Plan

CONTACT: Duane Schmidt, DWM/NMSS
301-415-6919

For PUBLIC:

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*See previous concurrence

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Decommissioning Branch
Division of Waste Management, NMSS

SUBJECT: SEWAGE SLUDGE SUBCOMMITTEE OF THE INTERAGENCY
STEERING COMMITTEE ON RADIATION PROTECTION STANDARDS:
SUMMARIES OF OCTOBER AND NOVEMBER 1999 SUBCOMMITTEE
MEETINGS AND OTHER SUBCOMMITTEE DOCUMENTS

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 MThomas/RES PSantiago JHolonich LCamper

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NAME	DSchmidt <i>DWS</i>		DOrlando <i>W</i>	
DATE	12/9/99		12/10/99	

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 10, 1999

MEMORANDUM TO: File

FROM: Duane Schmidt, Health Physicist *M. Orlando for D. Schmidt*
Decommissioning Branch
Division of Waste Management, NMSS

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CONTACT: Duane Schmidt, DWM/NMSS
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ATTACHMENT 1

Meeting Summary for October 6, 1999

FINAL

[These ISCORS subcommittee meeting summaries result from interagency discussions. The Sewage Subcommittee is composed of representatives from the Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Defense, the Department of Energy, the State of New Jersey, and two Publicly Owned Treatment Works. The Subcommittee summaries have not been approved by the respective agencies and organizations and do not represent the official position of any participating organizations at this time.]

ISCORS SEWAGE SLUDGE SUBCOMMITTEE MEETING SUMMARY

Date: October 6, 1999

Time: 0900-1200

Location: DOE/HQ
Room 4H-056
Washington, DC

Attendees: DOE: Jim Bachmaier, Judy Odoulamy
EPA: Robert Bastian, Dale Hoffmeyer, Behram Shroff, Mark Doehnert
EPA/NAREL: Dave Saunders, Mary Wisdom, Scott Telofski
NRC: Duane Schmidt
NRC Contractor: Dale Condra
DOD: Roy Lovett
State of NJ: Jill Lipoti
POTW: Tom Lenhart

Agenda: General Issues
Survey
- Status
- QAPP
Guidance Document
Dose Modeling

Summary:

GENERAL ISSUES:

Bob Bastian summarized the feedback received from the full ISCORS Committee at their last meeting on 23Sept99 hosted by DOD at ITT Systems and Sciences Corp. in Alexandria, VA. He noted that they were pleased by the progress made by the Subcommittee on the survey and guidance document development efforts, and were supportive of using the SAB review process for providing independent review of the Modeling Protocol Technical Support Document. It was noted that Andy Wallo from DOE indicated an interest in running additional samples to look at time variability.

Bob indicated that he provided ISCORS with the following list of suggested Yr2000 Sewage Subcommittee planned activities:

- June 2000 Complete peer review input on Dose Modeling Effort
- Sept 2000 Complete Dose Modeling Effort
- Dec 2000 Complete POTW sample collection & analysis
- Dec 2000 Complete public review of 2nd Draft Guidance Document

Bob also noted that ISCORS may be moving forward with their web page (and Subcommittee affiliated web pages) quickly, in an effort to have it operational by the end of the year. There was a good discussion as to how the Subcommittee web page could be used to help facilitate public outreach and access to information about the activities of the Subcommittee.

Duane Schmidt discussed his understanding regarding the status of the ORISE and LANL labs participation in Subcommittee meetings as cooperators rather than members of the Subcommittee.

Duane Schmidt noted that the minutes from the last two Subcommittee meetings (25Aug99 and 14Sept99) had been finalized and placed in the NRC Public Docket Room. He also noted that a copy of the list of 631 POTWs sent the survey questionnaire had been placed in the NRC Public Docket Room.

Bob Bastian and Behram Schroff discussed the interest in and concerns expressed by EPA's Region 5 Radiation Program staff regarding the guidance document and survey efforts. Bob noted that he has provided the staff with a copy of the draft guidance document for review and comment.

SURVEY

Status: Sampling kits have been sent out to the 1st group of 25 POTWs and samples are coming in to both labs. The points of contact identified in the questionnaires have been called at each POTW to be sure that they had received the sampling kits and cover letter, and to determine if they had any questions regarding the chain of custody information and sampling instructions. Some of the points of contact did not know about their role in the survey. Some of the POTWs are taking split samples. We will need to work out how to obtain their data. The labs will forward any differences in information obtained from their discussions with the points of contact from what is shown in the POTW's response to the questionnaire.

It was agreed that, if needed, a meeting to select the 2nd group of 25 POTWs for sampling would be held during the week of 18Oct99.

Duane Schmidt noted that there is some interest in having plutonium analyses conducted on samples from POTWs that receive discharges from nuclear laundries.

The group discussed the possibility and resource implications of running additional samples to look at time variability (as suggested by Andy Wallo at the last full ISCORS meeting). Dale Condra noted that some of the POTWs are collecting split samples and will have these run through separate analyses. Tom Lenhart noted that "other" data are also being collected by some of the POTWs, including some measurements taken over time at the same location.

Questionnaire: Duane Schmidt reported that the information from about 360 questionnaires out of ~400 returned had been entered into the database so far by the Los Alamos National Laboratory (LANL, NRC's contractor). Mary Thomas and Duane are still working at getting the Agreement State licensee data so that it can be integrated into the database with the responses from the POTWs in an accessible and usable format to support identification of the remaining POTWs to be sampled.

QAPP: Mark Doehnert emphasized the need for the Subcommittee to approve the existing QAPP as of a specific date, noting that it can then be revised as necessary after that date to accommodate changes that occur during the survey effort. Mary Wisdom reported that the remaining questions deal with how the data will be handled. She suggested ending the QAPP with the transmission of the data from the labs to LANL. She agreed to send out the final revisions before the next Subcommittee meeting so the final QAPP can potentially be approved by the Subcommittee at that meeting.

Mark again emphasized the need to develop a second part to the QAPP or separate data management plan to address handling of the data by LANL, how LANL will interact with NAREL and ORISE, and with the Subcommittee, as well as what analyses of the data supplied by NAREL and ORISE that LANL will undertake. Duane Schmidt agreed to work with Mary Thomas and others at NRC and with Mark and Mary Wisdom from NAREL to work out the interface with LANL in helping to clarify how the labs will be interfacing with each other, to help clarify the actual activities to be undertaken by LANL for the Subcommittee.

GUIDANCE DOCUMENT:

Behram Shroff agreed to send out the current draft of the guidance document with redline/strike-out changes noted to facilitate review by the Subcommittee members. He again noted that funding for additional support by TechLaw for making further revisions to the document probably won't be available until January 2000, but agreed to making changes to the document himself to facilitate the Subcommittee's desires to get the document to the full ISCORS Committee for review by Dec99.

DOSE MODELING:

Dale Hoffmeyer noted that he needs comments on the draft "Modeling Protocol" background document (i.e., Technical Support Document [TSD]) soon from the Subcommittee members if there is to be any chance of getting it revised and to the full ISCORS Committee in time for the next full ISCORS meeting (in December 1999). He has received comments from DOE and some others, so will proceed to prepare a redline/strike-out version to address their comments. However, he noted that sections still need to be added that address how the model(s) will meet our needs and to add scenarios for disposal practices. Dale provided a draft schedule for the dose modeling effort and noted that the Modeling Workgroup will continue on the basis of preparing the document and for briefing the full ISCORS Committee and SAB as agreed by ISCORS at their last meeting in Sep99. They will also continue to coordinate with the National Biosolids Partnership modeling effort, which has circulated a first cut of their approach.

The major issues still facing the dose modeling effort include what additional pathways and scenarios to add, deciding on what model(s) to use, deciding on how to get from the protocol to the guidelines, what type of uncertainty analysis to include (probabilistic vs deterministic).

ACTION ITEMS:

The Subcommittee needs to work out a procedure to obtain copies of the data that POTWs generate from split samples during the survey effort.

The labs agreed to forward any differences in information obtained from their discussions with the points of contact from what is shown in the POTW's response to the questionnaire.

It was agreed that, if needed, a meeting to select the 2nd group of 25 POTWs for sampling would be held during the week of 18Oct99.

Duane Schmidt agreed that he and Mary Thomas will continue to work at getting the Agreement State licensee data so that it can be integrated into the database with the responses from the POTWs in an accessible and usable format to support identification of the remaining POTWs to be sampled.

Mary Wisdom agreed to send copies of the final revised QAPP to the Subcommittee members for a final review before our next meeting and the Subcommittee agreed to aim at approval of the final QAPP at the next meeting.

Duane Schmidt agreed to work with Mary Thomas and others at NRC and with Mark and Mary Wisdom from NAREL to work out the interface with LANL in helping to clarify how the labs will be interfacing with each other, to help clarify the actual activities to be undertaken by LANL for the Subcommittee.

Behram Shroff will distribute the draft revised guidance document to the Subcommittee for comment when it is received from TechLaw in mid-September and will work with Loren Setlow on arrangements to assure continued contract support for future revisions to the document.

The Subcommittee agreed to provide Dale Hoffmeyer with comments on the draft "Modeling Protocol" TSD as soon as possible.

Next Meeting Date: Week of 18Oct99, if needed, to select the 2nd group of 25 POTWs for sampling

November 9, 1999, 9-Noon at DOE

ATTACHMENT 2

Meeting Summary for November 9, 1999

FINAL

[These ISCORS subcommittee meeting summaries result from interagency discussions. The Sewage Subcommittee is composed of representatives from the Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Defense, the Department of Energy, the State of New Jersey, and two Publicly Owned Treatment Works. The Subcommittee summaries have not been approved by the respective agencies and organizations and do not represent the official position of any participating organizations at this time.]

ISCORS SEWAGE SLUDGE SUBCOMMITTEE MEETING SUMMARY

Date: November 9, 1999

Time: 0900-1200

Location: DOE/HQ
Room 2E069
Washington, DC

Attendees: DOE: Jim Bachmaier, Judy Odoulamy
EPA: Robert Bastian, Dale Hoffmeyer, Behram Shroff, Mark Doehnert, Loren Setlow, Dwight Alpern, Betsy Forinagh
EPA/NAREL: Dave Saunders, Mary Wisdom
NRC: Mary Thomas, Duane Schmidt
NRC Contractor: Dale Condra
DOD: Roy Lovett
POTWs: Tom Lenhart, Kevin Aiello

Agenda: Survey
- Status of Sampling Effort
- Sharing Lists of Facilities
- Sign-off on QAPP
Open Noticed Meeting
Guidance Document

Summary:

SURVEY

Status of Sampling Effort: Things are generally going well. Discussions with the contact point at each treatment facility has proven to be necessary to be sure what type of samples will be provided and, therefore, what type of sampling kits should be sent. In numerous cases, the contact person identified in the questionnaire did not know about the POTW's agreement to participate in the survey effort.

- Four of the October sites have yet to send in samples: two facilities have had plant problems and do not have product to sample; one forgot; and one facility's sample was lost by FedEx.
- Samples from four of the November sites have yet to be received.

The completion of data entry into the database by LANL has been held up by the lack of data on state licensees from the NRC State Programs Office and the continued trickling in of

additional completed questionnaires. As a result, it was agreed that, if needed, a meeting to select the 3rd group of 25 POTWs for sampling would be held on 18Nov99 at NRC.

- Mark Sharing of Lists of Facilities: Requests have been made by EPA Regional staff, states and others for lists of the facilities to be sampled as a part of the survey effort. It was noted that the list of POTWs that received the survey questionnaire has already been made available as an attachment to the minutes of an earlier Subcommittee meeting. It was agreed that the list of 631 POTWs that received the survey questionnaire should be made available to the requesters and included with other materials on the ISCORS web page, along with the OMB approval package, a general write-up and Q's & A's about the survey effort, etc.

Sign-off on QAPP: Final revisions to the QAPP were discussed, as well as the need for a supplemental data management plan addressing how the results of the data developed by NAREL & ORISE that is sent to LANL will be handled and evaluated. Mark Doehnert agreed to work with Duane Schmidt, Mary Thomas and others at NRC on this issue.

The Subcommittee agreed that the QAPP as revised now stands as approved by the Subcommittee as a whole. Bob Bastian agreed to mail Mary Wisdom an updated list of the Subcommittee members and supporting groups who need to receive the approved QAPP.

OPEN NOTICED MEETING

The need for an open public meeting, noticed in the Federal Register, agency's web pages, etc. was discussed. It was agreed that such a meeting would facilitate the desires of private industry, environmental groups, and others to have more active input into the Subcommittee's activities and that it would be desirable to hold such a meeting very soon (i.e., in Dec'99) in order to obtain such input on the ongoing survey effort. The possibility of holding a second public meeting focused on the dose modeling effort during the Summer or Fall of 2000 was also discussed. It was agreed that during the ISCORS Subcommittee Chairs' conference call on 10Dec99, Bob Bastian and Mary Thomas would suggest that such a public meeting (using a format similar to the open meetings held by ISCORS) be held during the week of 13Dec99. Assuming approval by ISCORS, details of the public meeting could then be finalized at the 18Nov99 meeting.

GUIDANCE DOCUMENT

Behram Shroff emphasized the need to receive Subcommittee member's comments on TechLaw's 2nd draft of the POTW guidance document. Bob Bastian emphasized his desire to provide the full ISCORS Committee with the 2nd draft of the POTW guidance document at their next meeting which is currently scheduled for 13Dec99 and to seek their approval to distribute the document for general comment by the end of Jan'Yr2000. This means that comments on the current draft need be sent to Behram Shroff by 6 or 7Dec99 in order for him to make the appropriate revisions and get copies made in time for the meeting on 13Dec99.

ACTION ITEMS:

- It was agreed to request that the next full Subcommittee meeting be an open public meeting and to schedule it during the week of December 13, 1999.

- The Subcommittee agreed that the QAPP as revised now stands as approved by the Subcommittee as a whole.

It was agreed that the list of 631 POTWs that received the survey questionnaire should be made available to the requesters and included with other materials on the ISCORS web page, along with the OMB approval package, a general write-up and Q's & A's about the survey effort, etc.

- It was agreed that comments on the current draft should be sent to Behram Shroff by 6 or 7Dec99.

- Mark Doehnert agreed to work with Duane Schmidt, Mary Thomas and others at NRC in helping to clarify how the labs will be interfacing with each other, data will be transferred and interpreted, including the actual activities to be undertaken by LANL for the Subcommittee.

- It was agreed that, if needed, a meeting to select the 3rd group of 25 POTWs for sampling would be held on 18Nov99 at NRC.

- Bob Bastian will brief ISCORS at the December 13, 1999, meeting on the current status of the Subcommittee activities and the results of the public meeting, if the public meeting is held before the ISCORS meeting.

Next Meeting Dates: November 18, 1999, at NRC to select the 3rd group of 25 POTWs for sampling

December 13, 1999, 9:00–11:00, at NRC (an open public meeting using a format similar to the open meetings held by ISCORS)

ATTACHMENT 3

ISCORS Sewage Sludge Subcommittee
Dose Modeling Workgroup Highlights

Dose Modeling Workgroup Highlights.

The dose modeling workgroup is preparing a draft Technical Support Document (TSD). The TSD will describe a proposed modeling framework (or protocol) for evaluating radiation exposures from the use and disposal of sewage sludge and ash. The workgroup is planning to complete a draft interim TSD by March 2000 for review by ISCORS. In addition to ISCORS review, the workgroup will attempt to have the draft interim TSD reviewed by EPA's Science Advisory Board.

The interim TSD will describe scenarios and models (i.e., equations) for evaluating radiation exposure. The final TSD will include results in terms of concentrations in sludge of each radionuclide evaluated. The workgroup anticipates that modeling results, based on the TSD, will be used by the ISCORS Sewage Sludge Subcommittee to prepare guidance for POTWs. Results will also be used by EPA and NRC to determine if further federal action is necessary.

The following exposure scenarios have been proposed by the workgroup.

On-site resident

The exposed individual in this scenario lives in a house that was built on sludge amended soils. It is assumed that the individual spends time outdoors working on site in a garden and raising livestock. A percentage of the vegetables, milk, and meat produced at the site are consumed by the individual. The individual gets water from a well at the site. The well water is potentially contaminated by infiltration and leaching of radionuclides from the ground surface. Exposure pathways include external gamma radiation; inhalation of radon gas and airborne particles; and ingestion of drinking water, vegetables, milk, meat fish, and soil.

General public

The exposed individual in this scenario is a member of the public who does not live on a site where sewage sludge has been applied. However, food produced on sludge amended soils makes up a small portion of the individual's diet. In addition, runoff from the sludge amended soils contaminates surface water that is a source of fish and drinking water. Exposure pathways for this scenario include ingestion of drinking water and fish from a contaminated river; and ingestion of vegetables, milk, and meat produced on sludge amended soils.

Disposal

The exposed individual in this scenario lives near a site where sewage sludge is disposed in a trench. The exposure pathways for this scenario include inhalation of outdoor radon, and ingestion of drinking water from a well. The well water is potentially contaminated by infiltration and leaching of radionuclides from the disposal trench.

Land Reclamation

The exposed individual in this scenario lives near a site where sewage sludge is applied as part of land reclamation activities. The site is eventually used for recreational use. The

exposure pathways for this scenario include inhalation of airborne particles during land reclamation, and external gamma radiation during periodic recreational use.

Sludge Application Worker

The exposed individual in this scenario is a worker who operates heavy equipment for applying sewage sludge to fields, forests and reclamation sites. The exposure pathways for this scenario are external gamma radiation, inhalation of airborne particles, and inadvertent ingestion of contamination from dirty hands.

Compost Worker

The exposed individual in this scenario is a heavy equipment operator who moves and mixes sewage sludge in a composting operation. The exposure pathways in this scenario are external gamma radiation, inhalation of airborne particles, and inadvertent ingestion of contamination from dirty hands.

Sludge Press Worker

The exposed individual in this scenario is a worker operating a sludge press at a sewage treatment facility. The sludge press is used to dewater sewage sludge before it leaves the treatment facility. The exposure pathways in this scenario are external gamma radiation, inhalation of airborne particles, and inadvertent ingestion of contamination from dirty hands.

ATTACHMENT 4

Quality Assurance Project Plan, EPA/NRC Sewage
Sludge Survey, Revision 0, October 1999

Quality Assurance Project Plan
EPA/NRC Sewage Sludge Survey

IAG/QAPP-2

Prepared by:

**U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
National Air and Radiation Environmental Laboratory
540 South Morris Avenue
Montgomery, AL 36115-2601**

Revision: 0

Copy Number: _____

Date: October 27, 1999

Controlled Copy: Yes _____ No _____

Assigned to: _____

DCO: _____

This Quality Assurance Project Plan has been prepared in accordance with requirements described in EPA QA/R-5, "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations," United States Environmental Protection Agency, Quality Assurance Management Staff (now Quality Assurance Division), Draft Interim Final, August 1994.