SRS Citizen's Advisory Board

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Environmental Remediation &
Waste Management Subcommittee

**Meeting Record**
**September 21, 1995**
**Augusta, Ga.**

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The ER & WM Subcommittee of the SRS CAB met on Thursday, September 21, 1995 at the Augusta Sheraton Hotel in Augusta, Ga. at 5:00 p.m. Subcommittee members present included Bill Lawless, Subcommittee Co-Chair. Walt Joseph, the CAB facilitator also attended. Joel Massmann, Adam Babich, Renate Kimbrough, John Bredehoeft and Mark Benjamin of the Independent Scientific Peer Review (ISPR) team for the F&H-Area groundwater remediation project, also attended. Carl Froede represented EPA-Region IV. Keith Collinsworth, Jack Gelting, Bob Benson, Shelly Sherritt, Crystal Rippy and Cynde Devlin attended from the South Carolina Department of Health and Environmental Control (SCDHEC). SRS representatives included John Pierpoint, Gholam Golshir, Steve Serkiz, Anne Roe, Mary Flora, John Adams, Scott McMullin, Bruce Schappell, Bill Rajczak, Phillip Prater, Tom Horan, Mary Johnson, Joan Baum, Clay Jones, Kim Wierzbicki, David Nix and Leslie Huber. Hunter Weiler attended from DOE-HQ. Members of the public attending included Todd Crawford, Paula Joseph, Carl Mazzola, Jim Lovecamp, Charles Murphy and Lee Poe. Brian Costner attended from the Energy Research Foundation (ERF) and Jan Gottlieb and Charles Powers attended from the Consortium for Risk Evaluation and Stakeholder Participation (CRESP). Rich Baker and Roman Mychajliw attended from ADTECTS Corporation and David LaMonica of the ROCHEM Separations Systems Corporation also attended. Virginia Gardner of DOE-SR attended as the Associate Deputy Designated Federal Official (ADDFO).

Dr. Lawless welcomed everyone to the meeting, stressed that the meeting would be informal, and introductions were made. Dr. Lawless gave a brief overview of the F&H GW ISPR, and discussed the ISPR as a means to put tension on the system and in the long run provide the best solutions to the problems facing DOE. Dr. Lawless said the ISPR also provided a cost/benefit analysis which is needed in the era of downsized budgets and in light of the low risk rating for the project. Dr. Lawless stated the ISPR was a way to make sure science is an equal party to the decision making process.

Crystal Rippy, an engineer with the Hazardous Waste Permitting Section of SCDHEC's Bureau of Solid and Hazardous Waste Management, reviewed the RCRA permit as it applies to the F & H-Area Hazardous Waste Management Facilities (HWMFs) and gave an overview of the current corrective action strategy. The overall goal of the groundwater corrective action plan is to (1) capture and remediate all groundwater with contaminants (both hazardous and nonhazardous constituents) at concentrations exceeding those standards listed in the Groundwater Protection

Standard of the permit; and (2) mitigate further migration of the plume in order to prevent further dischsarge to Fourmile Creek. Ms. Rippy pointed out that the details of implementation of the project to achieve the goals are left to the discretion of SRS. Ms. Rippy also stated that while DHEC believes the actions in the permit are necessary and appropriate, it is open to new information and ideas and is willing to evaluate any permit modification request submitted to the department for review. Ms. Rippy introduced Jack Gelting, of SCDHEC Division of Hydrogeology.

Mr. Gelting briefly described the corrective action proposed by DOE in the permit and detailed in the Preliminary Engineering Report and approved by SCDHEC. The contamination issue is soil and groundwater which are contaminated with radionuclides, metals, organics and tritium by leachate from the basins. Mr. Gelting explained that the permit describes a groundwater protection standard for these contaminants and it is based on legally enforceable Drinking Water standards and health based maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs). Mr. Gelting explained the three phased corrective action approach proposed by DOE. The purpose of Phase I is to protect Fourmile Branch by pumping groundwater to contain the plume defined by the 10,000pci/ml tritium isoactivity contour in the F-Area and the 2 mcg/ml mercury isoconcentration contour in the H-Area. These areas within the contours were targeted because all the metals contamination is confined within those areas, as it is mainly adhered to the soils in those areas; the tritium contamination is mainly in the groundwater.

The treatment options are flexible; treat to remove the metals and radionuclides and reinject the tritium contaminated water back into the acquifer where there would be a longer travel time for the tritium to be stored and decay. Phase II is to be initiated after evaluation of Phase I and allows an option for the filing of an application for an Alternate Concentration Limit (ACL) or a mixing zone request, (these are the SCDHEC methods used to alter existing drinking water and groundwater standards). Phase III will be initiated after all improvements have been made and the lessons learned from Phases I and II incorporated. Mr. Gelting commented on the flexibility, efficiency, and reasonableness of the process and stated SCDHEC expects DOE to demonstrate their flexibility, resonableness, and efficiency by implementing the process.

Brian Costner, ERF, asked EPA and DHEC which of the recommendations in the ISPR report would have the most impact on the current plan of action. Both Carl Froede, EPA, and Keith Collinsworth, SCDHEC, said they saw no impact as far as the RODs or permit were concerned. Mr. Collinsworth did note cost savings were possible from some of the recommendations. In particular, in Phase II the targeting of hot spots after the capture zone has been established could be a recommendion that would result in cost savings. Shelly Sherritt noted that while they were not sure whether any major or minor permit modification would be required, the recommendations were complementary to the action plan.

Lee Poe asked why the Permit was issued without waiting for the ISPR report. Shelly Sherritt noted that they had planned to continue the action on schedule (after 3 years of negotiations) and they would be open to new information and a Permit Modification Request can be submitted anytime. John Pierpoint, WSRC, discussed the procurement of the treatment plant and said the vendors were available for questions. Dr. Lawless questioned the flexibility of Phase I and the

time span of Phase III. DHEC said there was flexibility and based on tritium decay rate Phase III would range from 70 to 80 years. The time for Phase I is 3 years and Phase II is 5 years.

Dr. Joel Massmann gave an overview of the Independent Scientific Peer Review (ISPR) of the F & H-Area groundwater remediation projects draft report and discussed the report development and the path forward for completing the report. The objectives from the original scope of work were reviewed. Dr. Massmann said the draft report was written by Adam Babich, Mark Benjamin, and himself and then sent out to the remaining team members, EPA, SCDHEC, and SRS . Dr. Massmann was asked about the due date for the final report and he said September 26 was not realistic. The due date was changed to October 15, with the conclusions and recommendations (which were carefully considered) section essentially completed by September 26. Dr. Massmann said the final report would have a more fully developed risk conclusions section, cost estimates for reasonable alternatives, supporting calculations and analyses, details of computer modeling, the full suite of alternatives considered, and team member resumes (limited to two pages each).

Mark Benjamin discussed the treatment plant construction and operation and the source characterization and control, he recommended that the water treatment facility design and construction proceed as described in the Preliminary Engineering Report with the exception of salt removal. Questions and discussions ensued covering system contract terms and conditions, justification of salt removal, whether complete information was provided to the ISPR team, use of reverse osmosis, and sludge characteristics and disposal. Dr. Massmann said the salt issue and clogging was brought up three weeks ago during his last visit to the site and there was no response from WSRC that additional information was available and needed to be considered, but that any additional information would be reviewed and considered. Mark Benjamin also discussed the feasibility of lowering metal concentrations in the seep water via control of the aquifer pH and improved characterization of contaminant sources.

Joel Massmann and John Bredehoeft presented the water extraction/injection evaluations, recommendations and conclusions. Dr. Massmann discussed the recommendation to conduct feasibility studies of precision pumping since the plumes appear to be discrete. That is only pump wells that have substantial contamination. Secondly, if the wells only contain tritium, bypass the parts of the treatment system designed for removing metals. John Bredehoeft discussed simulation of contamination concentration and movement in the F-Area groundwaters, permability of acquifers, storage options for tritium contaminated groundwater (storing above ground was said to cost $0.50/gallon and the cost was prohibitive). The option of storing the tritiated groundwater in the Congaree Aquifer was also discussed.

Renate Kimbrough discussed her evaluations of the risks and public health concerns. Dr. Kimbrough said the shallow aquifer had high levels of lead, mercury, cadmium, high acid content (low pH), and nitrates exceeded MCLs; and basically water is not fit for human consumption (i.e. if water was given to an infant it would be fatal) and was not sure the water could ever be made clean and used as a source of drinking water. Therefore she believed a more cost effective alternative would be institutional controls rather than treatment. Dr. Kimbrough said the tritium was not the major health risk in her opinion and she was more concerned about all the other contaminants.

Adam Babich, the ISPR regulatory issues team member, discussed the policy conclusions and recommendations. Mr. Babich said that since the health risks are uncertain, ultimately the question of how much to spend is a question of policy and there is no single scientifically "correct" answer. He discussed the recommendation to identify and agree upon achievable, quantifiable goals and then start now to craft the Phase II strategy in light of the goals (i.e. identify regulatory approaches that support reasonable and attainable goals). Instituitional controls that take advantage of the status of SRS as a federal facility was also discussed. The cost ($275M) of the project to attain legally enforceable standards and reduce human health and ecological risk (which may be trivial or non-existent) is ultimately a policy question. Mr. Babich said the decision to proceed with the project seems to be consistent with general regulatory practice and regulatory philosphy.

Mr. Babich said the Safe Drinking Water Act was set up to create two levels of standards, or two levels of criteria. The first level is Maximum Contaminant Level Goals (MCLGs), which are goals that are set without worrying about cost, that is goals which reflect what we would like our drinking water to be like. However recognizing scientific uncertainity EPA has made a number of simplifying assumptions in setting those goals and EPA has said we are going to assume that any level of exposure to a carcinogen is harmful and we want to set the goals below the level where there would be any harm. Therefore for carcinogens the MCLGs will be set at zero. The MCLG for tritium , which is in the category of beta emitters in the drinking water regulations, and is in the proposed regulation stage, has a proposed value of zero.

Mr. Babich said EPA next sets a technology based standard to try to get as close to the goal as is possible with current technology and considering cost and feasibility; and that is the 20pci/ml standard for tritium. The whole system considers that there may be a risk at lower levels, and the regulators assume there is, and will try to reduce it. RCRA is based similarly, as is noted in cases involving land disposal restrictions were the courts have recognized a regulatory assumption which says any amount of certain substances in the drinking water is too much. CERCLA adopts a different philosphy and sets an acceptable range of risks that are allowed. Mr. Babich concluded by stating the SRS approach was reasonable, credible, and consistent with the law.

Rich Baker of ADTECHS gave a presentation on the treatment process and David LaMonica of the ROCHEM Corporation gave a presentation on his company's reverse osmosis system. Questions and discussions ensued covering system operation and specifications, costs, salt concentration of reinjected water, and whether any of the recommendations would be changed as a result of additional information contained in the presentations.

Dr. Lawless then solicited questions and comments from attendees. These questions included flexibility of the contract as far as location of wells and the treatment facility itself, schedule for the project and performance elements of the contract, additional discussions on the recommendations, land use issues, whether the costs of corrective action are disproportionate to the benefits, and the question of whether all necessary information was supplied to the ISPR team. The fact that the Site is now taking a more comprehensive team approach to clean up was also pointed out. Dr. Massmann thanked all the people involved in the IRPS effort. The subcommitee co-chair, DOE, EPA, DHEC, and WSRC praised the ISPR team for its efforts, professionalism, and patience.

All formal comments to the draft report were requested by the next Friday, September 29th. A proposed recommendation to the CAB concerning the path forward in consideration of the lessons learned to date with the F&H ISPR was discussed. The comments on the draft risk report to Congress and the mechanism to formally transmit those comments was also discussed.

**Attachments:**

- Attachment 1 - Crystal Rippy, DHEC, Handout
- Attachment 2 - Joel Massmann Presentation
- Attachment 3 - Mark Benjamin Presentation
- Attachment 4 - John Bredefoeft Presentation
- Attachment 5 - Renate Kimbrough Handout
- Attachment 6 - Adam Babich Presentation
- Attachment 7 - Rich Baker, ADTECS, Presentation
- Attachment 8 - David LaMonica, ROCHEM Corp. Brochure
- Attachment 9 - Bill Lawless Comments on Draft ISPR Report & Draft Motion
- Attachment 10 - Lee Poe Risk Report Comments and Motion

**Note: Meeting handouts may be obtained by calling the SRS CAB toll-free number at 1-800-249-8155.**