



## **SRS Citizens Advisory Board**

### **Environmental Remediation Committee**

#### **Meeting Summary**

November 6, 2000  
North Augusta Community Center  
North Augusta, SC

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#### **CAB Members**

Jimmy Mackey\*  
Maria Reichmanis\*  
Sally Connah\*  
Perry Holcomb\*  
Beaurine Wilkens\*

#### **Stakeholders**

Lee Poe  
Rick McLeod, Tech. Advisor  
Mike French  
W.R. Greenaway  
Gerry Devitt  
Vera Jordan  
Larry Callair

#### **DOE/Contractors**

Gerry Stejskal, WSRC  
Paul Sauerborn, WSRC  
Chris Bergren, BSRI  
Don Toddings, BSRI  
Thomas Kmetz, BSRI  
Ron Beul, BSRI  
R.M. White, WSRC  
Tom Treger, DOE  
Mike Griffith, WSRC  
Bill Payne, WSRC  
J.G. Long, WSRC  
Michelle Ewart, DOE  
Ed McNamee, BSRI  
Robert Baker, DOE  
Vernon Osteen, WSRC  
Jim Kubar, BSRI

#### **Regulators**

Charles Gorman, SCDHEC

**\* Members of the ER Committee**

**Note: Kathryn May and Murray Riley of the ER Committee were unable to attend meeting.**

#### **Introduction**

**Jimmy Mackey introduced himself and then asked for introductions.**

#### **Schedule Review**

**Paul Sauerborn reviewed the schedule noting topics to be reviewed through the end of calendar year 2000, and requested any suggested addition.**

#### **Dynamic Underground Stripping**

Jim Kupa delivered a presentation on Dynamic Underground Stripping (DUS). This process is new to SRS but not to other areas in the United States. Mr. Kupa stated that this process was developed by Lawrence Livermore National Laboratory (LLNL) and the University of California, Berkeley with Department of Energy funding. The process is effective above and below the water table, and the ability to specifically locate free phase Dense Non-Aqueous Phase Liquid (DNAPL) source material was not necessary using this process. Mr. Kupa said that the use of this process over other processes such as pump and treat would actually clean up a contaminated site in a few years in lieu of possible decades. Mr. Kupa stated that the process uses heat in the form of steam to not only mobilize contaminants to an extraction well, but destroy them in-situ and that mix can be adjusted by the design of the project. The technique is applicable to a broad range of contaminants (both DNAPL and fuels).

Mr. Kupa indicated that the DUS project was actually three deployments. First is the inject of steam, then injection of oxygen with the steam to enhance final removal of contaminants (hydrous pyrolysis oxidation) and finally Electrical Resistivity Tomography in combination with thermocouples are used for imaging to monitor progress of heating fronts and the contamination cleanup.

As mentioned earlier, Mr. Kupa gave examples of different sites that have demonstrated significant success using this technology.

1. Lawrence Livermore National Laboratory in 1993 and 1994 removed 50,000 lbs. of gasoline from 100,000 cubic yards of soil and was closed in 1996.
2. Visalia Pole Yard, a Superfund Site, completed in 1999 removed over 800,000 lbs. of creosote from a 4.3-acre site in 2 years.
3. Portsmouth Gaseous Diffusion Plant in Piketon, Ohio pilot project reported 828 lbs. of TCE removed from the treatment.

In respect to the deployment at SRS, Mr. Kupa stated that the several systems were deployed in the A/M Area, where chlorinated solvents were discharged totaling approximately 3,500,000 lbs. To date there has been an ongoing remediation program since 1985 with over 900,000 lbs. of solvents extracted from the subsurface. Traditional technologies are used for plume containment, and a demonstration of DNAPL destruction by Fenton's chemistry.

The 321-M area Solvent Storage Tank Area is a known localized DNAPL area with no upgradient sources within the M-Area aquifer, and that is the precise location where the DUS system has been deployed. The current year 2000, technical goals are:

1. Characterization from soil cores, which is complete.
2. Installation of injection/extraction wells in proper zones, which is complete.
3. Baseline and operational ERT data compiled to observe the applied boiling point within the soil block, where the baseline has been completed and operational data is continuing to be collected.
4. Steam injection and recovery of extractants, are in progress.
5. Expect to see the HPO process to begin.

Mr. Kupa went on to say that the technical success measures are:

1. Successful completion of the area of concern and retiring the vapor extraction unit and recovery wells from the M-1 air stripper system.
2. Note the efficiency of the HPO process.
3. Process knowledge of the injection into the deep coastal sediment lithology.
4. Technical Peer Review Panel to be led by Lawrence Livermore Lab through a technical assistance program.

Perry Holcomb asked Mr. Kubar at what depths do they perform this DUS process and he indicated that there are three different steaming levels. The shallow screens are set at 50-70 feet, the intermediate screens are at 110-130 feet, and the deepest screens are at 150-160 feet. Mr. Kubar also stated that the Department of Energy patents the DUS system. Lee Poe asked how much steam was being delivered to the ground and Mr. Kubar stated that 14,300 lbs./hr. at 300 psi was being delivered.

#### Annual Update on the F&H Groundwater Treatment Units

Ed McNamee presented the Annual Update of the F&H Groundwater Treatment Units. Mr. McNamee revisited the process with the committee in how the groundwater treatment units worked and noted that the system pulls water from the ground, treats the water for contaminants and re-injects the water up-gradient. Mr. McNamee noted that the F-Area treatment facility throughput until last year was very poor. This year has been extremely productive running at efficiencies in excess of 95%. Mr. McNamee stated that the efficiency at the H-Area unit ran close to 100%.

Mr. McNamee stated that there were two major milestones completed during Fiscal Year 2000:

1. Completed operations at H-Area for one year in compliance with the consent order on June 30, 2000.
2. Completed operations at F-Area for one year in compliance with the consent order on August 31, 2000.

The next step for the groundwater treatment units as noted by Mr. McNamee is to submit the Phase II Corrective Action Plan (CAP) on July 31, 2001. Also noted was that the work on treatability studies is currently underway to look for ways to:

1. Simplify the chemistry at F-Area.
2. Identify passive collection and treatment systems.
3. Identify better methods for managing the tritium.
4. Long-term passive management of the aquifer.

Mr. Poe asked Mr. McNamee if there were a published document the decontamination factors for the units (ratio of contaminants coming in versus going out). Mr. McNamee stated that when the units reach a steady state, the decontamination factors would be calculated.

#### TMDL for Mercury in the Savannah River Basin – Update

Bill Payne presented on the Total Maximum Daily Load (TMDL) for Mercury in the Savannah River Basin. Mr. Payne stated that the TMDL was based on the Georgia fish advisories, and that the proposed water quality target is much lower than the drinking water standards for mercury. The TMDL resulted from a Lawsuit against EPA. Mr. Payne also stated that EPA was required to write a TMDL since the state of Georgia did not supply one. This TMDL was written quickly by EPA due to a court-imposed deadline of February 28, 2001. The proposed TMDL would cause serious impacts to SRS and other Savannah River Basin facilities.

Mr. Payne identified the following activities have occurred since the July Citizens Advisory Board Meeting:

1. SRS cost estimate as high as \$500,000,000.00 to both EPA and Office of Management and budget to reach the required TMDL.
2. EPA sampling of water, fish, sediments, and soil completed.

3. The South Georgia TMDL proposed by EPA.
4. A Stakeholder meeting was held at the Augusta Chamber of Commerce.

Activities still working are:

1. A Best Management Practices Plan.
2. Developing SRS Mass Balance for Mercury
3. 2<sup>nd</sup> Proposed TMDL in November-December of 2000 with a 60-day comment period.
4. Final TMDL by February 28, 2001.

Rick McLoed stated that he was concerned that EPA region four was not talking and working with guidance from EPA headquarters on this issue, and how can other states have TMDL limits much higher than that imposed by the court order.

#### South Carolina Water Quality Standards – Regulation (61-68)

Vernon Osteen presented on the South Carolina Water Quality Standards new regulations. Mr. Osteen stated that the South Carolina Department of Health and Environmental Control review the South Carolina Water Quality Regulations every three years and that there is currently a public comment period on this issue through November 27, 2000. Mr. Osteen stated that the proposed revisions to regulation 61-68 are:

1. Turbidity
2. Color
3. Mixing Zones
4. Hardness Value Changes

Mr. Osteen indicated that in respect to SRS, newly proposed hardness value changes present a very serious financial impact to SRS. The current value for hardness is from 400-50 milligrams per liter (mg/l) as opposed to the newly proposed of 400-25 mg/l. The parameters effected are copper, cadmium, nickel, zinc, chromium III, lead, and silver. The impacts to the SRS will be two fold:

1. Lower metals limits at National Pollutant Discharge Elimination System (NPDES) outfalls with limits.
2. New Metals limits at some NPDES outfalls currently without limits.

The strategies as pointed out by Mr. Osteen are to:

1. Review the basic literature for basis of change in criteria.
2. Conduct an economic analysis.
3. Propose variance language for the regulation.
4. Develop negotiation approach for sites NPDES implementation.

Mr. Osteen stated that the position of the SRS at this time is that the regulation, remain the same for the hardness value until an environmental gain can be demonstrated to justify the economic expense.

#### Public Comments

There were no public comments. Mr. Mackey handed out a position paper he had written concerning the Fish Consumption Advisory Plan as referenced in the Savannah River and Swamp floodplain IOU workplan. Mr. Mackey through his letter was asking that EPA continue their review of the workplan with the understanding that the Fish Consumption Advisory Plan would be

presented to them at a later date. The consensus of the Committee was to proceed with sending the letter. Mr. Mackey thanked the attendees, and the meeting was adjourned.

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