ENVIRONMENTAL RESTORATION AT SAVANNAH RIVER SITE: A COMMUNICATIONS PROGRAM AT WORK

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ABSTRACT

Environmental cleanup became a national public issue at Savannah River Site (SRS) and other Department of Energy (DOE) locations in the 1980s. SRS has responded to this demand by changing the way it relates to the public. This change included open, effective, and regular communications to meet the needs of multiple stakeholders interested in environmental restoration. This paper addresses:

(1) how media interest at SRS is met with a visible show of progress over time;
(2) how public participation is achieved through a Citizens Advisory Board, conferences and public tours of our work sites;
(3) how regulators are kept informed;
(4) how legislators and educators are connected to the program; and
(5) how environmental restoration (ER) work is shared with the technical community.

The presentation that accompanies this paper captures these actions in photos, graphics, news articles, TV clips and video. These communications over time help to build support from and accountability with the public for the cleanup program. We can gain support that further opens communications as we share our progress and successes. This effort gives SRS the momentum to continually apply more efficient and cost effective cleanup technologies.

INTRODUCTION

The U.S. Department of Energy established SRS' Environmental Restoration Program on a tradition of environmental concern. During the 1980's, the environmental program began by establishing where the inactive waste sites were located and then characterizing the extent of the contaminants in the groundwater and soils. Today we currently estimate that there is groundwater contamination beneath five percent of the site's 310 square miles. It became clear in the early 1990's that it was not enough to do the work and do it well. We realized that we needed to keep the public informed about our progress and the way our cleanup objectives were being accomplished.

BACKGROUND

SRS is located on the border of the Savannah River, in an area called the Central Savannah River Area (CSRA). The site is roughly 310 square miles and spans parts of three counties in South Carolina. The major cities located in the CSRA and within twenty miles of the site are Aiken and North Augusta in South Carolina and Augusta in Georgia.

SRS was constructed to support the nuclear defense of the United States throughout the Cold War era. SRS celebrated its fiftieth Anniversary in the year 2000. With the end of the Cold War, SRS' mission shifted to environmental restoration, waste management and facility disposition to address the legacy of nuclear materials production. The U.S. Department of Energy in 1989 established the Environmental Management Program. Since then, SRS has demonstrated excellence in protecting human health and in reducing the risks associated with the past, present and future operations.

Major Cleanup at the Savannah River Site

SRS has 515 waste sites identified for cleanup and 277 sites are in the remedial design phase or have been completed. Of the 500 acres that comprise these waste sites, 340 are in the remedial design phase or have been completed. At one time SRS had five nuclear reactors in production. As a result, the predominant contaminants are near or in the waste storage areas for the reactors. The largest cleanup area is at the Burial Ground Complex. Plume analysis shows that SRS has eleven groundwater contamination areas. To clean these up, eight area groundwater remediation systems are running. We have treated four billion of the estimated 14 billion gallons of groundwater identified for cleanup. Environment restoration will continue with safe, cost-effective and timely application of new technologies.

The Need for Cleanup

When cleanup became a national issue during the late 1980's, SRS saw a need to provide accurate and timely information about their cleanup progress. Information presented in local media articles and those from communities downstream from the site made this need acutely evident (1, 2, 3, 4, 5).

To respond to these articles, we first needed to identify public issues and then assess the communication challenges for these audiences. For example, the coastal areas were concerned about the tritium contaminants in the Savannah River flowing downstream toward them. To address these concerns, SRS communicated projected cleanup costs based on available cleanup technologies. DOE backed SRS by publicly supporting the site in their commitment to prevent further groundwater contamination. Cleanup areas included both radioactive and hazardous locations. These sites comprise landfills, seepage basins, trenches, rubble piles and pits ranging in size from that of a home washing machine to over 76 acres.

Progress In Cleanup

Communicating our early progress was our first action. As soon SRS had physical evidence, it invited the media to the field to see the progress and learn of the future plans for cleanup. In 1991, DOE stated that SRS had the largest environmental restoration cleanup effort in the DOE's history (6).

Other articles delivered messages that SRS was transforming itself from a nuclear production materials complex to an environmental cleanup complex. SRS lowered cleanup costs by using innovative technologies, accelerating their cleanup plans. SRS also kept the media informed of its progress and its commitment to safety and cost effectiveness (7, 8, 9, 10, 11, 12).

SRS media events and news releases included the capping of a 55-acre area at the Nonradioactive Waste Disposal Facility (NWDF) with geosynthetic materials instead of kaolin clay caps. This improved technology saved over $100,000 dollars per acre over the life of the cap. Bioremediation and using Mother Nature with passive technologies are being used for environmental purposes for cleanup at NWDF and another location in D-Area. Two of the longest horizontal wells in the world are installed at SRS so microbes can eat the contaminants in the landfill area. Grouting, an insitu method to stabilize contaminants, has either started or is completed at the L Oil and Chemical Basin, Old F Retention Basin, and the F Retention Basin. Stabilizing contaminated soil in place has become the standout choice whenever possible because it increases worker safety and lowers expenses. Traditional pump and treat methods are still being used. However, these methods are being replaced with more "green technologies" to cut costs and minimize disruption of the area whenever feasible. During the last three years, SRS has achieved cumulative life cycle cost savings of $374 million by using innovative technologies.

We want to continue the positive perception of our cleanup work and the realization that the work is being accomplished safely and cost effectively.

Public Participation and Acceptance

Public meetings are another approach to communicating with people. During the early 1990's, SRS formed a Citizen Advisory Board (CAB). SRS provided this group of 25 citizens with its cleanup plans for their review and input. The CAB has made significant contributions to our plans as we keep them informed of our progress and goals. SRS invites CAB members to regularly view the progress in the field, encourages members to attend environmental conferences, and provides them timely information as needed or when requested (13, 14, 15).

Keeping the CAB and the public informed every step of the way is a good business practice. It may even help the bottom line by minimizing adverse communications and their potential lawsuits. Public participation and acceptance of SRS environmental plans helps prevent obstacles. Understanding the obstacles is half the effort, and seeing the progress helps add value to the project.

Regulators are Kept Informe d

We seek regulators' endorsement and approval of our programs by the South Carolina Department of Health and Environmental Control (SC-DHEC) and the Environmental Protection Agency (EPA). These agencies approved our 30-year cleanup plan in 1993 (16, 17). Since then, we have made much progress and continually look for new cleanup technologies to apply to contaminated sites. Regulators have supported this technology development.

We communicate with our regulators daily in Atlanta, Georgia (EPA) and in Columbia, South Carolina (SC-DHEC). Site tours are common. Planning meetings with the regulators have evolved over time to become goal-setting meetings. Several net meetings scheduled monthly with regulators have reduced travel time, expenses associated with travel and provide real time visual aides during the meetings. Regulators have also had the advantage of being key players in the last three Technology End User Conferences (ER TEC). SRS has been the major organizer for these annual conferences, which were started in 1998. The conferences bring together end users and scientists from the DOE, DOD, Universities and industry to share cleanup technology progress.

Political Support

SRS uses periodic and timely communications in its effort to keep DOE-Headquarters and legislators informed of the SRS ER program. Since Congress provides the ER funding, it is vitally important to show progress, cost effectiveness and safety. SRS receives positive recognition when the State (Columbia, SC) newspaper headlines that the Governor of South Carolina agrees to nuclear waste cleanup (18).

Our communications reach Mayors, Legislators, House of Representatives, Senators and The Secretary of Energy. During the 50-year site celebration at SRS, Secretary of Energy, Bill Richardson addressed a crowd of citizens after visiting the site. He said that he was proud of the Savannah River Site's commitment to safe, effective cleanup, and the enormous community spirit and support that SRS receives.

Educational Outreach

SRS seeks to keep students and educators connected to the ER program at the local, regional and national level.

SRS has a local school to work program that allows students interested in the environmental field, among others, to get first hand experience by working side by side with engineers, scientists, public relations specialists and other professionals (19). Teachers and students are invited on tours of the site to view

progress in the field (20). Annually, SRS holds a technology conference to show area schools how technology is being used across the site (21). SRS also supports programs for minorities. The Historically Black Colleges and Universities (HBCU) program is openly received. The site procurement department received the year 2000 Eisenhower Award for their commitment to helping minority, disadvantaged and small businesses receive contracts for work at SRS. On the national level, educators and scientists are invited to SRS to demonstrate potential technologies. During the June 2000 ER TEC conference, Mike Kupperburg, a University of Florida professor, shared his experience of working with phytoremediation at SRS. He also described how the phytoremediation technology is being implemented in Poland to clean up sites there. By sharing our successes and challenges all these programs contribute toward our cleanup goals.

Credibility with the Technical Community

SRS encourages engineers and scientists to publish their findings and success stores in trade journals, conferences and to share these successes in local community outreach programs and local news. The *Environmental News, Chemical Engineering*, and *Pollution Engineering* are just a few examples of journals that have featured environmental stories on SRS. Publishing to the technical community is another important facet in our communications outreach (22).

Trade journals give SRS a way to gain credibility by having others corroborate our success stories. We also have shared our experiences directly by visiting sites to consult on cleanup. Examples include sharing solvent cleanup technology at King's Bay, Georgia (Naval Base), and at Pantex in Texas (DOE). Purge water management was shared with the Lawrence Livermore Laboratories in California.

The annual ER TEC Conference, as mentioned previously, is one of our most successful ways for sharing technologies. Many articles and much media awareness have come from the gathering of this group of engineers, scientists, regulators, educators and other professionals. The conference provides a method for sharing field experiences of applying technologies by the people that are doing the work. This exchange motivates SRS engineers and others from across the nation. The next conference will be held July 17-19, 2001, in Atlanta, GA.

The June 2000 conference focussed on natural remedies that use trees, plants, and microbes for cleanup. In the year 2001, two SRS sessions will be on phytoremediation of tritium and dynamic underground stripping. Phytoremediation is a process where trees suck up tritiated water and evaporate it safely. Dynamic underground stripping (DUS) is a steam cleaning technology using hot steam to mobilize dense solvents in the ground and then extract and treat them in a soil vapor extraction unit. SRS is using DUS at its M-Area Solvent Tank Storage Site, an area of about 1000-ft. Oxygen is injected with the steam to enhance the remediation. Three-dimensional imaging of the cleanup will be obtained through electrical resistance tomography of the soils.

Remedial Accomplishments

SRS is committed to successful environmental management. Restoration on over 340 acres of land and billions of gallons of groundwater for cleanup provide evidence that we are restoring the environment, cleaning our groundwater, and protecting our communities. Our progress to date and the expeditious application of new technologies has positioned SRS for future missions.

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