Savannah River Site
Citizens Advisory Board

Recommendation 318
Technology of Groundwater Cleanup

Background

During SRS site operations in the 1950-1980s reactor fuel and target fabrication activities were conducted in the 300-M Area to provide input materials for production reactor operation. The fabrication processes utilized at the time involved use of organic solvents to clean the metals involved in the process much as a painter uses paint thinner for cleaning. The fabrication process at the time used large amounts of solvents known as volatile organic compounds (specifically trichloroethylene-TCE and tetrachloroethylene- PCE) and the handling and disposal of these organic solvents were not dealt with in an environmental friendly manner. It was common at the time to use settling basins for disposal of volatile organic compounds (VOCs). The use of settling basins would be prohibited under environmental regulations of today. Over a 30 to 40 year period a large amount of solvents were released to the surrounding soils and groundwater within SRS. It is estimated that as much as 3.5 million pounds of solvents were released through multiple sources.

In the late 1970s and the early 1980s it became clear that the release of these solvents posed a serious threat to the environment. Cleanup activities began in the early 1980s, and were later conducted under a SC Department of Health and Environmental Control Resource Conservation and Recovery Act (RCRA) Permit issued in 1987.

In a general sense it appears that the experience at SRS has been symptomatic of problems at all DOE productions sites such as Oak Ridge, Paducah, Portsmouth, Hanford, etc. All the sites seem to have similar groundwater problems with release of these non-radioactive, conventional VOCs.

Cleanup of the solvents from the groundwater included a number of treatment technologies including air-stripping, soil vapor extraction, recirculation wells and dynamic underground stripping. All of these technologies involved taking water from the soil and extracting the solvents in the water or removing solvents directly from the soil. A number of innovative and creative methods were used to both control the groundwater plume and remove the source contaminants. Over 4.8 billion gallons of groundwater have been treated and 1.4 million pounds of solvents have been removed from the subsurface since 1983.

The measures taken over the past 25 years have worked very effectively and the Site now indicates that no groundwater plume containing solvents will ever migrate off-site. The efforts taken to date make for a good news story for SRS

Discussion

SRS has made several presentations on this topic to the CAB. This is an ongoing program that has been underway for over 25 years and it has been very productive and effective. It seems from the progress to date that remediation is sufficiently mature that the information developed thus far should be shared widely with the other DOE sites and the public. With the success of the SRS program for groundwater cleanup it seems there would be a real opportunity to export this technology to other DOE sites. With

this in mind we are requesting the Site (and SRNL in specific) assess the program to determine if there are certain features that would be useful for technology transfer to other DOE sites.

Recommendation:

The SRS CAB recommends that the Department of Energy:

1. Assess the groundwater cleanup program with the idea in mind of determining if there are elements of the SRS groundwater cleanup program that would be useful to other DOE sites and industrial sites.
2. Develop a program for potentially assisting and advising other DOE sites of our experience and capabilities, as well as appropriate media outlets.