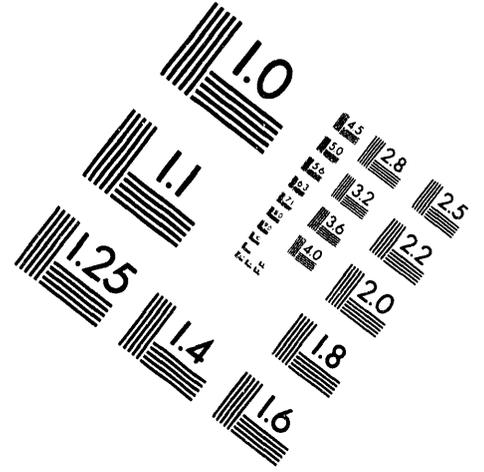
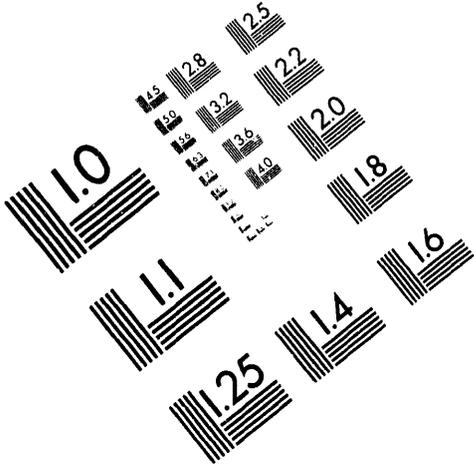




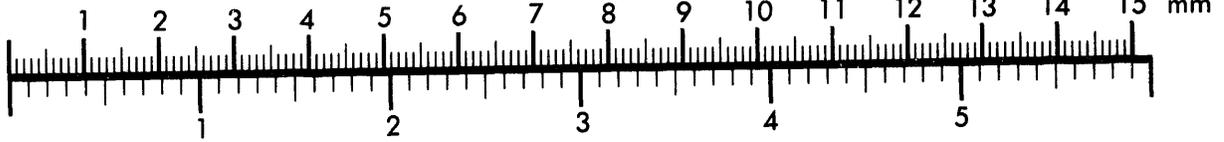
AIM

Association for Information and Image Management

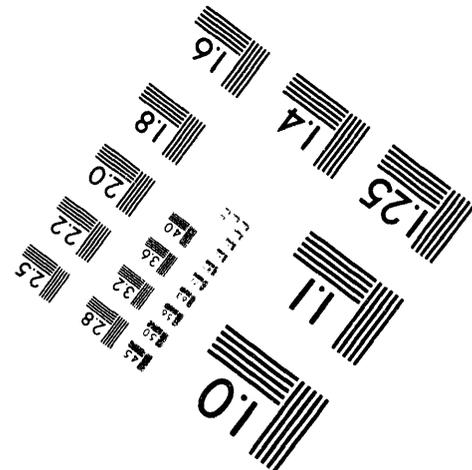
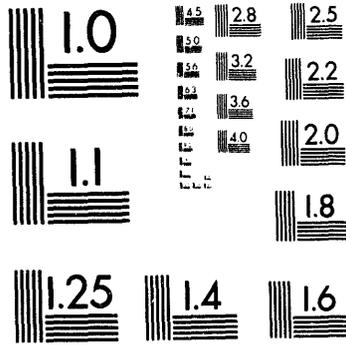
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202



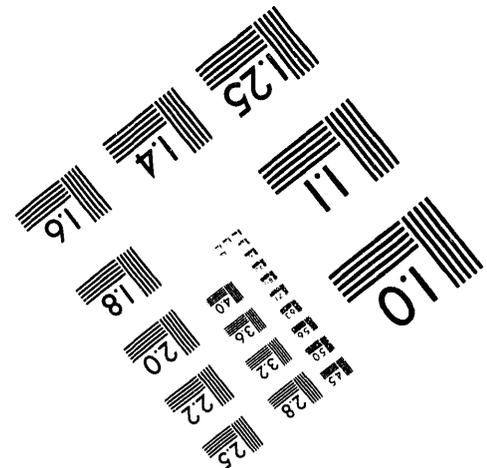
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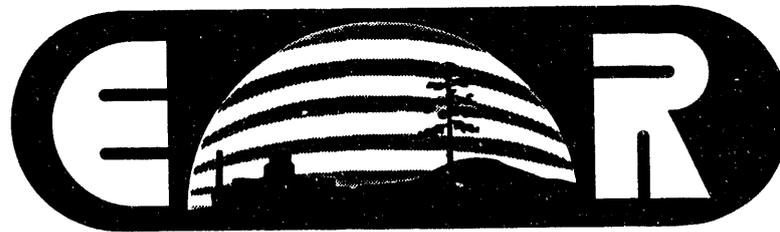
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1 of 1

Lessons Learned Bulletin (U)

Number 2
May 1994



Environmental Restoration

"Restoring the Environment Today for a Cleaner Tomorrow."

Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808



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Preface

The Savannah River Site initiated a Lessons Learned program for its Environmental Restoration Program (ER) last year in order to document both positive and negative aspects of lessons learned in the rapidly growing program. The purpose of the ER Lessons Learned Program is to improve communication within Savannah River Environmental Restoration Program in order to prevent the repetition of errors already made and to encourage repetition of effective program and project activities. This will allow decisions and outcomes of one project or activity to improve the decision making in other projects and activities.

Unlike traditional lessons learned program, this program tracks programmatic as well as project events or mechanisms. This includes safety, security, quality assurance, regulatory, and technological events resulting from environmental remediation, restoration, or administration activities.

The elements of the new Lessons Learned Program include a database cataloging lessons learned, a procedure defining the process for identifying and documenting the lessons learned, and a Lessons Learned Bulletin. The purpose of this Bulletin is to present and convey selected Lessons Learned within the Savannah River Site, as well as to other DOE sites within the complex which may be able to benefit.

The Savannah River Site's Environmental Restoration Bulletin is published biannually. We hope that you will be able to use and benefit from these lessons learned – both positive and negative – that we have experienced.



Lewis C. Goidell, Director
Environmental Restoration Division
U. S. Department of Energy, Savannah River Operations Office

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I. Introduction

During the past four years, the Department of Energy - Savannah River Operations Office and the Westinghouse Savannah River Company (WSRC) - Environmental Restoration (ER) Program completed various activities ranging from waste site investigations to closure and post closure projects. Critiques for lessons learned regarding project activities are performed at the completion of each project milestone, and this critique interval allows for frequent recognition of lessons learned. In addition to project related lessons learned, ER also performs lessons learned critiques relating to:

- Completion of Quality Assurance (QA) audits, reviews, surveillances, and other evaluations by external or independent organizations.
- Development or implementation of an idea or method to correct, modify, or otherwise improve current operating or programmatic processes.
- Experience of any reportable events as defined by the Site Item Reportability and Issue Management (SIRIM) program, including events of down-graded significance.
- Receipt of articles or reports, (i.e., publications and trade magazines) having potential applicability to ERD activities.

The Savannah River Site (SRS) also obtains lessons learned information from general industry, commercial nuclear industry, naval nuclear programs, and other DOE sites within the complex.

Procedures are approved to administer the lessons learned program, and a database is available to catalog applicable lessons learned regarding environmental remediation, restoration, and administrative activities. ER will continue to use this database as a source of information available to SRS personnel. For those individuals who do not have computer access, copies of the database containing lessons learned are available in Building 992-4W, cubicle 292.

II. Release of Groundwater causes minimal impact

Significance: Immediate response and actions taken to shutdown the M-1 Air Stripper, notify the proper officials, promptly evaluate the situation, and correct the problem resulted in minimal impacts to the environment and equipment downtime.

On January 11, 1994, the M-1 Air Stripper was shutdown for routine maintenance. During the restart of the facility, Reactor Materials personnel experienced difficulties with the level mechanism system controlling the discharge rate from the air stripper. All safety interlocks functioned properly; however, the lower section of the stripper chamber filled with water and caused the level system to shutdown. With the chamber full, water entered the process line between the air blower and the stripper and escaped through a valve that, under normal operating conditions, remained open. As a result, approximately 3-5 gallons of untreated groundwater was released to the ground.

Reactor Materials personnel immediately shutdown the stripper and notified supervision of the event. Evaluations revealed that the air stripper level control mechanism malfunctioned during restart due to a blockage of the process signal to the controller. This blockage prevented accurate level indications from being transmitted to the controller, thereby generating an erroneous column level for the stripper.

This malfunction caused the M-1 Air Stripper to shutdown for less than 24 hours and did not create a significant interruption of the M-Area groundwater clean-up program. The release of 3-5 gallons of groundwater was not a reportable quantity.

Lessons Learned:

As a result of this experience, a positive lessons learned was gained primarily due to the immediate actions taken by the Reactor Material personnel. They shutdown the operation and developed an expeditious path forward to correct the situation and to bring the system back to operation.

III. Lack of attention leaves subcontractor with second-degree burns

Significance: Re-emphasizing the importance of pre-job equipment operating inspections and wearing appropriate clothing will result in fewer Personnel Safety/Occupational Illness/Injury cases.

Though not directly working under the jurisdiction of the ER, this event occurred at an ER waste site.

While a subcontractor lit the oxygen/acetylene torch assembly, he heard a popping noise from the torch and then the flame went out. He depressed the oxygen pressure release lever to clear any debris from the cutting tip; however, when the lever was released, the torch's flame flashed back inside the gas/air mixing chamber, releasing the flame and pressure at the base of the torch handle. The flame continued to burn through the oxygen hose connection, and the acetylene hose remained intact until the gas and air cylinders were shut off at the regulators.

The flames burned through the worker's cotton gloves and left his right wrist with second-degree burns. The burn was immediately treated on site, and then he was treated at a burn-treatment facility. He was not medically cleared to return to work until 13 days after the incident.

The torch manufacturer attributed this failure to a clogged cutting tip, and an evaluation showed that there was no flashback arrestor on the torch assembly. Also, the worker was wearing cotton gloves instead of leather gloves which are required when working with torches.

Lessons Learned:

As a result of this event, the following actions were recommended:

- Install flashback arrestors on all torch cutting heads
- Retrain employees on the safe use of torches
- Re-emphasize that employees wear leather gloves when working with torches.

However, proper attention and safe use of equipment would have eliminated the injury and lost work time.

IV. Correct disposal techniques for toner fluid

Significance: Determination and perseverance by ER personnel determined the correct disposal techniques of spent flammable toner fluid.

In 1991, ER planned to purchase a plotter for its site mapping program. Through the site equipment inventory system, ER found that a color plotter was available and located onsite. Arrangements were made to transfer the plotter, toner, chemicals, and paper to the ER building located offsite in Aiken.

After using the plotter for a period of time, quantities of spent toner fluid were generated and found to be flammable. The question now arose as to the correct method of storage and disposal for the spent toner fluid.

The WSRC/Environmental Protection Department (EPD) stated that the ER offsite location was considered a "small quantity generator" of an Environmental Protection Agency (EPA) ignitable hazardous waste having a flash point of less than 140° F. Because ER generated less than 100kg per month, ER was exempted from Resource Conservation and Recovery Act (RCRA) requirements. The EPD also stated that disposal of the spent toner at the Aiken County Landfill would be legal; however, this action was discouraged. The EPA also concurred that a small quantity of waste could be blended with used oil and burned in a boiler or industrial furnace without a RCRA permit.

ER suggested the following options:

- treat and dispose the waste offsite
- deliver the waste to the SRS
- send the waste to be recycled or burned at an energy recovery facility.

The most logical solution appeared to be the burning of the spent toner for energy at the SRS powerhouse. The SRS powerhouse facility responded negatively to this option, and ER was instructed to accumulate toner waste at their offsite building until further notice.

Several onsite audits were performed in which no concerns were raised concerning the storage and disposal of the toner waste. However, a WSRC Occupational Safety and Health Administration inspection team recommended that the waste be stored in fireproof cabinets and a purchase requisition be prepared to have a vendor dispose of the toner waste.

The City of Aiken Fire Department inspected the storage of the toner waste and ordered ER to remove the material from the building. When the SRS was informed that the City of Aiken Fire Department had ordered removal of the waste, approval was given for an outside vendor to dispose of the material. The toner waste was removed from ER's building on March 1, 1994, by an outside vendor for a total cost of \$1,000.

The scenario of this situation was exhaustive, especially for ER individuals trying to obtain a correct disposal solution. Recognizing that SRS groups could not present adequate disposal techniques, ER personnel took the initiative to investigate and obtain the proper disposal method.

Lessons Learned:

Often times SRS offsite facilities will be subjected to different regulations, and a thorough investigation is necessary to determine the proper disposal method of materials.

As a result, other SRS offsite facilities were notified of this disposal problem in order to prevent future occurrences.

V. Foresight prevented future contamination

Significance: Realizing that a future deer hunt could occur near contaminated groundwater, personnel took actions to ensure that hunting activities would not take place in or near contaminated areas.

Routine sampling activities conducted along an old effluent stream seepage line (wetlands boundary) detected tritium and volatile organic compounds. The source of the contamination was traced to groundwater emanating from the Burial Ground Disposal Facility, known as the Old Radioactive Waste Burial Ground. This area contains buried hazardous and radioactive materials.

The cause of the groundwater contamination was the infiltration of rainwater through the wastes buried in trenches. The contaminated groundwater flows towards the old effluent stream seepage line and discharges into the surface water of the stream and wetlands.

Each fall, SRS allows individuals from across the United States to participate in deer hunting onsite. Because dogs are released during the hunt, concern was generated that these dogs might enter the contaminated area and potentially spread the contamination. ER contacted SRS, EPD, and other pertinent groups involved in organizing the hunt, to inform them of their concerns. As a result, the deer hunt managers eliminated dog drop-offs and deer hunt stands in the area of seepage line (Hunts Units 24 and 25) from the December 11, 1993, deer hunt. Further meetings were held in January, to inform the deer hunt managers of other environmental monitoring areas that may contain levels of hazardous or radioactive materials.

Lessons Learned:

The potential existed for the spread of contamination, not only at SRS, but possibly to offsite areas as well. The response team's foresight and immediate actions in recognizing and preventing potential spread of contamination, resulted in the avoidance of a negative lessons learned.

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This publication was developed to address lessons learned resulting from environmental remediation, restoration, or administration activities at the Savannah River Site that could be applicable to other environmental remediation/restoration organizations across DOE complexes. For those individuals who do not have computer access, copies of the database containing lessons learned are available in Building 992-4W, cubicle 292.

Detailed information regarding these lessons learned may be obtained by contacting either Alison Blackmon, DOE/ERD, (803) 725-9762 or John Parker, WSRC/ERD, (803) 644-1817.

If you have lessons learned with potential impact to our program at the Savannah River Site, please submit them to John Parker at the above address.

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