

Management Response Plan
for the
Chemical Safety Vulnerability
Working Group
Report



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VOLUME 2

INITIAL SITE RESPONSE PLANS

Brookhaven National Laboratory

Hanford Site

Idaho National Engineering Laboratory

Lawrence Livermore National Laboratory

Los Alamos National Laboratory

Oak Ridge Site (Oak Ridge National Laboratory, K-25 Plant, and Y-12 Plant)

Rocky Flats Plant

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The site-specific plans contained in this volume satisfy Task 1 of the response plan. This task calls for nine sites to submit plans addressing facility- and site-specific vulnerabilities identified by the field verification teams. A number of these vulnerabilities will require steps that are resource intensive and will require years to complete. The long-range plans addressing this type of vulnerability will be amplified in the Comprehensive Site Response Plans called for in Task 2, due by September 1995. These long-range plans are dependent on future budget and priority decisions, as well as Congressional appropriations and their implementation.

INITIAL SITE RESPONSE PLAN

BROOKHAVEN NATIONAL LABORATORY



**BROOKHAVEN NATIONAL LABORATORY
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

As part of the U.S. Department of Energy's (DOE) initiative to identify chemical safety vulnerabilities throughout the DOE complex, the Chemical Safety Vulnerability Core Working Group conducted a series of field assessments at various DOE contractor sites. Brookhaven National Laboratory (BNL) was subjected to a field verification on May 16-23, 1994. The draft field verification visit assessment report identifies four issues at Brookhaven that should be considered as part of the subsequent effort to identify DOE-wide chemical vulnerabilities. None of the conditions or circumstances identified required immediate action to prevent severe consequences. However, all four vulnerabilities were characterized as of short-term consequence, with severity ranging from medium to high. Many of the observations supporting the vulnerabilities had been identified through Brookhaven's Self-Assessment Program or, previously, through external appraisals, and were being addressed.

This Management Response Plan addresses the vulnerabilities identified in the draft assessment report. Brookhaven discussion is provided for each observation supporting BNL response to the vulnerabilities, and any action taken or planned. BNL recognizes that correcting the observation without addressing the root cause will not meet the objective of the chemical safety vulnerability initiative. Consequently, the responses focus on efforts and activities that will address the broader programmatic issues associated with the vulnerabilities.

Response Summary

None of the four vulnerabilities was characterized as of immediate consequence. This fact is important because it allows the Laboratory the opportunity to prioritize the issues through our environment, safety, and health (ESH) Management System and address them in the Laboratory's ESH Management Plan with ESH issues that have been previously identified and prioritized. As such, the BNL's appropriate ADS is referenced, and the current status discussed.

Brookhaven National Laboratory has set a goal of ESH excellence supported by a culture of continuous improvement. To meet this goal, the Laboratory has been evolving an integrated approach to the management of ESH at the site. The Draft Chemical Vulnerability Assessment of BNL identified vulnerabilities at the Laboratory which represent another perspective on the systems approach that the Laboratory is pursuing. The vulnerabilities can be categorized as weaknesses in *planning, protracted implementation of ESH programs, and resource limitations*. The Laboratory has already recognized these as issues which apply to the overall ESH program at BNL and has been working diligently to improve planning, to assure that those aspects of the ESH program which require longer implementation times represent low risk areas, and to apply available resources in an efficient and cost-effective manner.

One of the key aspects of the Laboratory's integrated approach for ESH management is the analysis, prioritization, and planned actions to respond to identified deficiencies or new initiatives and requirements. It is BNL's goal to balance relative risk against available resources and mission requirements. Based on the many favorable DOE evaluations of BNL's performance, the Laboratory is confident of its ability to work with Brookhaven Area Office (BHO), Chicago Operations Office (CH), the Office of Energy Research (ER), and Laboratory Management (LM) to address and resolve

the specific issues raised by the Team. There are, however, barriers within the DOE system which hamper the Laboratory's ability to fully address these vulnerabilities in a consistent and integrated fashion. These barriers are:

- Conflicting and sometimes redundant or excessive requirements,
- Conflicting priorities,
- DOE initiatives to decrease/control site support functions.

BNL is a multipurpose laboratory with its major mission involving basic research with large research facilities (reactors and accelerators). Brookhaven has no large production or pilot plant activities which involve large quantities of chemicals. The Laboratory's SARA Title III report lists only 5 substances above the Threshold Planning Quantities (TPQ). BNL research and operations use a large number of different chemicals in small quantities, primarily in laboratories with hoods. Potential chemical vulnerabilities are risk ranked and prioritized for resolution with other ESH issues. The following specific responses and improvements are consistent with this policy.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Brookhaven National Laboratory
Point of Contact: Otto White (516-282-4248)

Vulnerability Number: CSVN-BNL-000-01

Vulnerability:

- Weaknesses in planning impede the effective elimination of hazards posed to workers and members of the public.

Summary of Vulnerability:

- Weaknesses in planning are evident in the site maintenance program, facility/process construction and design, management of chemicals, and packaging of waste materials. Maintenance programs at existing facilities are not effective in preventing facility deterioration in order to prevent loss of chemicals from systems. Relatively new system designs have not incorporated engineered controls to prevent chemical exposures. Several older facilities are used for storage of hazardous materials. These facilities do not have all the safety systems common to general industry. Site chemical inventories are incomplete and do not provide the detail needed to plan appropriately for procurement, use, storage, and disposal of hazardous chemicals. Immature and incomplete programs fail to mitigate chemical release incidents to workers or the environment.

Response:

- Several sitewide committees have been charged with advising management on chemical safety issues. These committees include the Chemical Process Safety Committee, Chemical Management Program Advisory Committee, Chlorine Review Committee, and Ad Hoc Committee on Chemical Safety. The products of these committees will be used to obtain sitewide buyin and ownership of recommendations.

BNL has initiated a number of projects which are designed to improve the management of chemicals. Currently individual departments and divisions are maintaining detailed inventories of chemicals within their facilities while on a sitewide basis, an inventory for SARA Title III requirements and Community Right-to-Know regulations is being maintained using a 5 pound - 1 gallon criteria. As a DOE Occupational Safety & Health Worker Protection Program (OSHWPP) pilot site recipient, BNL is currently installing a chemical management system (CMS) that was developed at PNL. This program will provide an online chemical management database that includes a detailed chemical inventory on a room-to-room basis. The system, via bar-coding chemical containers, will track chemicals from their initial entry onsite to disposal. Features of the system include:

- Chemical Exchange Program
- Detailed Inventories
- Hazard Analysis
- Emergency Response Information

- Identification of Waste Stream
- Minimization of Waste
- Generates Regulatory Report

ADS E94D0003 in the BNL ESH Management Plan will address the initial inventory.

Operational policies developed for the use of the CMS will specify requirements for inventories at various organizational levels including laboratories.

Currently ESH Standards 2.1.1 and 6.2.0 provide guidance on the use, storage and disposal of chemicals. These standards will be reissued as appropriate.

- Older buildings used for storage of hazardous materials

BNL has recognized the need to improve the facilities where hazardous waste is repackaged and temporarily stored for offsite disposal. A new facility is to be constructed within the next two years. The new facility will provide BNL with the capability to meet its hazardous, mixed, and radioactive waste management requirements well into the next century. It is designed to permit safe sampling, handling, repackaging, and temporary storage of waste prior to shipment offsite. It is also designed to allow for future expansion to meet foreseeable BNL mission needs. Funding for this facility has been approved by EM-30.

- Although the maintenance budgets have been decreasing, the dedication of effort towards preventive and predictive maintenance activities has increased during that same period. The inoperable safety shower observed by the site review team is clearly a preventive maintenance issue. Further investigation would have revealed that an extensive, formal safety shower and eye wash station inspection program exists. This observation by the team was an isolated problem. There is no direct correlation of the preventive maintenance budget to facility condition.
- Regarding piping systems and pressure vessels, BNL is fully on line with the Condition Assessment Survey program as mandated by DOE. Part of that inspection process requires that all pressure vessels/piping systems be visually inspected for signs of deterioration. When evidence of deterioration is found, the program calls for nondestructive testing of vessels and pipes. These inspections are scheduled through the Preventive Maintenance Module of our Computerized Maintenance Management System. BNL recently sent preventive maintenance coordinators to a DOE-sponsored Predictive Maintenance Seminar and found that the Laboratory's program is very consistent with most other similar multiprogram labs. The Laboratory acknowledges the benefits of predictive maintenance and it is a cornerstone of our maintenance philosophy.
- Maintenance Implementation Plans (MIP) are required for nuclear facilities. Those facilities which were identified prior to FY 1994 have developed and submitted MIPs to DOE for approval. The two facilities identified as nonreactor nuclear facilities in FY 1994, which includes the Hazardous Waste Management Facility, have commitment dates for submitting MIPs to DOE.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Brookhaven National Laboratory
Point of Contact: Otto White (516-282-4248)

Vulnerability Number: CSVN-BNL-000-02

Vulnerability:

- Protracted implementation of core safety programs increases the potential for chemical vulnerabilities.

Summary of Vulnerability:

- The three means for managing hazardous chemicals are: (1) a knowledgeable and well-directed operating organization; (2) technically capable advocates for ES&H, who can provide specialized assistance to line organizations; and (3) an array of core or model safety programs to guide both groups. The core safety programs at the BNL have not been fully implemented, and completing such programs, including training, is not scheduled for several years.

Implementation of elements of core safety programs that could lead to chemical safety vulnerabilities is protracted in several areas including: (1) incomplete hazards assessment to support emergency management, (2) incomplete ES&H training, and (3) a lack of guidance concerning chemical inventory in the ES&H Standards for Hazard Communication and the Laboratory Chemical Hygiene Plan.

Response:

- The Laboratory has prepared and issued a request for proposal to perform Hazard Assessments at BNL facilities. These facilities have previously been identified and prioritized and are included in the ESH Management Plan (ADS A92D0019, B94D0013). A total of 23 facilities containing 36 buildings are included in the project. These assessments will be conducted in accordance with DOE 5500.3A and organized to meet the DOE Emergency Management Requirements.

Each assessment document will be formatted to contain the following elements:

- Introduction
- Facility and Process Description
- Identification and Screening of Hazards
- Hazard Characterization
- Event Scenarios
- Event Consequences
- Emergency Planning Zone
- Emergency Classes, Protective Actions and Emergency Action Levels
- Maintenance and Review of the Hazard Assessment Documents

- BNL's chemical vulnerability with respect to chlorine is being addressed. The Laboratory decision to reduce the chlorine gas inventory at all locations below the OSHA Chemical Process Safety Standard's threshold quantities was a recommendation from the ad hoc committee appointed to evaluate the applicability of the OSHA Standard to processes and activities at BNL. Subsequently, another committee (Chlorine Review Committee) has been established to study the use of chlorine in compressed gas cylinders and alternatives that may be viable at BNL.
- Although the Chlorine Review Committee has not yet completed its deliberations, its initial recommendations will result in an improved margin of safety. To date, the committee conducted an independent sitewide review using an outside technical specialist, made and implemented inventory reduction measures, and initiated system changes to convert pressurized delivery systems to vacuum delivery systems. There are other chlorine sources, such as HTH tablets or sodium hypochlorite solutions, that are under consideration as replacements for gaseous chlorine use in some areas. Many of these lower risk systems have already been implemented. The applicability of similar solutions at remaining locations using chlorine in gas cylinders is the specific charge of the committee.

Hazard identification will include a review of chemicals to determine threshold planning quantities (TPQ) as defined by SARA Title III, 40 of the Code of Federal Regulations (CFR), Part 355, Appendix A, radioactive material quantities listed in 10CFR30.72 schedule C and chemically toxic materials which, based on their toxicological and physical properties, present potential hazards.

Facilities and process description will provide sufficient detail to support the identification and characterization of all hazards and determine their potential onsite and offsite consequences. The facility descriptions will address general information related to the facility's mission, operations, and physical characteristics, including an assessment of the facility's vulnerability to external and natural phenomena hazards. Facility descriptions will include the location of the facility relative to other facilities on the same site, the site boundaries, the nearest public access locations, and transportation networks, such as highways, railways and waterways. If appropriate, the facility description will include the types of materials transported, the types of containers and vehicles used, the routes, speeds, number of shipments per year, and other controls relevant to the likelihood or severity of an accident.

BNL has recognized, prior to the chemical safety vulnerabilities site visit, deficiencies in compliance training in the S&EP Training Plan. The Plan covers industrial hygiene, industrial safety, radiological protection and general employee training requirements mandated by DOE, OSHA, ANSI, etc. Deficiencies have been prioritized in the planning, and ADSs A93D0195 and E94D0031 have been prepared to define funding, human resources, and facility requirements. Internal and external sources have been targeted to facilitate improvements.

Guidance concerning chemical inventories has been addressed in the response to CSVN-BNL-000-01.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Brookhaven National Laboratory
Point of Contact: Otto White (516-282-4248)

Vulnerability Number: CSVN-BNL-000-03

Vulnerability:

- There is a point at which shortfalls in resources will lead to new chemical safety vulnerabilities, as well as an inability to accomplish timely progress on identified issues.

Summary of Vulnerability:

- The Safety and Environmental Protection Division provides technical expertise to line programs, as well as supporting independent reviews of self-assessments by various operating organizations. A declining laboratory budget, combined with a fairly rigid control over General and Administrative expenses (which is where most costs of the Safety and Environmental Division are funded) means that BNL is entering a period where there may be real decreases in resources applied to ES&H. Budget constraints will lead to a deterioration in the capabilities to provide technical support necessary to carry out mandated ES&H programs. The relatively low number of staff at BNL that are well qualified in recognizing and providing solutions to chemical safety vulnerabilities can be expected to further decrease with time.

Response:

- BNL has and will continue to take steps to assure that resource limitations do not impair the safety and health of workers and the public or our commitment to protect the environment. BNL has been evolving an integrated approach to the management of ESH at the site. The Laboratory has been working diligently to improve planning, to assure that those aspects of the overall ESH program which require longer implementation times represent low risk areas and to apply resources in an efficient and cost-effective manner. In the preparation of this ESH Management Plan, BNL will prioritize vulnerabilities for inclusion in annual budget submittals.

A key aspect of BNL's integrated approach for the ESH Management Plan is the analysis, prioritization, and planned response to identified deficiencies or new initiatives/requirements. It is the Laboratory's goal to balance relative risk against available resources and mission requirements. The definition, integration, and prioritization of requirements establish a baseline from which an integrated plan of activities, schedules, and costs can be developed to clearly define a path for ESH programs. Sites not only have to deal with chemical safety, but must assure the stability of their programs with respect to all ESH requirements. Sites must also address priorities in other support areas, such as physical plant needs. Integration of activities and tradeoffs in conflicting priorities are a fact that sites deal with every day. Not every requirement is a priority 1, and sites such as BNL attempt to consistently balance the demands of site operations with respect to all ESH disciplines as well as between ESH demands and other non-ESH requirements.

While limited resources are an issue in meeting all demands, they represent a challenge for efficient and cost-effective compliance and improvements. Flat or decreasing budgets do not necessarily imply inadequate levels of safety or a reduction of the core program activities. However, limited resources require a clear agreement between DOE and the sites on requirements and their priority so that resources can be more effectively used to reach realistic goals.

Planning weaknesses result from not defining an appropriate set of integrated requirements with priorities that include cross-cutting activities. For sites such as BNL, where the mission has remained fairly constant and is expected to continue so in the future, the issues center on maintaining and upgrading existing facilities, operations, and programs to maintain our ESH progress. The issue is to assure the stability and integrity of all facilities in all ESH areas; therefore, a clear definition of requirements, a setting of priorities and goals, planning, and integration of activities to implement those plans can strengthen the ESH status of the site.

The Laboratory will continue the development and implementation of this integrated approach for managing ESH. The Laboratory will continue to work with BHO, CH and ER to develop long-range requirements, establish realistic goals and assure the stability of our total ESH program. There are already mechanisms in place to achieve this, and we recommend enhancements to these activities:

1. The effort to revise the DOE Directives System should include an effort to prioritize and cross-link requirements. As the Laboratory, in conjunction with CH/LM and ER, continues to confront the reality of resource-constrained budgets, the need for DOE leadership to set policy on priorities and integration of requirements becomes more and more critical.
2. A second aspect of the Directive System improvements requires that the authors perform a resource impact analysis and that DOE integrate the incremental impact in its own internal budget process. Currently, ER and the Laboratory are repeatedly tasked to implement new requirements without additional resources or to reduce program activities in order to meet new requirements that have not been fully reviewed. At a time when DOE is focusing on reductions in overhead costs, this approach is incompatible. Review and cost impact analyses must, therefore, become institutionalized.
3. DOE has initiated several system approaches to handling ESH as well as non-ESH requirements. The ESH Management Plan is a good start for defining priorities and for resource allocation. It needs to mature, to become a long-range planning effort that helps DOE and the sites establish the path to excellence. The Capital Asset Management Process will be a valuable long-range management tool for DOE and the laboratories in the joint effort to more effectively plan and execute the maintenance and facilities management function; however, currently its implementation is placing a heavy burden on the laboratories. LM had been an advocate for direct funding CAMP startup costs for the laboratories. Support for this from other offices within DOE would help foster further development and implementation.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Brookhaven National Laboratory
Point of Contact: Otto White (516-282-4248)

Vulnerability Number: CSVN-BNL-000-04

Vulnerability:

- Formal control measures have not been implemented to ensure that personnel who do not read or speak English understand the safety requirements and hazards associated with work in hazardous environments.

Summary of Vulnerability:

- The requirement for contract specifications to provide positive assurance that subcontractor personnel who do not read or speak English understand workplace safety requirements and hazards has not been institutionalized. On an individual basis, specifications for subcontracts have, at the request of a safety engineer, included a clause stating "Workers shall be able to comprehend work and safety instructions in English or a supervisor who can translate shall be provided and be present at all times." On several occasions, a safety engineer has suspended work on a job site by invoking the contract clause that requires a bilingual person be present on the work site at all times.

Response:

All asbestos abatement contracts currently include the statement, "Workers shall be able to comprehend work and safety instructions in English or a supervisor who can translate shall be provided." The contract specification for all types of projects shall be updated to include the following verbiage under Supplementary Conditions- Construction Safety:

"Workers shall be able to comprehend the scope of work and safety instructions required to perform the job. If workers cannot read or speak English or are hearing impaired, an interpreter shall be provided by the contractor to ensure that the scope of work; information regarding hazards associated with the work-site; and safety requirements are relayed to them in a manner in which they can understand. The interpreter shall be at the work-site whenever these workers are on the job."

NOTEWORTHY PRACTICES

- There were observed noteworthy practices, including an effective and simple system for controlling work by plant maintenance, an individual initiative to include a non-English speaking/reading clause in contracts, and the specific inclusion of chemicals in the safety analysis for the new Hazardous Waste Management facility. These will be considered, together with good practices at other sites, in developing the final report of the review of DOE operations.
- This facility has its own configuration management system, an effective computerized preventive maintenance control scheme for experimental equipment and safety-related systems, and a captive operating staff. The safety analysis document used as a Basis for Interim Operation addresses the requirements in DOE 5480.25, "Safety of Accelerator Facilities," and has been submitted to the Brookhaven Area Office for approval. The equipment has been maintained in good operating condition (the facility has been in operation for almost 25 years), procedures are in place, operating logs are kept, and it is apparent that the management and operating personnel in this area take pride in the safety and quality record that they have achieved. There were no conditions identified in this facility which would lead to a chemical vulnerability.
- The efforts of one construction safety engineer to address the issue of safety and hazard awareness for subcontractor personnel who do not read or speak English was identified as a noteworthy practice.

INITIAL SITE RESPONSE PLAN SUMMARY

SITE	IMPROVEMENT	PRODUCT	DUE
Brookhaven National Laboratory	To improve weaknesses in planning that impede the effective elimination of hazards posed to workers and members of the public (CSVR-BNL-000-01), BNL reviewed its use of chlorine and identified improvements; obtained, via OSHWPP, a DOE proven Chemical Management System for sitewide implementation; and established a sitewide committee to review and advise on chemical safety issues.	Establish Chemical Management System Advisory Committee	Done
		Establish Chlorine Review Committee	Done
		Form and charge Ad Hoc Committee on Chemical Safety	Done
		Develop and initiate Chemical Management System	3/95
		Develop implementation plan for recommendations from the Chlorine Review Committee	11/94
		Complete construction of new Hazardous Waste Management Facility	9/96
	To minimize protracted implementation of core safety programs that may increase the potential for chemical vulnerabilities (CSVR-BNL-000-02), BNL has prepared and released a Request for Proposals to perform Hazard Assessment for up to 23 facilities and submitted request for funding ES&H Training in the Laboratory ES&H Management Plan.	Complete MIPs for all nuclear facilities onsite	2/95
		Complete hazard assessment for designated facilities	9/95
		Initiate improved OSHA training program	1/95

INITIAL SITE RESPONSE PLAN SUMMARY

SITE	IMPROVEMENT	PRODUCT	DUE
Brookhaven National Laboratory	Improve ESH Management System to ensure that shortfalls in resources will not lead to significant ESH vulnerabilities (CSVR-BNL-000-03).	Develop and implement an ESH Management System Procedure to require annual review and prioritization of new vulnerabilities and requirements and incorporate them with the ESH Management Plan.	3/95
	Improve formal control measures to ensure that personnel who do not read or speak English understand the safety requirements and hazards associated with work in hazardous environments (CSVR-BNL-000-04).	Update contract specifications for all types of projects to include verbiage for safety control measures for personnel who do not speak English.	11/94

NOTEWORTHY PRACTICES

Tandem Van de Graaff has its own configuration management system, an effective computerized preventive maintenance control scheme for experimental equipment and safety-related systems, and a stable operating staff. The safety analysis document used as a Basis for Interim Operation addresses the requirements in DOE 5480.25, "Safety of Accelerator Facilities," and has been submitted to the Brookhaven Area Office for approval.

INITIAL SITE RESPONSE PLAN

HANFORD SITE



**HANFORD SITE
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

As part of the U.S. Department of Energy's (DOE) initiative to identify chemical safety vulnerabilities in the DOE complex, the Chemical Safety Vulnerability Core Working Group sponsored a series of field assessments at various DOE sites. A field assessment was conducted at the Hanford Site May 2-11, 1994. The field verification team visiting Hanford examined a broad range of facilities with special attention given to those facilities being transferred to, awaiting, or undergoing decontamination and decommissioning (D&D). Different types of chemical- and waste-handling facilities including laboratories, process facilities, water treatment plants, and waste treatment and storage facilities, were examined.

The Field Verification Report for the Chemical Safety Vulnerability review of the Hanford Site identified three chemical safety vulnerabilities. The three vulnerabilities ranged from low to medium priority with consequences of immediate to medium term. This Management Response Plan addresses each vulnerability identified in the Hanford Field Verification report and describes the planned corrective actions for each vulnerability.

Response Summary

Two of the chemical safety vulnerabilities identified at Hanford are associated with: (1) prolonged storage of large quantities of hazardous chemicals in shutdown or deactivated facilities; and (2) the loss of corporate knowledge that will be critical when equipment and systems that contain these chemicals are operated, breached, or disassembled during cleanup activities. As noted in the Hanford Field Verification Report, there has been significant progress at Hanford in reducing bulk storage of hazardous chemicals; however, this process is complicated by prolonged decision-making processes, the involvement of multiple stakeholders, and numerous requirements by regulatory agencies. Hanford will continue to monitor excess bulk storage of the chemicals and aggressively pursue the disposal of the chemicals. Once these chemicals have been disposed of, both the consequence and priority of the vulnerabilities will be greatly reduced or eliminated.

The third chemical safety vulnerability reflects weaknesses in some aspects of the various hazard analysis methodologies and differing work control systems used by the multiple contractors at the Hanford Site. This vulnerability is further complicated by the lack of a graded approach to differentiate between low hazard and high hazard work plan reviews and the lack of definitive guidance for hazard classification and safety analysis for nonnuclear facilities. Hanford will continue to support the development of sitewide hazard analysis programs such as Hanford Occupational Exposure Assessment Program (HOEAP) (commendable practice) and to clarify the requirements for conducting job hazard analysis, facility hazard analysis and hazard communication.

CHEMICAL SAFETY VULNERABILITY REVIEW
August 1994

Site/Facility: Hanford / PUREX and PFP
Point of Contact: PUREX - Douglas G. Hamrick, WHC
PFP - Eric C. Vogt, WHC
PUREX/PFP - Al Farabee, DOE-RL

Vulnerability Number: CSVR-RL-HAN-01

Vulnerability:

- Large quantities of surplus hazardous chemicals are being stored for prolonged periods in production facilities that are being transitioned to deactivated status.

Summary of Vulnerability:

- Large quantities of nitric acid, aluminum nitrate, carbon tetrachloride, and tributylphosphate solvent are being stored at the PUREX Plant and at the Plutonium Finishing Plant (PFP) in outside tanks or drums. Prolonged storage of hazardous chemicals in shutdown or deactivated facilities may lead to personnel hazards or environmental releases caused by spills, evaporation, leakage from corroded tanks or drums, decomposition of chemicals, or lack of adequate administrative controls. These conditions and circumstances represent a low-priority vulnerability with a potential for short- to medium-term consequences.

Response:

- **PUREX HISTORY - NITRIC ACID** During operation of the PUREX and UO3 processes, nitric acid was recovered from various off-gas streams by absorption. Approximately 193,780 gallons of this recovered nitric acid are currently stored in six tanks at the PUREX facility. The six (304L stainless steel) tanks are Tank-U1, Tank-U2, Tank-P2, Tank-P3, Tank-P13, and Tank-P14. Tank P4 contains process flush solutions returned from UO3, rain/snow melt collected from the 203-A sumps, and steam condensate collected from the 203-A steam system. Corrective actions are as follows:
 1. **CHEMICAL STORAGE MONITORING** - The volumes of the PUREX nitric acid stored in Tanks-U1, U2, P2, P3, P13, P14, and P4 are monitored once per shift (three shifts per 24 hours) per Plant Operating Procedure P0-040-305. The U1 and U2 tanks are in U-Cell, which is a cell within the 202-A (PUREX) facility. The U-Cell sumps serve as secondary containment for these vessels. The P2, P3, P13, P14 and P4 tanks are in the 203-A facility, which serve as nitric acid and UNH storage for the PUREX/UO3 facilities. The P2, P3, P13, P14 and P4 tanks have secondary containment and sumps dedicated to them.

2. **DISPOSAL** - One option for disposition of the PUREX nitric acid contained in Tanks U1, U2, P2, and P3 is to export the approximate 183,000 gallons from PUREX to British Nuclear Fuels Limited, plc (BNFL plc) in Sellafield, England. The acid is planned to be shipped in ISO containers, which contain approximately 4,000 gallons each. Several tanks would be involved and would be reused until approximately 50 transfers had been completed. The Secretary has directed that an Environmental Assessment be conducted for the evaluation of the shipment option and to evaluate other alternatives.
 3. **DISPOSAL** - The additional approximate 10,780 gallons of nitric acid contained in Tanks P13 and P14 are also expected to meet BNFL plc's operating specifications. Attempts to add this material to the export contract with BNFL plc, will be made after the material has been more thoroughly characterized. If not satisfactory, it will be neutralized and sent to underground storage.
 4. **DISPOSAL** - The material contained in Tank P4 will be neutralized and sent to underground storage.
- **PUREX HISTORY - ORGANIC SOLVENT** During operation of the PUREX process, organic solvent, consisting of ~23% Tri-butyl Phosphate (TBP) and ~75% Normal Paraffin Hydrocarbon (NPH), was used in the solvent extraction operations. When the plant was shutdown following the Stabilization Campaign, approximately 21,000 gallons of this solvent remained in the building, stored in two canyon tanks (Tks-G5 & -R7). As part of the deactivation of the facility, the organic from these two canyon tanks was combined in a single bulk storage tank previously used to store the pure NPH (Tk-40). The organic was "cleaned up" during the Stabilization Campaign by contacting the solvent with an aqueous wash to remove the degradation products and radiological contaminants. Thorough laboratory analyses were completed on the materials stored in Tks-G5 & -R7; however, the combined mixture has not been sampled and analyzed. The original analyses demonstrated that the solvent is a non-RCRA waste and that it could be transported as a LSA material; however, due to the TBP concentration, the solvent is classified as a Washington State Designated Waste. Corrective actions are as follows:
 1. **CHEMICAL STORAGE MONITORING** - The volumes of the PUREX organic solvent stored in Tank Tk-40 are monitored once per shift (three shifts per day) per PUREX Plant Operating Procedure PO-040-305. Tank Tk-40 is located in the 211-A bulk chemical storage area directly north of the 202-A building. Tk-40 is surrounded by a ~5-foot-high concrete dike which will contain any potential leak or spill.
 2. **DISPOSAL** - The first option for disposal of the PUREX TBP/NPH is shipment to the Idaho National Engineering Laboratory (INEL) for use as a fuel substitute in the Westinghouse Idaho Nuclear Company (WINCO) calciner. To date, regulatory and policy concerns from the State of Idaho have stopped the shipment of the solvent until it can be delisted. Environmental testing (fish toxicity) is in progress as part of the delisting process and is expected to be completed by January 31, 1995.
 3. **DISPOSAL** - Other options for the disposal of this material are currently being evaluated. These options include offsite incineration at either a mixed-waste or at a low-level waste (LLW) incinerator or disposal onsite by a vendor-supplied steam reformer. In the event that the material can not be accepted and used by the WINCO calciner, one of these options will be chosen for the disposal of the PUREX organic.

3. **DISPOSAL** - Other options for the disposal of this material are currently being evaluated. These options include offsite incineration at either a mixed-waste or at a low-level waste (LLW) incinerator or disposal onsite by a vendor-supplied steam reformer. In the event that the material can not be accepted and used by the WINCO calciner, one of these options will be chosen for the disposal of the PUREX organic.
- **PFP HISTORY - NITRIC ACID, ALUMINUM NITRATE AND CARBON TETRACHLORIDE** Bulk chemical storage at the Plutonium Finishing Plant includes storage of approximately 3,000 gallons of 12M nitric acid and 8,000 gallons of aluminum nitrate stored in bulk storage tanks and approximately 2,640 gallons (forty-eight 55-gallon drums) of carbon tetrachloride. The bulk storage tanks are stainless steel, are located within diked containment areas, and are expected to be adequate for indefinite storage. The carbon tetrachloride (CCL₄) drums are stored outdoors on poly-spill pallets beneath a tent for protection from the weather, and the area is posted to warn workers of the potential hazards. PFP has determined that the subject chemicals are not needed in the immediate future for plant operations and has placed the products in the Declaration of Excess program.
 1. **CHEMICAL STORAGE MONITORING** - Until the surplus chemicals are removed from the facility, routine surveillances to detect and mitigate any leaks, ensure container integrity, and verify proper labeling will continue.
 2. **DISPOSAL** - Both the nitric acid and the aluminum nitrate have been placed in the Declaration of Excess Program since May 18, 1994. Currently, PFP is aggressively pursuing redeployment to offsite agencies or public sales. Due to the quality and the commercial application of the product, the completion of the redeployment of the nitric acid and aluminum nitrate is anticipated to be near term (prior to December 31, 1994).
 3. **DISPOSAL** - The drums of CCL₄ have been determined to be excess to the immediate needs of the plant and have been placed in the Excess Program. PFP will continue to pursue redeployment of the carbon tetrachloride until all recycling efforts have been exhausted. If redeployment of the material in the near term (December 31, 1994) proves to be not feasible, PFP will pursue other options, including declaring the material waste. If the carbon tetrachloride is determined to be waste, the material will be shipped from the facility within 90 days.

CHEMICAL SAFETY VULNERABILITY REVIEW

August 1994

Site/Facility: Hanford Site

Vulnerability Number: CSVRL-HAN-02

Point of Contact: John B. Hall, DOE-RL
Lesley L. Reed, WHC

Vulnerability:

- Weaknesses exist in some aspects of the hazard analysis program at Hanford.

Summary of Vulnerability:

- Weaknesses exist in some aspects of the program and systems for performing various hazard analyses at the Hanford Site. The field verification team noted that the graded approach used to differentiate low-hazard work plans and packages from high-hazard plans and packages needs improvement. Differing hazard recognition and control systems implemented by multiple contractors, along with inconsistently performed facility hazard analyses, further contribute to an increased potential for personnel exposure to workplace hazards. These conditions and circumstances represent a medium-priority vulnerability with a potential for immediate consequences.

Response:

- HOEAP - The Department of Energy, Richland Operations Office (RL) and RL contractors have recognized a need for rigorous hazard analysis for the many work processes and operations which may result in chemical and nonchemical exposures to workers. The HOEAP, which was identified as a commendable practice by the Chemical Safety Vulnerability Field Verification Team has been developed to provide a consistent mechanism for identifying and documenting the chemical, physical, biological and ergonomic hazards present in the workplace. Once fully implemented the HOEAP will serve to significantly strengthen the hazard analysis program at Hanford. The HOEAP was developed by RL with input from the various Hanford contractors and was designed to be used by all Hanford contractors. Sitewide training on the HOEAP has previously been conducted and "field testing" is in progress so as to optimize its performance.

A summary report of the HOEAP "field test" describing its strengths and weakness will be prepared by December 31, 1994, (near-term task) and the HOEAP will be revised accordingly. Once revised, DOE-RL will adopt the HOEAP as the primary mechanism for conducting hazard analysis for routine processes/operations and/or high-hazard operations. Revisions to and completion of the HOEAP will be completed by June 30, 1995, (short-term task) with implementation of the program by the line organizations occurring thereafter. Processes such as WHC Job Hazard Analysis (JHA) and Pacific Northwest Laboratories (PNL) Workplace Exposure Assessment (WEA) will continue to serve as the primary mechanism for conducting hazard analysis for nonroutine tasks and/or low-hazard operations.

- **HAZARD ANALYSIS AND COMMUNICATION** - DOE-RL Standard, "Hazard Analysis and Communication," has been drafted and is to be implemented by all RL contractors. The draft Hazard Analysis and Communication standard specifies the requirement for conducting workplace hazard analysis for both industrial safety and industrial hygiene related hazards and communication of the controls necessary to protect workers from the identified hazards. This Standard cross references the various Hanford industrial safety and health analysis methodologies, including the HOEAP and JHA. The Hanford task force creating the Hazard Analysis and Communication Standard has recommended a pilot program for determining the standard's workability. Estimated implementation date for this standard is on or before December 31, 1994, (near-term task).
- **FACILITY HAZARDS ANALYSIS** - As noted in the Hanford Field Verification Report, some facilities have been classified as low-hazard nonnuclear facilities due to the determination that they may have potential "minor onsite and negligible offsite impacts." Safety analysis documents, as described by DOE 5481.1B, have not been prepared for some low-hazard, nonnuclear facilities due to confusion regarding the numerous DOE Orders and OSHA standards that are either in draft or have been promulgated relative to conducting hazard assessments in these types of facilities. Specifically, the applicability of 29 CFR 1910.119, 29 CFR 1910.1200, 29 CFR 1910.120, 29 CFR 1910.1450; DOE 5480.10A (draft), DOE 5481.1B, DOE 5480.SAP (draft); EM Standard DOE-EM-STD-5502-94; Draft DOE Standard, "Process Safety Management for Highly Hazardous Chemicals," and Draft DOE Standard, "Analysis of Chemical Process Hazards," for conducting hazards analysis at nonnuclear low-hazard facilities needs to be determined. In the event that further guidance relative to the above issue is not evident by December 31, 1994, DOE-RL in conjunction with the various Hanford contractors, will develop a quality improvement team (QIT) to further evaluate this issue and draft a report to DOE-HQ - Office of Environment, Safety and Health (EH) detailing the issue and providing recommended resolution to the issue(s). The Hanford report will be issued to DOE-HQ EH by June 30, 1995, (short-term task).

CHEMICAL SAFETY VULNERABILITY REVIEW
August 1994

Site/Facility: Hanford Site/PUREX & PFP
Point of Contact: PUREX - Douglas G. Hamrick, WHC
PFP - Eric C. Vogt, WHC
PUREX/PFP - Al Farabee, DOE-RL

Vulnerability Number: CSV-RL-HAN-03

Vulnerability:

- A loss of corporate knowledge may adversely affect cleanup activities at the Hanford Site.

Summary of Vulnerability:

- The loss of corporate knowledge may result in chemical safety vulnerabilities, particularly when systems or components are operated, breached, or disassembled. The loss of corporate knowledge is a result of personnel turnover, inconsistent configuration management, failure to capture and retain characterization data, and reductions in the scope of the training program. These conditions and circumstances increase the possibility for accidents or releases involving hazardous chemicals and represent a low- to medium-priority vulnerability with a potential for immediate- to short-term consequences. By the nature of this vulnerability, the severity of the consequences can be expected to increase with time.

Response:

- The majority of the chemicals involved in CSV-RL-HAN-03, Section 3.b, will be disposed of as described in CSV-RL-HAN-01, "Hanford Management Response Plan," which will reduce the severity of this vulnerability. However, due to the fact that chemical residues will still be present in the systems and components, actions to compensate for the loss of corporate knowledge have been provided.

Both PUREX and PFP have previously implemented an organizational structure (Projectized) that will lessen the impact of the loss of corporate knowledge. The "new" organizational structure intermingles experienced personnel with less experienced personnel to maximize available corporate knowledge. Team concepts are being used for each subactivity whereby specialized experience is aligned to achieve subactivity completion.

Westinghouse will continue to use team concepts, development of rigorous configuration control systems, and extensive safety reviews to minimize chemical safety vulnerabilities associated with the loss of "experienced" facility personnel.

ITEM #	VULNERABILITY/OBSERVATION	ACTION/PRODUCT	DUE DATE	RESPONSIBLE PERSON
HAN-01	Large quantities of surplus hazardous chemicals are being stored for prolonged periods in production facilities that are being transitioned to deactivated status.	PUREX-NITRIC ACID		
		1) CHEMICAL STORAGE MONITORING- Volumes of PUREX nitric acid stored in tanks will be monitored once per shift.	Ongoing	D. G. Hamrick
		2) DISPOSAL - Nitric acid contained in Tanks U1, U2, P2 and P3 will be dispositioned.	August 31, 1995*	D. G. Hamrick
		3) DISPOSAL - Additional 10,780 gallons of nitric acid contained in tanks P13 and P14 will be neutralized and sent to underground storage.	August 31, 1995	D. G. Hamrick
		4) DISPOSAL - Material contained in Tank P4 will be neutralized and sent to underground storage.	August 31, 1995	D. G. Hamrick
		PUREX-ORGANIC SOLVENT		
		1) CHEMICAL STORAGE MONITORING - Volumes of the PUREX organic solvent stored in Tank Tk-40 are monitored once per shift.	Ongoing	D. G. Hamrick
		2a) DISPOSAL - Environmental testing (fish toxicity).	January 31, 1995	D. G. Hamrick
2b) DISPOSAL - Shipment to INEL for use as a fuel substitute in WINCO calciner.	Pending	D. G. Hamrick		

*Dependent on outcome of environmental assessment.

		3) DISPOSAL - Offsite incineration at either a mixed-waste or low-level waste incinerator, or disposal onsite by a vendor-supplied reformer.	Options being evaluated	D. G. Hamrick
		PFP-NITRIC ACID, ALUMINUM NITRATE AND CARBON TETRACHLORIDE		
		1) CHEMICAL STORAGE MONITORING - Routine surveillances until surplus chemical are removed from facility.	Ongoing	E. C. Vogt
		2) DISPOSAL - Product redeployment for nitric acid and aluminum nitrate completed.	Dec. 31, 1994	E. C. Vogt
		3) DISPOSAL - Continue to pursue redeployment of carbon tetrachloride, or declare as waste.	Dec. 31, 1994	E. C. Vogt
HAN-02	Weaknesses exist in some aspects of the hazard analysis program at Hanford.	HOEAP		
		HOEAP field test summary report completed.	Dec. 31, 1994	J. B. Hall
		Revised HOEAP in place.	June 30, 1995	J. B. Hall
		HAZARD ANALYSIS AND COMMUNICATION		
		DOE-RL Standard, Hazard Analysis and Communication issued.	Dec. 31, 1994	J. B. Hall
		FACILITY HAZARD ANALYSIS		
		Develop a Quality Improvement Team (QIT).	Dec. 31, 1994	J. B. Hall

		Issue Hanford report to DOE-HQ EH.	June 30, 1995	J. B. Hall
HAN-03	A loss of corporate knowledge may adversely affect cleanup activities at the Hanford Site.	The majority of chemicals involved will be disposed of as described in HAN-01.	Ongoing	D. G. Hamrick E. C. Vogt
		Teams, configuration control, and extensive safety reviews.	Ongoing	D. G. Hamrick E. C. Vogt

INITIAL SITE RESPONSE PLAN

**IDAHO
NATIONAL ENGINEERING LABORATORY**



**IDAHO NATIONAL ENGINEERING LABORATORY
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

This report presents the response to the field verification report for the Chemical Safety Vulnerability Review of the Idaho National Engineering Laboratory (INEL). The review occurred from May 2 to May 10, 1994. The INEL was one of nine sites visited as part of the Chemical Vulnerability Review being conducted by the DOE's Office of Environment, Safety and Health at the direction of the Secretary of Energy. The purpose of the DOE complex-wide review is to identify and characterize site-specific and complex-wide vulnerability involving potentially hazardous chemicals at DOE facilities.

Response Summary

Ongoing activities at the INEL include the varied use, handling, transportation, retention, and disposal of hazardous chemicals primarily related to storage, conditioning for final disposition, and processing of spent fuel and other radioactive materials; reactor research and development functions; environmental restoration and waste management; maintenance functions; and analytical laboratory activities. During the field verification review, team members reviewed those facilities included in the INEL self-evaluation effort, i.e., CPP-601/602/621 Fuel Processing Facility; Idaho Chemical Processing Plant (ICPP) Tank Farm; Pad A at the Radioactive Waste Management Complex; Pit 9 at the Radioactive Waste Management Complex; Army Reentry Vehicle Facility Site (ARVFS) Sodium-Potassium Waste Storage Unit; Power Burst Facility Reactor Area Evaporation Pond; and Argonne National Laboratory-West (ANL-W) Analytical Laboratory. In addition, the Fluorinel Dissolution Process and Fuel Storage (FAST) Facility, the Waste Calcining Facility, and the Rover Headend Processing Plant at the ICPP; the Radioactive Sodium Storage Facility and Radioactive Scrap and Waste Facility at ANL-W; and selected emergency response facilities were examined by the review team.

Three vulnerabilities were identified as a result of the INEL field verification review. They are:

1. Spills and releases to the soil from past operations that pose a hazard to workers involved in future activities that may disturb soils at the site (e.g., from construction or decontamination and decommissioning).
2. Hazardous chemicals and wastes that have been stored onsite for excessive periods without a clear disposition plan.
3. Weaknesses in emergency management program documentation that would impact the effectiveness of responses to hazardous material releases.

The team noted that none of the identified vulnerabilities represent a condition or circumstance with the potential for severe near-term consequences.

The noteworthy practices identified at the INEL include:

- The establishment of a sitewide chemical exchange system for excess chemicals.
- Successful efforts at the ICPP to eliminate inventory of bulk hazardous chemicals at facilities in transition.

- The planning, execution, and documentation for the flushing of chemical storage and processing systems at the FAST Facility and the Fuel Processing Facility at the ICPP.
- Maintenance and work control related to chemical systems at the ICPP.
- The replacement of aging safety systems at the ANL-W Analytical Laboratory.
- Use of the Waste Management Authority (committee) at the ICPP to review waste implications prior to changes in process or chemical use or purchase.
- A model chemical hygiene program for laboratory operations at the ANL-W Analytical Laboratory.
- The use of the Idaho Training Advisory Council to facilitate information exchange and improve consistency of chemical safety-related training across site contractors.
- The development of nomograph for use in planning response to chemical incidents at the ICPP.

This document constitutes the initial response to the INEL site visit. The form of the response is in two parts. Part 1 reviews the five functional areas of the review. Actions to resolve the INEL vulnerability are provided. Part 2 provides additional information on the nine noteworthy practices identified in the review. The sharing of these noteworthy practices with other sites to improve chemical safety at other sites is encouraged, and points-of-contact have been identified.

During the period of time that the INEL chemical safety self-assessment and field verification reviews were conducted, several Management and Operations contractors were responsible for activities at the INEL. Specific facilities for which self-assessments and reviews were performed in conjunction with this chemical safety vulnerability study were primarily associated with Westinghouse Idaho Nuclear Company (WINCO) and EG&G, Idaho. The INEL contract has since been rebid, and Lockheed Idaho Technologies Company (LITCO) has been awarded the consolidated contract. LITCO is projected to take over the contract October 1, 1994. Resources will continue to be available to prevent, mitigate, and correct potential chemical safety vulnerabilities at the INEL.

CHEMICAL SAFETY VULNERABILITY REVIEW

Part I

September 1994

Site/Facility: Idaho National Engineering Laboratory
Functional Area: Identification of Chemical Holdings
Point of Contact: G. T. Paulson

Vulnerability Number: CSVN-INEL-CH-01

Vulnerability:

- Contamination of soil by discharges of large quantities of hazardous material.

Summary of Vulnerability:

- Four hundred spills, leaks, and discharges of hazardous materials to the soil have been identified for the INEL, with 83 of these being at the ICPP. Spills of hazardous materials have occurred from process lines and from bulk storage areas at the ICPP. In the past, there have also been intentional discharges of hazardous materials to soils. Known releases have occurred from pipes in the vent tunnel at CPP-601, from bulk chemical storage facilities at CPP-621, and leaks of high-level waste and dichromate at the tank farm. Other releases to soil have occurred through discharge of cleaning agents to French drains, tank overflows, punctured drums, and discarded paints and paint solvents.

These leaks, spills, and discharges create the potential for future exposure to workers and release to the environment during construction, decontamination and decommissioning, and other activities that disturb the soil. WINCO has taken several important steps to mitigate those hazards. Efforts have been made to identify, investigate, and, in some cases, remediate historical leak sites, and procedures are in place specifying required actions in the event that additional spill locations are discovered. Known locations have been designated as Environmentally Controlled Areas (ECA) that are posted to protect the health and safety of workers. This vulnerability was prioritized as one which could result in short-term consequences of low-potential severity.

Response:

1. After the completion of the consolidation of current INEL operating contractors, the INEL program for dealing with chemical contamination of soil will be reviewed by December 1994. The INEL program contains the following elements:
 - Continue to use Federal Facilities Agreement and Consent Order process to identify and control new sites.
 - Control disturbances at identified sites.
 - Control exposures during remediation activities through work and process controls.
 - Continue to obtain approval from regulators on disposition of release sites.

CHEMICAL SAFETY VULNERABILITY REVIEW
Part I
September 1994

Site/Facility: Idaho National Engineering Laboratory
Functional Area: Identification of Chemical Holdings
Point of Contact: G. T. Paulson

Vulnerability Number: CSVN-INEL-CH-02

Vulnerability:

- Delays in disposition of hazardous materials and waste.

Summary of Vulnerability:

- For some facilities, the INEL has made substantial progress in arranging for final disposition of unneeded hazardous chemicals and improperly stored hazardous wastes. However, several examples of planning and arrangement for final disposition have not been provided. Approximately 10,000 gallons of cooling water containing dichromate are stored in two tanks, without secondary containment, in the ICPP tank farm area. The cooling system has not been used since 1988 and will not be needed again for at least 5 to 10 years.

In addition, approximately 1,000 gallons of reclaimed hexone solvent extractant are being held in cell tankage in CPP-601. The material is contaminated with fission products. The ARVFS bunker managed by EG&G Idaho contains four containers of NaK mixed waste that have been stored there since 1974. The bunker is an interim status storage facility, and the containers were last inspected in 1979. The condition of the containers is unknown. Treatment options are currently being considered for both of the latter examples; however, each represents a continuing risk to workers and environment that could be limited by their removal for treatment or disposal. This vulnerability was prioritized as one that could result in medium-term consequences of medium potential severity.

Response:

1. Issue a revised action plan for the ICPP cooling water by December 1994.
2. Update the present action plan for the ICPP hexane by December 1994 to reflect the change in disposition strategy for the material from incineration at WERF (unavailable) to transport to commercial incineration in Tennessee at the point where the hexane is considered a waste (anticipated 3Q FY 95).

3. Issue a revised action plan for the ARVFS NaK by December 1994.
4. Evaluate the need to develop INEL-wide policy requiring evaluation of chemicals after a specified period of non-use to determine if they should be retained or disposed of or replaced with an alternative by March 1995.

CHEMICAL SAFETY VULNERABILITY REVIEW**Part I****September 1994**

Site/Facility: Idaho National Engineering Laboratory
Functional Area: Emergency Management Programs
Point of Contact: G. T. Paulson

Vulnerability Number: CSVN-INEL-EMP-01**Vulnerability:**

- Weaknesses in the INEL emergency management programs documentation.

Summary of Vulnerability:

- Emergency Management Programs - The DOE review included the Emergency Response Plan, in-plant consequences, environmental issues, coordination with the community, and community right-to-know issues.

The Idaho National Engineering Laboratory/West Valley Demonstration Project Emergency Plan 1993 was developed to assure consistent and controlled emergency response actions for any operational emergency, including those associated with chemical incidents. However, this umbrella plan is not supported by Emergency Plan Implementing Procedures (EPIPs) and does not include Emergency Action Levels (EALs). In addition, EALs for hazardous chemical events are inconsistent among INEL contractors and within the INEL Emergency Plan. Some hazardous material EALS are inconsistent between a contractor's plan and their own EPIPs.

The EPIPs and EALs play a fundamental role in assuring proper response to a chemical emergency. EALs are the specific indicators used to determine occurrence category and emergency class. The category of emergency (based on severity) drives the level of activation, the level of initial resources, and protective measures taken onsite or offsite. If the level of initial response is incorrect, an incident could escalate. This vulnerability was prioritized as one that could result in immediate-term consequences of medium potential severity.

The consistency issue will be resolved by the INEL reorganization and reassignment of organizations reporting to the DOE Idaho Operations Office.

Response:

1. Issue an action plan for improving emergency preparedness for chemical emergencies by December 1994.

CHEMICAL SAFETY VULNERABILITY REVIEW

Part I

September 1994

Site/Facility: Idaho National Engineering Laboratory
Point of Contact: G. T. Paulson

Noteworthy Practices

1. Identification of Chemical Holdings - Noteworthy practices identified in this area are:
 - The establishment of a sitewide chemical exchange system for excess chemicals.
 - Successful efforts at the ICPP to eliminate inventory of bulk hazardous chemicals at facilities in transition.
 - The planning, execution, and documentation for the flushing of chemical storage and processing systems at the FAST Facility and the Fuel Processing Facility.
2. Emergency Management Programs - The DOE review included the Emergency Response Plan, in-plant consequences, environmental issues, coordination with the community, and community right-to-know issues.
3. Facility Physical Condition - The DOE review included engineered barriers, maintenance conditions, chemical systems, safety systems, storage, monitoring systems, and hazards identification. No vulnerabilities were identified in this area. One noteworthy practice was identified as the replacement of aging safety systems at the ANL-W Analytical Laboratory. It is recommended that this activity be viewed in a broader complex-wide perspective.
4. Operational Control and Management Systems - The DOE review included organizational structure; requirements identification; hazard analysis; procedural adherence; maintenance control; engineering and design reviews; configuration control; safe shutdown plans; and site programs for quality assurance, chemical safety, inventory control, access control, disposal, transportation and packaging, and corrective actions.

Noteworthy practices identified in this area are:

- Maintenance and work control related to chemical systems at the ICPP.
- Use of the Waste Management Authority (committee) at the ICPP to review waste implications prior to changes in process or chemical use/purchase.
- A model chemical hygiene program for laboratory operations at the ANL-W Analytical Laboratory.

It is recommended that these practices be considered in applications elsewhere in the DOE complex.

5. Human Resource Programs - The DOE review included technical competence, staffing, training and qualifications, employee involvement, employee concerns, personnel performance requirements, and visitor and subcontractor control. No vulnerabilities were identified. One noteworthy practice was identified in this area. It was the use of the Idaho Training Advisory Council to facilitate information exchange and improve consistency of chemical safety-related training across site contractors. It is recommended that this practice be considered in applications elsewhere in the DOE complex for large sites.

Part 2 - Noteworthy Practices

1. Sitewide chemical exchange system for excess chemicals.

In response to *DOE-ID 10333 1992 rev.1, United States Department of Energy Idaho Field Office Waste Minimization and Pollution Prevention Awareness Plan*, the Material Exchange Program (MEP) was established at the INEL. The MEP promotes the transfer of excess or unneeded material among the organizations at the INEL. Its primary goal is to reduce waste, but the safety benefit of reducing unused chemical inventories is significant.

The MEP applies to unused material, such as laboratory chemicals, janitorial chemicals, decontamination chemicals, containerized gases, paints, oils, adhesives, and other similar materials. The MEP does not apply to radioactive or radioactively contaminated material (except radiological calibration sources), designated hazardous waste material, or any property or material inventories controlled by EG&G Idaho Property Control.

Material users identify excess unused material and report its availability to the Material Exchange Coordinators. The coordinators pass this information on to the Material Exchange Manager. The manager is responsible to administer and implement the program. The manager evaluates excess material and identifies concerns related to the material. The information is entered into a database, and the material is tracked until it is transferred or disposed.

Available material is advertised in *INEL PREVENT*, Office Vision, and the *Federal Exchange*. *INEL PREVENT* is published quarterly and lists excess material available to INEL organizations. Office Vision is an internal electronic information source. If the material users are unable to find an acceptor in a reasonable time period, the material is placed on the *Federal Exchange*.

The safety benefit of reducing unneeded chemical inventories is significant. The storage and disposal of unneeded material is also expensive. This program could be transferred to any facility.

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2. Elimination of bulk hazardous chemical inventories at the ICPP transition facilities.

In April of 1992, the DOE directed the ICPP to stop reprocessing spent nuclear fuel. As a result, bulk hazardous chemicals associated with the process were no longer needed. The chemicals included cadmium nitrate, cadmium sulfate, hydrofluoric acid, and fluoboric acid. If these chemicals had been treated as waste, the liability for WINCO and the DOE would have been significant.

In order to avoid treating the chemicals as waste, WINCO chose to sell the chemicals to outside buyers. Selling the chemicals will remove all waste disposal liability. The process is incomplete, but contracts are in place for the transfer of the chemicals.

In an era of change within the DOE complex, many facilities will undergo mission transition. As a result, chemicals associated with previous activities will require disposal. The practice of seeking a buyer is an alternative available to all contractors in the DOE complex.

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3. Planning, execution, and documentation for the flushing of chemical storage and processing facilities at FAST and the Fuel Processing Facility.

In April of 1992, the DOE directed the ICPP to stop reprocessing spent nuclear fuel. As a result, the reprocessing facilities required phase-out and cleanup. Due to the presence of cadmium in the systems, the processing facilities contained mixed waste (hazardous and radioactive).

Since mixed waste presents a difficult disposal problem, removing the hazardous constituent (cadmium) was viewed as a best management practice. This would allow the waste to be treated as merely radiological, and the disposal would be much easier.

Once the project was completed, the sample results indicated that cadmium was reduced to nondetectable levels. Since disposing of mixed waste is an ongoing problem, the practice of removing hazardous constituents should be common practice in the DOE complex.

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4. Maintenance work control at the ICPP.

Work Control Core Teams are an innovative change in the way maintenance work is performed in hazardous and environmentally sensitive areas at the ICPP. They are designed to ensure the availability of subject matter experts in the development of maintenance work packages. The teams include members from divergent professional disciplines in order to ensure the work is performed safely with the highest quality standards. This new way of conducting business was developed by WINCO personnel.

Core teams consist of a facility point-of-contact, systems engineer, maintenance foreman, scheduler, flow integrator, and administrative assistant. They also include representatives from quality assurance, environmental compliance, industrial safety, and radiological safety. Personnel assigned to core teams have sufficient experience, training, and authority to review, approve, prioritize, and schedule work requests. Each team is trained and dedicated to a specific process area within the facility. Since the teams are located in the facilities they serve, they are able to develop a sense of ownership, understand inherent facility concerns, and develop a knowledge base for sound decision making.

Customer satisfaction, employee safety, environmental protection, and equipment reliability are the daily concerns of each team. Core teams have reduced the safety work order backlog by 25 percent. Since the teams evaluate work orders during the development process, the quality of the work orders has improved significantly. The reduction in the safety work order backlog and the improved quality of work orders have helped to produce over 2,000,000 perfect work hours at the ICPP.

WINCO's use of dedicated subject matter experts to develop, review, approve, prioritize, and schedule work packages is a unique and innovative practice within the DOE complex. Although the focus of this review was chemical safety, the core team program improves all aspects of safety, product quality, and work order turnaround.

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5. Replacement of aging safety systems at the ANL-W Analytical Laboratory.

The Analytical Laboratory at ANL-W performs chemical analysis for both radioactive and nonradioactive materials in support of ANL-W programs and facilities. Activities are accomplished in dedicated gloveboxes, hot cells, and in the general laboratory working area.

Due to evolving missions at ANL-W, the Analytical Laboratory facilities required upgrading. A risk analysis was performed, and a graded approach to system upgrades was established. ANL-W is currently refurbishing and modifying the 30-year old hot cells as well as aging critical and safety-related systems in Building 752. Upgrades include modifications to electrical power distribution; replacement of deteriorated waste, vacuum, air, water, steam, and suspect liquid waste lines; and installation of double HEPA filtration for the hot cells.

ANL-W is collecting and characterizing all wastewater from sinks and the janitor closet in the Analytical Laboratory to determine the appropriate disposition. Support systems in need of replacement, excluding the hot cells, have been identified, prioritized, and scheduled for replacement as funding becomes available.

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6. WINCO Waste Management Authority.

In the spring of 1993, Westinghouse formalized its longstanding policy of prohibiting waste generation without sufficient preplanning and approval to ensure proper, subsequent handling of waste. In support of this policy and to improve the effective implementation of waste management concepts, WINCO initiated the Waste Management Authority (WMA) at the ICPP.

The purpose of the WMA is to identify, review, and approve/disapprove mixed, hazardous, radioactive, and industrial wastestreams prior to their generation. The program is designed to ensure that wastestreams are minimized and controlled, recycled or reused where possible; have identified storage and treatment; and are managed in compliance with regulations governing their generation, handling, storage, treatment and disposal/reclamation. The procedure implementing the WMA calls for generators to complete a waste-generation profile form indicating planned waste composition, minimization activities, potential recycling or secondary use, sampling requirements, storage, treatment, and disposal, as applicable, for review by the WMA before the process wastestream has begun. Information concerning proposed wastestreams is compared to existing, approved wastestreams in the database for waste minimization ideas, similarities with existing wastestreams to eliminate redundant waste analysis, and established wastestreams reported under national and site-specific databases.

The WMA is comprised of technical representatives from various organizations and disciplines at the ICPP, who review and approve/disapprove the proposed waste generation. The team is responsible for communicating lessons learned, treatment needs, minimization successes, and other relevant information to management. Positive impacts from implementation of this program are designed to ensure appropriate technology development and transfer; focus attention to urgent waste management requirements; reduce waste management costs through planning, improved reporting, waste minimization, and information sharing; and enhance communication among operations, waste management, and environmental personnel.

Establishing the WMA has resulted in a unique approach to managing waste consistent with WINCO's vision of environmental leadership. By sharing this idea with other facilities in the DOE complex, a new standard will be established that provides a consistent approach to environmental excellence.

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7. Chemical Hygiene Program, Laboratory Operations, Analytical Laboratory, Argonne National Laboratory-West.

ANL-W is committed to providing a safe work environment and believes employees have a right to know about health and physical hazards associated with their work. As a result, ANL-W has instituted a model chemical hygiene program for their Analytical Laboratory. The goal of the Analytical Chemical Hygiene Training is to instill in each employee an awareness of potentially hazardous chemicals in the workplace and to train employees in safe work practices.

The training reviews the requirements of the OSHA Laboratory Standard and describes how the requirements are implemented in the Analytical Laboratory. Chemical Hygiene Training is provided to all Analytical Laboratory personnel and to anyone desiring unescorted access to the laboratory. The training is performance based, and a closed-book exam, requiring at least an 80 percent score, is the tool used to measure performance.

The Analytical Laboratory Chemical Hygiene Training has served as a model for the development of two other programs at ANL-W. The training could be transferred to other DOE sites and customized to meet the requirements of other facilities.

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8. INEL Training Advisory Council.

The INEL Training Advisory Council was established to "coordinate and optimize selected contractor resources to address common training issues."¹ The Council's primary goal is to support and consolidate the development of common sitewide training. This includes such activities as requirements analysis, training design, issuance of training products, and standards evaluation. The Council also establishes standards for recordkeeping and investigates other training sources within the DOE complex.

The Council includes representatives from each of the INEL prime contractors. These representatives have the authority to make decisions and commit resources on behalf of the contractor. Standing and Ad Hoc committees are established at the discretion of the Council to address specific tasks.

The INEL Training Advisory Council provides numerous benefits. First, the availability of quality training materials is assured through shared resources. In the case of chemical safety, this is always the highest priority. Second, it provides consistent training for all INEL workers, regardless of facility location. Third, the cost savings are significant. The program could be easily implemented at other sites in the DOE complex.

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¹INEL Training Advisory Council Charter, Revision 2. September 10, 1993.

9. Development of a nomograph for use in planning response to chemical incidents at the ICPP.

WINCO Emergency Management (EM) and Operational Safety Analysis (OSA) are developing *operator aids* for hazardous material accident assessments. These aids are expected to provide a cost-effective means for improving the accuracy and timeliness of consequence assessments for accidents occurring during backshift and weekend operations at the ICPP.

Personal computers programmed with accident assessment modeling codes were recently installed in the ICPP Emergency Control Center (ECC) as the primary means for estimating the consequences from accidents involving hazardous materials. However, personnel assigned to the technical support staff on backshifts may not have the same technical orientation as day shift personnel and may have difficulty in maintaining the necessary technical proficiency.

In response to this concern, OSA (technical lead) and EM are developing nomograph-type assessment aids. The aids are being designed to assist the ECC technical support staff in making initial accident consequence assessments on which initial protective action recommendations are based.

The vision for the project is twofold. First, the aids are intended to be used by any technically trained person (for example, shift supervisor, shift foreman, HP supervisor, etc.) to make a quick, conservative, estimate of the potential consequences from a spill of hazardous materials. Second, the assessor should be able to use the resource effectively with little or no previous training. As currently designed, the assessor determines the material spilled, spill area, windspeed, and observable weather conditions. A simple connect-the-dots approach produces a conservative estimate of the downwind distance where airborne concentrations could approach the limits at which protective actions would be required.

The use of the nomograph as an assessment tool could be used at other DOE facilities. It will allow personnel to make conservative judgments in an emergency situation. The principles could be applied to any area requiring evaluations with varying parameters.

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INITIAL SITE RESPONSE PLAN

LAWRENCE LIVERMORE NATIONAL LABORATORY



**LAWRENCE LIVERMORE NATIONAL LABORATORY
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

As part of the U.S. Department of Energy's (DOE) initiative to identify chemical safety vulnerabilities in the DOE complex, the Chemical Safety Vulnerability Core Working Group sponsored a series of field assessments at various DOE sites. A field assessment was conducted at the Lawrence Livermore National Laboratory (LLNL), April 18-26, 1994. The field assessment team included a number of members who participated on the original Tiger Team assessment of LLNL in 1990, and they noted a significant improvement in many areas. The final draft of the field verification assessment report also identified four site-specific Chemical Safety Vulnerabilities and seven noteworthy practices. All were classified as having short-term consequence, with three of the four having a low severity priority and one, a moderate priority. Two of the four vulnerabilities (including the moderate-priority issue) have been corrected, and the remaining vulnerabilities will be corrected by September 30, 1994. These site-specific vulnerabilities were also reviewed in context with evaluations at other sites to determine if they represented common issues.

Response Summary

Three of the four identified vulnerabilities involve issues which can and have been resolved directly within the site's control (i.e., completion of Emergency Plan Implementing Procedures, hazards analysis and appropriate documentation, and training). The fourth vulnerability (i.e., strategic planning for the disposition of aging/inactive facilities) is partially within the site's control. Action has been taken by LLNL to identify and provide plans for the disposition of facilities with chemical safety if the facilities contain radioactive contamination. This action implements DOE 5820.2A. The implementation of the plan cannot be accomplished solely by LLNL because some of the strategic issues involve DOE decisions and funding. In addition, there is currently no DOE guidance on the disposition of chemical facilities (i.e. an analog to DOE 5820.02A for facilities contaminated only with chemical hazards). The Management Response Plan has identified these issues for longer-term actions.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Lawrence Livermore National Laboratory
Point of Contact: Rex Beach (510) 422-7592 or Jim Jackson (510) 422-4256

Vulnerability Number: CSV-LLNL-FM-01

Vulnerability:

- Limited strategic planning for the disposition of aging/inactive facilities that may contain residual amounts of hazardous or mixed waste.

Summary of Vulnerability:

- The aging condition of buildings in the 222 Complex, especially as related to roof leakage and HVAC systems, were identified in the Chemical Safety Vulnerability Review (CSV) self-assessment. Facilities at the end of life cycle (i.e. B-222) have not been scheduled for expensive roof replacements.

Background Discussion:

LLNL issued Health and Safety Manual Supplement 2.30, "Guidelines for Decontamination and Disposal of Radioactively Contaminated Facilities and Associated Equipment," on March 21, 1994, and in accordance with the requirements of DOE 5820.2A. The scope of this document includes:

- The process for decontaminating facilities and equipment, including planning requirements for D&D work for facilities (or parts of facilities) and their associated equipment.
- The responsibilities of individuals who perform work in D&D facilities or with associated equipment.
- Planning information that LLNL must provide to PSOs through DOE/OAK. This Health and Safety Manual Supplement covers chemical safety issues related to D&D in all radioactively contaminated facilities at LLNL, including B-222. C&MS has met the first requirement of the H&SM Supplement (development of a D&D Management Plan) by submittal of information required by EM-60.

Response:

- All LLNL facilities have determined the applicability of H&SM Supplement 2.30 (LLNL's implementation of DOE 5820.2A).
- All facilities for which H&SM Supplement 2.30 is applicable have developed D&D Management Plans.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Lawrence Livermore National Laboratory
Point of Contact: Rex Beach (510) 422-7592 or Jim Jackson (510) 422-4256

Vulnerability Number: CSV-LLNL-EP-01

Vulnerability:

- Absence of Emergency Plan Implementing Procedures (EPIPs) for integrated LLNL response to a sitewide hazardous materials emergency.

Background Discussion:

- The LLNL Draft Emergency Plan (UCRL-MA-113311) meets the requirements of DOE Order 5500.3A. It was issued for use in September 1993.

Response:

Emergency Plan Implementing Procedures (EPIPs) for integrated LLNL response to a sitewide hazardous materials emergency will be approved and issued by September 30, 1994.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Lawrence Livermore National Laboratory
Point of Contact: Rex Beach (510) 422-7592 or Jim Jackson (510) 422-4256

Vulnerability Number: CSVN-LLNL-MO-01

Vulnerability:

- Weakness in the hazards analysis program. There is a lack of explicit definitions for when a PWP is to be implemented and implementation when it is required and an absence of accident analyses.

Summary of Vulnerability:

- The CSVN self-assessment identified the need to complete Preliminary Hazards Assessments and Safety Analysis Reports for some of these facilities. It also identified existing schedules for completing these documents.

Response:

- The LLNL Health & Safety Manual (H&SM), Chapter 2, "Work Planning, Safety Procedures and Management Oversight," establishes the environment, safety, and health (ES&H) requirements for work planning, preparation, execution, and monitoring. Controls for hazardous operations are specified in other chapters and supplements of the H&SM. The H&SM is explicit that these controls must be followed or a Facility Safety Procedure (FSP) or Operational Safety Procedure (OSP) must be written specifying alternate controls. These safety procedures must be reviewed by safety professionals in the discipline and be approved by line management. It is also explicitly stated in the C&MS FSPs that the Project Work Plan (PWP) is not a substitute for an OSP. In other words, the PWP cannot invoke alternate controls nor delete controls specified in the H&SM. As a result, the implementation of the H&SM remains the document which specified the requirements for addressing potential chemical vulnerabilities in the work planned and conducted. The PWP is a best management practice and its "requirement" only provides C&MS managers with a screening mechanism for early identification of new or significantly modified work. In that way, long lead issues such as NEPA, environmental permits safety analysis impacts, etc., can be initiated so as to minimize schedule impacts to the start of work. The guidance in the FSP lists six explicit criteria for when the PWP is "required." In the process of identifying this work, the PWP also provides managers with early documentation of controls to be used and which are used already specified as required in the H&SM. The management prestart review, also required by Chapter 2 of the H&SM, provides a mechanism to review of the implementation of controls prior to starting the work. It is our belief that oversight provided through multiple layers of ES&H Safety Team professional involvement in work monitoring and assistance, the self-assessment program, C&MS independent Assurance Office assessments, as well as the oversight of the LLNL Assurance Review Office, the DOE Facility Rep., and external assessments, represents an acceptable level of assurance that the work planning process is working. We agree that a higher rate of implementation of the PWP would reduce the risk of schedule and cost impacts to some activities; we do not believe, however, that implementation of the PWP is the mechanism for ensuring chemical vulnerabilities are addressed.

A schedule for completing risk assessments (Preliminary Hazard Assessments) for those facilities at LLNL without PHAs (including those facilities identified for the CSVr self-evaluation) are currently scheduled and agreed to by DOE in accordance with UC-DOE Contract No. W7405-ENG-48, ES&H Performance Measure 4.1.a. Since this schedule is based on a graded approach, taking into account the level of hazards at other LLNL facilities, and is agreed upon by DOE, no change to this process or schedule is anticipated as a result of the CSVr. This includes the completion of the PHA for B-229 on June 1, 1994, as stated in the self-evaluation.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Lawrence Livermore National Laboratory

Vulnerability Number: CSVR-LLNL-MT-01

Point of Contact: Rex Beach (510) 422-7592 or Jim Jackson (510) 422-4256

Vulnerability:

- Personnel entry into hazardous work environments without benefit of chemical safety training.

Summary of Vulnerability:

- Personnel are entering potentially hazardous work environments without the benefit of training that correctly addresses the associated chemical hazards. The work environment of some employees has not been evaluated to determine if facility-specific chemical hazards training is warranted.

Response:

- The curriculum of the "Pressure Safety Orientation" class (HS-5030) and the "Chemical Safety" course (HS-4240) will be reviewed and modified as necessary by September 30, 1994, so that the information on personal protective equipment for cryogen use is consistent with the Health & Safety Manual.
- The curriculum for the required "New Employee Safety Orientation" class (HS-0001) given to all new employees will be modified by September 30, 1994, to cover Health Hazard Communication issues (e.g., warning signs, spill, and emergency instructions, etc.) in greater detail.
- The workplace hazards identification and notification for custodians, protective service, emergency response and other personnel has been evaluated and appropriately documented in the Facility Safety Procedure. For example Section D.2.1 of the B-222 FSP states: "Access to laboratories, offices, and shops normally is unrestricted. In cases where unrestricted access may result in exceptional safety of security concerns, the Room Responsible Person will (1) inform the Facility Manager of the access restriction, the reason and the duration of the restriction and (2) post the entrances to the room with an access restriction notice, and, if a hazard is the cause for the restricted access, a description of the hazard. The Health Hazard Communication placard posted outside each room is considered adequate to inform janitorial, protective service, emergency response, and other personnel of the hazards in the room." This is consistent with OSHA's health hazard communication requirements. The above documentation was reviewed and determined to satisfy the portion of the vulnerability concerning identification and notification of hazards for employees who work in, but not with, chemicals in laboratories (e.g., custodians, protective service officers, etc.). No further action required.

- Individuals requiring chemical safety classes HS-4240, "Chemical Safety," and/or HS-4246, "Laboratory Safety," have been notified and scheduled for the next available class.

TASK #	VULNERABILITY	ACTION	DUE DATE	RESPONSIBLE PERSON
FM-01	Limited strategic planning for the disposition of aging/inactive facilities that may contain residual amounts of hazardous or mixed waste.	1. All LLNL facilities will determine the applicability of H&SM Supplement 2.30 (LLNLs Implementation of DOE Order 5820.2A).	Complete	Garth Cummings
		2. All facilities for which H&SM Supplement 2.30 is applicable will develop D&D Management Plans.	Complete	
EP-01	Absence of Emergency Plan Implementing Procedures (EPIPs) for integrated LLNL response to a sitewide hazardous materials emergency.	Emergency Plan Implementing Procedures (EPIPs) for integrated LLNL response to a sitewide hazardous materials emergency will be approved and issued.	9/30/94	Coleman Johnson
MO-01	Weakness in the hazards analysis program: (1) lack of explicit definitions for when a PWP is to be implemented and implementation when it is required, and (2) absence of accident analyses.	1. No further action required (see response to vulnerability CSV-LLNL-MO-01).	Closed	Rex Beach
		2. No further action required (see response to vulnerability CSV-LLNL-MO-01).	Closed	
MT-01.1	Personnel entry into hazardous work environments without benefit of chemical safety training. 1. Entry into potentially hazardous work environments without proper training.	The curriculum of the "Pressure Safety Orientation" class (HS-5030) and the "Chemical Safety" course (HS-4240) will be reviewed and modified as necessary so that the information on personal protective equipment for cryogen use is consistent with the Health & Safety Manual.	9/30/94	A. Buerer

MT-01.2.a	Personnel entry into hazardous work environments without benefit of chemical safety training. Work environment for some employees has not been evaluated.	The curriculum for the required "New Employee Safety Orientation" class (HS-0001) given to all new employees will be modified to cover Health Hazard Communication issues (e.g., warning signs, spill, and emergency instructions, etc.) in greater detail.	9/30/94	A. Buerer
MT-01.2.b	Personnel entry into hazardous work environments without benefit of chemical safety training. Work environment for some employees has not been evaluated.	No further action required (see Form 1).	Closed	Marc Costantino
MT-01.2.c	Personnel entry into hazardous work environments without benefit of chemical safety training. Work environment for some employees has not been evaluated.	Individuals requiring chemical safety classes HS-4240 and/or HS-4246 will be notified and scheduled for the next available class.	Complete	Marc Costantino

INITIAL SITE RESPONSE PLAN

**LOS ALAMOS
NATIONAL LABORATORY**



**LOS ALAMOS NATIONAL LABORATORY
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

Los Alamos National Laboratory (LANL) recently participated in the Chemical Safety Vulnerability Review (CSVR) initiated by Secretary Hazel O'Leary on February 14, 1994. All Department of Energy (DOE) line programs with operational responsibilities were directed to participate in the review. Overall responsibility was assigned to Assistant Secretary for Environment, Safety and Health, Tara O'Toole, who subsequently directed formation of a working group comprised of representatives from operations offices, area offices, and management and operating (M&O) contractors.

The purpose of the review was to identify, characterize, and set priorities for correcting conditions or circumstances involving hazardous chemicals at DOE sites and facilities that might result in (1) fires or explosions from uncontrolled chemical reactions, (2) exposure of workers or the public to chemicals, or (3) releases of chemicals to the environment. In the context of the CSVR, the term hazardous chemical includes hazardous or mixed waste.

Response Summary

A working group, with a core group comprised of DOE staff, was formed to guide the CSVR process. Initially, the core group selected 84 facilities at 29 DOE sites for review. More facilities were added during the field verification phase of the CSVR; the final tally was 146 facilities at 29 DOE sites. A self-assessment questionnaire, developed by the core group, was refined at the first working group meeting held March 1-2, 1994. The five facilities initially selected at LANL completed the self-evaluation questionnaires and submitted them to the core group for evaluation. Based upon review of the self-assessment questionnaires and other information, LANL was selected for CSVR field verification. An experienced team of reviewers (eight technical experts) came to LANL and gathered relevant information from May 16-25, 1994. [For reference, the CSVR field verification team visit was assigned the tracking number 94-30 by LANL Audits and Assessments.]

The five LANL sites that were initially selected for review and completed the self-evaluation questionnaires were:

<u>Location</u>	<u>Description</u>
TA-3-29	Chemistry and Metallurgy Research (CMR) Facility
TA-3-170	Compressed and Liquified Gas Facility (Gas Plant)
TA-16-340/342	Explosives Development and Processing Facility
TA-33-86	High Pressure Tritium Laboratory (HPTL)
TA-54	Waste Storage Facilities

In order to gather other essential or relevant information during the field verification, four additional LANL sites were reviewed:

<u>Location</u>	<u>Description</u>
TA-3-30	General Warehouse Building
TA-3-31	Chemical Warehouse Building (VWR Receiving)
TA-46-339	Wastewater Treatment Facilities
TA-54-1008	Well-Water Chlorination Station, Pajarito Booster No.2

The team identified three chemical safety vulnerabilities at the Laboratory. All three were assigned a medium priority and a short-term timeframe. The definitions for these terms are:

PRIORITY

High — Consequences that would cause death or irreversible injury to workers or the public or would cause environmental damage that would be irreversible or very costly to remediate.

Medium — Not specifically defined.

Low — Consequences that would consist of reversible injuries, illnesses, or environmental damages.

TIMEFRAME

Immediate — Any chemical safety vulnerability that could result in immediate consequences.

Short-term — Any chemical safety vulnerability at a facility in which there is a significant chance of a consequence occurring within a 3-year timeframe as a result of chemical degradation, change in mission for the facility, degradation of the containment systems, change in personnel at the facility, or other factors affecting the facility.

Medium-term — Any chemical safety vulnerability at a facility in which there is a significant chance of a consequence occurring within a 3- to 10-year timeframe as a result of chemical degradation, change in mission for the facility, degradation of the containment systems, change in personnel at the facility, or other factors affecting the facility.

Long-term — Any chemical safety vulnerability at a facility in which there is a significant chance of a consequence occurring within a timeframe of more than 10 years as a result of chemical degradation, change in mission for the facility, degradation of the containment systems, change in personnel at the facility, or other factors affecting the facility.

The field verification review was organized into five functional areas:

<u>Symbol</u>	<u>Description</u>
CH	Identification of chemical holdings , including the properties of chemicals located at the facility, the characterization of those chemicals, and an analysis of the inventory.
FM	Facility (maintenance) physical condition , including engineering barriers, maintenance conditions, chemical systems, safety systems, storage, monitoring systems, and hazards identification.
OMS	Operational control and management systems , including organizational structure; requirements identification; hazard analysis; procedural adherence; maintenance control; engineering and design reviews; configuration control; safe shutdown plans; and site programs for quality assurance, chemical safety, inventory control, access control, disposal, transportation and packaging, and corrective actions.
HR	Human resource programs , including technical competence, staffing, training and qualifications, employee involvement, employee concerns, personnel performance requirements, and visitor and subcontractor access control.
EM	Emergency management program , including the emergency response plan, implant consequences, environmental issues, coordination with the community, and community right-to-know issues.

**Chemical Safety Vulnerability Review
September 1994**

CSV-LANL-CH-01

Priority: Medium

Timeframe: Short-term

Significant accumulations of hazardous chemicals and wastes are being stored for prolonged periods, some under unsatisfactory conditions.

Summary of Vulnerability:

A legacy of hazardous chemicals and wastes, resulting from decades of operations, exists at Los Alamos National Laboratory (LANL). Many of these materials are being collected, characterized, stored, and prepared for disposal. Some materials are stored temporarily under less-than-satisfactory conditions that could lead to personnel hazards or environmental releases caused by leakage from corroded tanks, drums, or gas cylinders.

Response:

A principal factor in prolonged storage is the backlog of characterization sampling and analysis. Two actions are presently underway to shorten the time necessary for obtaining waste characterization samples. First, a quality assurance plan has been developed that describes safe sampling protocols under the variety of conditions observed around the Laboratory. Second, a proposed reorganization of the Environmental Protection Group (ESH-8), which is responsible for characterization sampling, will have a smaller, more focused group responsible for collection of waste samples. The issue of sampling analysis turnaround is being addressed by the Environmental Chemistry Group (CST-9); new staff have been hired recently, and an option for subcontracting some analyses, contingent upon funding, will be investigated.

The other principal factor prolonging storage is the time needed to negotiate final disposition plans. Although the Field Verification Team noted much progress by the Laboratory (CST-7), waste containers (overpacked drums) remain exposed to the weather and the wastes still lack treatment facilities to comply with the land disposal restrictions. Construction of a storage structure will begin in 1995. Treatment of low-level mixed wastes will be based on a compliance schedule negotiated between EPA and DOE in a recently completed Federal Facilities Compliance Agreement.

**Chemical Safety Vulnerability Review
September 1994**

CSVRLANL-CH-01

Priority: Medium

Timeframe: Short-term

CH-01 Action #	Description of milestone	Date	Responsible Organization
1	Issue quality assurance plan to address variety of sampling hazards encountered at LANL.	6/94	ESH-8
2	Complete reorganization of ESH-8.	10/94	ESH-8
3	Hire additional/replacement staffing for the collection of samples.	3/95	ESH-8
4	Determine the scope of the problem, define deliverables, and establish contracts with external analytical laboratories to facilitate response to peak demands for analytical service, in collaboration with ESH-8.	10/95	CST-9
5	Complete construction of chemical waste storage building at TA-54.	11/95	CST-7

**Chemical Safety Vulnerability Review
September 1994**

CSV-LANL-FM-02

Priority: Medium

Timeframe: Short-term

The lack of funding could affect the safe cleanup or transition of aging and/or inactive facilities.

Summary of Vulnerability:

Many aging and/or inactive facilities at Los Alamos National Laboratory (LANL) are candidates for transition (e.g., to decontamination and decommissioning). Funding for these facilities is uncertain or not available, and workload changes are contemplated. These circumstances result in an unacceptable level of maintenance and surveillance at facilities in which residual hazardous chemicals may pose a threat to workers, the public, or the environment.

Chemical Safety Vulnerability Review
September 1994

CSVN-LANL-FM-02

Priority: Medium

Timeframe: Short-term

Response:

TA-33-86, High Pressure Tritium Laboratory — a transition facility

Responsible Organization: ESA-5

Current Efforts

A specific effort has been underway between the local DOE Facility Representative and DP-652 to move the High Pressure Tritium Laboratory (HPTL) into the EM-60 transition process.

Work in progress is to complete removal of accountable tritium by the end of the fiscal year (FY-94) or shortly thereafter. Once the accountable tritium is removed, the facility will no longer be classified as nuclear, only radiological. This work is being paid for by redirected DP funds. In fact, all work at the facility has been through redirected DP funds since 1989. The rapid decline in funding for weapons work has made planning and resource allocation difficult, and the situation is exacerbated for an inactive facility such as the HPTL.

Future Work

Any decontamination and decommissioning (D&D) work beyond the current fiscal year is contingent upon identifying a source of funding, since this facility is not included on the D&D list for the next 4 to 5 years. However, if funding becomes available, the next phase of work will involve cleanup and removal of the process system. This work is estimated to take about 1 year for completion. It is also anticipated that former employees with corporate knowledge of the facility and process system will be available on a part-time basis for at least another year to assist in the characterization of waste and waste streams. In the interim, routine maintenance and surveillance of the facility will continue.

LANL-10

Chemical Safety Vulnerability Review September 1994			
CSVR-LANL-FM-02		Priority: Medium	Timeframe: Short-term
FM-02 Action #	Description of Milestone	Date	Responsible Organization
1	Complete removal of accountable tritium.	1/95	ESA-5
2	Implement shutdown plan, with validation by and concurrence of Los Alamos Area Office.	1/95	ESA-5

Chemical Safety Vulnerability Review
September 1994

CSVRLANL-FM-02

Priority: Medium

Timeframe: Short-term

Response (continued):

TA-16-340/342, Explosives Development and Processing Building – an aging facility

Responsible Organization: DX-16

Operational: The operating group DX-16 has a proactive system to identify facility maintenance issues immediately. The operating technicians perform documented daily and monthly inspections of all facilities, including functioning safety showers. Additionally, the S-Site Safety Committee performs independent safety inspections every 6 months, and all deficiencies are immediately repaired or tracked until repaired.

Facilities: DX-16 currently spends approximately \$36,000 per year for building maintenance in addition to \$200,000 in space tax for the LANL Facility, Security, and Safeguards Division. As a result, there is no budget for major improvements. Facility concerns, such as roof leaks, are identified and repaired, and operations are conducted so that chemicals, waste, and equipment would not be damaged by a roof leak. The new LANL Facilities Management Program will allow users to prioritize the use of maintenance funds.

Processing: Operating processing equipment and instrumentation is maintained to be safe and reliable. This is ensured by functioning checks before every operation, SOP operational reviews, and a preventative maintenance program and database maintained by ESA-2. Unused gages, controls, and instrumentation are not maintained or removed until a new system replaces them. Process equipment that is used very infrequently is cleaned and stored, either in place or in a staging area. Restart of processing equipment involves functional tests and refurbishment or replacement to meet modern safety criteria. All new operations are designed with an emphasis on safety and reducing worker exposures.

Near-term Efforts: There are waste minimization projects currently funded to replace the vacuum system and improve solvent condensers. Drawings have been prepared, funding has been allocated, and equipment is onsite. Four of the nine bays that require upgraded processing utilities will have them in the near future. These project costs are being underwritten by the DOE Non-Nuclear Reconfiguration Program which has transferred detonator production from EG&G Mound to LANL. Improvements to ventilation are part of this installation. Work will begin and proceed one bay at a time pending funding allocation from DOE.

Chemical Safety Vulnerability Review September 1994			
CSV-R-LANL-FM-02		Priority: Medium	Timeframe: Short-term
FM-02 Action #	Description of Milestone	Date	Responsible Organization
3	Identify and correct safety inspection findings. Look for trends such as increased or recurring observations related to facility maintenance.	Every 6 months	DX-16
4	Track maintenance tasks and costs.	12/94	DX-16
5	Review current and planned operations to increase worker safety.	1/95	DX-16
6	Complete chiller installation, including solvent condensation.	6/95	DX-16
7	Complete efforts related to relocation of work from Mound to LANL.	1/97	DX-16

Chemical Safety Vulnerability Review
September 1994

CSVR-LANL-OMS-03

Priority: Medium

Timeframe: Short-term

The absence of a consistent approach to chemical safety at LANL can result in unanticipated chemical risks.

Summary of Vulnerability:

The absence of a consistent and integrated approach to chemical safety at LANL has resulted in improper chemical safety practices. A Laboratory-wide chemical safety policy does not exist, and supporting programs have not been developed in a timely manner.

Response:

Responsible Organization: ESH-5

The Industrial Hygiene and Safety Group, ESH-5, has work in progress to address this vulnerability. There are corrective actions under two Tiger Team Corrective Action Plans (C-WS-06 and C-WS-08), and a new Laboratory-wide document, entitled *Chemical Safety Program*, has been drafted. Reviews involving employee participation are planned to start about September 1, 1994. Implementation of the corrective actions and the new *Chemical Safety Program* document will unify and make consistent the Laboratory's approach to chemical safety.

Chemical Safety Vulnerability Review September 1994			
CSV-03		Priority: Medium	Timeframe: Short-term
OMS-03 Action #	Description of Milestone	Date	Responsible Organization
1	Complete revision of <i>Chemical Safety Program</i> document, incorporating employee comments.	4/95	ESH-5
2	LANL formal review completed, changes incorporated, and document officially released through the Controlled Document System.	9/95	ESH-5

INITIAL SITE RESPONSE PLAN

**OAK RIDGE SITE
(OAK RIDGE NATIONAL LABORATORY,
K-25 PLANT, AND Y-12 PLANT)**



**OAK RIDGE OPERATIONS
SITE MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

Based on direction from the Secretary of Energy, the Assistant Secretary for Environment, Safety and Health established the Chemical Safety Vulnerability Working Group to review and identify chemical safety vulnerabilities within the Department of Energy (DOE). The Chemical Safety Vulnerability Working Group sponsored a series of field assessments at nine DOE sites. A field assessment was conducted at Oak Ridge Operations for Y-12, K-25, and Oak Ridge National Lab in April 1994. The facilities visited at K-25 site included the K-1070-A Burial Ground, the K-25 Process Building (lithium storage vaults), the Pond Waste Management Project, Building K-725, and the K-1066 Storage Yards. The facilities visited at Y-12 site included Building 1405, Building 9201-4 (Alpha-4), Building 9201-5 (Alpha-5), Building 9202, and the 9720-5 Warehouse. The facilities visited at ORNL included Building 3047, Building 3506 (Waste Evaporator), 7658 Contractor Landfill, and Building 7821 (Emergency Waste Basin). The Chemical Safety Vulnerability review at Oak Ridge was designed and undertaken to identify and characterize adverse conditions and circumstances involving potentially hazardous chemicals at specific facilities. Specifically, the review was designed to identify, characterize, and prioritize facility-specific and generic chemical safety vulnerabilities that might result in (1) fires or explosions from uncontrolled chemical reactions, (2) exposure of workers or the public to hazardous chemicals, or (3) release of hazardous chemicals to the environment. Special attention was given to those facilities being transferred to, awaiting, or undergoing decontamination and decommissioning (D&D). This included laboratories, process facilities, landfills, hazardous materials storage areas, and storage facilities. The review identified five vulnerabilities.

This site-specific Management Response Plan addresses the vulnerabilities identified in the Draft Field Verification Report for the Oak Ridge Reservation, dated April 26, 1994. Near-term and short-term actions are noted, but broader issues require more comprehensive responses that will be addressed in the Implementation Plan to the DOE Chemical Safety Vulnerability Management Response Plan.

Response Summary

Two of the vulnerabilities addressed the storage of chemicals. One identified that chemicals are stored in facilities not designed for the purpose of chemical storage. The facilities selected for storage of chemicals are appropriately modified and maintained, as needed, to provide safe storage. Buildings which have been selected for chemical storage are adequate for this purpose and have required a minimum of new construction, avoiding unnecessary delays and escalated costs (e.g., the K-25 lithium hydroxide storage area has been modified to meet chemical storage area requirements). The other vulnerability identified large quantities of specialty and other industrial chemicals stored without consistent strategic planning. Currently, mercury is being collected and sold. Some quantities of lithium hydroxide have been sold in the past, and increased amounts are planned to be sold over the next several years.

Another vulnerability addressed the possibility that uncharacterized areas could contain potentially hazardous materials that are increasingly accessible to employees and the public. At Oak Ridge, access to facilities and the sites is primarily based on the hazards and security requirements of the facilities/sites. All areas are controlled to some degree, ranging from strict personnel access control to the posting of signs. Also, there are ongoing efforts to characterize facilities and the sites in the Oak Ridge Reservation. This is in support of activities required for routine surveillance

and maintenance, environmental monitoring, facility maintenance, D&D, hazard assessments, and safety analyses. Changes to perimeter boundaries and fences have been limited to lowering or eliminating security clearance requirements for entry. These areas still require personnel entering the area to be escorted unless they meet site-specific training requirements. These areas are not open to general access by the public. These areas have been evaluated for unusual risks. All persons entering these areas are informed of the hazards or escorted by knowledgeable persons. Hazard screening took full advantage of personnel who had process or operating history in order to provide adequate hazard evaluation. Safety and health programs are in place to ensure appropriate measures are taken to protect employees and the public.

Another vulnerability addressed the issue of facilities being placed in caretaker status without appropriate cleanup or documentation. Years ago, the buildings cited in this vulnerability were placed in caretaker status without appropriate cleanup or documentation. Currently, there are programs to prevent additional facilities being placed in caretaker status without appropriate cleanup or documentation (e.g., Surplus Facilities Deactivation program). Each site on the Oak Ridge Reservation has programs to cover the D&D process. Also, Energy Systems policies and procedures require proper safety analysis documentation on facilities before becoming storage areas for hazardous materials. Analyses include compatibility with the building and its contents. Additionally, computerized chemical tracking systems are in place for procurement, inventory, and physical location.

The remaining vulnerability addressed the inconsistent rigor and formality that apply to managing hazardous materials. The wide variety of type, form, and quantity of hazardous materials in use and in storage hinders the application of generic requirements for their handling and storage. Additionally, differences in appropriate hazardous materials storage conditions can occur due to differences in the authorizing permits for the specific facilities. General requirements for safe handling and storage of chemicals are provided, but specific application is the responsibility of the qualified, immediate supervision with guidance from support organizations, including hazardous waste operations, industrial hygiene, and industrial safety. There are consistent policies, procedures, and management practices designed to uniformly track and control hazardous materials. Also, the DOE UF₆ cylinders are currently managed in one program to ensure uniform management.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Oak Ridge

Vulnerability Number: CSVR-OR-ORR-01

Vulnerability:

- Uncharacterized areas containing potentially hazardous materials are increasingly accessible.

Summary of Vulnerability:

- Security areas at the Oak Ridge sites are shrinking as programs are cut back. The costs of maintaining such areas are high, and the Department's increased openness promotes reduction in controlled areas, consistent with missions. Other access control measures, both administrative and physical, will diminish over time. At Oak Ridge, all facilities and operations have been subjected to at least a preliminary hazard screening. However, excess and abandoned facilities/sites may not have been fully evaluated and characterized, and some will become available for access by workers and the public. Those individuals will not be knowledgeable of the history of the facility/site, nor will they be aware of the real or potential hazards that may be present.

Response:

- Access to facilities/sites is primarily based on the hazards and security requirements of the facilities/sites. As a general rule, all areas are to some degree controlled, ranging from strict personnel access control to the posting of signs.

The K-25 Site is currently undergoing a residue characterization assessment to complete the Tennessee Oversight Agreement commitment B.6(2). A K-25 working group is performing these assessments by questioning facility managers or responsible persons concerning the management procedures or plans addressing potentially hazardous residues still present. Part of this interview process specifically addresses the historical uses, contamination, and residues present at facilities onsite that are used for "new missions."

Each building at the K-25 Site has an individual assigned as the building operator. This individual is responsible for knowing the hazards of the building. The shutdown process buildings in the site's D&D program are subjected to routine surveillance and maintenance by a dedicated organization that evaluates the condition of the buildings' physical structures as well as potential hazardous conditions or environmental concerns created from chemicals or degradation products.

Perimeter boundaries and fences have not changed at the K-25 Site. Some areas, which were previously restricted due to security concerns, have been opened to uncleared employees. These areas have been evaluated for unusual risks. All persons entering these areas are informed of the hazards or escorted by knowledgeable persons. Hazard screening took full advantage of personnel who had process or operating history in order to provide adequate hazard evaluation.

Building 9201-4 is the only facility at Y-12 which is presently undergoing remediation. Associated activities have extensive planning efforts in place to control the soil, decontamination waste, debris, and other "disturbed" materials during D&D. Also, extensive analysis of the protective and/or mitigative features for personnel and public safety have been performed. There are no activities at the facility except for the actual D&D work (i.e., there are no operations ongoing). The Chemical Safety Vulnerability Assessment Team was very complimentary of the conduct of the activities. Further, the facility is located within a guarded, alarmed fence, far from public access. Physical and administrative barriers are in place, e.g., the rotogate and badge reader to prevent "causal" entrance to the facility. Workers are required to attend HAZWOPER training prior to working in the building. Those who enter the building and are not trained must be escorted. Also, all DOE and Energy Systems employees and visitors onsite for 10 or more days are required to take General Employee Training (GET) prior to site access.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-01

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none">In the past, hazardous materials have escaped from buildings and have contaminated the soil around and beneath some buildings, e.g., the 9201-4 Production Building at Y-12.	<p><u>Y-12</u>: Hazardous materials have escaped from buildings and have contaminated the soil around and beneath 9201-4 Production Building at Y-12. The D&D sites at the Y-12 plant are currently HAZWOPER sites. Physical access to these sites is controlled in accordance with the provisions of the applicable sections of the CFRs defining these requirements.</p> <p>Areas where hazardous materials have escaped from buildings and have contaminated the soil are not accessible to the public or generally accessible to employees. When soil is to be excavated, a determination is made regarding its appropriate, safe management.</p>	S.H.Howell

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-01

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> ● Past operational practices involving the disposal of chemicals into building drains may have leaked hazardous materials to the soil, which has not been characterized for contaminants. ● Access on unlocked, unguarded roads in the vicinity of landfills and work areas is no longer rigorously controlled. 	<p><u>K-25</u>: Areas where hazardous materials have escaped from buildings and have contaminated the soil are not generally accessible to employees or the public. When soil is to be excavated, a determination is made regarding its appropriate, safe management.</p>	R.S.Eby
	<p><u>K-25</u>: Although some landfills and burial grounds have been declassified, access by the general public is denied. Workers who enter these areas are trained in the hazards of working with unknown chemicals.</p>	R.S.Eby
	<p><u>ORNL</u>: The inactive Contractor Landfill is located well within the ORNL posted site boundary. Access control to the ORNL site was increased in 1992 by adding guard control of traffic except for certain hours. The access road into the 7658 area has a locked gate and is posted.</p>	Larry Hawk

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Oak Ridge

Vulnerability Number: CSVR-OR-ORR-02

Vulnerability:

- Chemicals are stored in facilities not designed for that purpose.

Summary of Vulnerability:

- Funding requested for some dedicated storage facilities has not been provided. Therefore, the use of less-than-adequate facilities has been required. Drums could corrode, releasing chemicals to the environment and/or causing potential worker exposures. Cylinders containing uranium hexafluoride are stored outside and are exposed to the elements. Severely corroded cylinders have released uranium hexafluoride to the environment. Additional cylinder failures are expected to cause more uranium hexafluoride releases. A plan currently exists to demolish Building 9201-4 at some time in the future. In the interim, the building could be used for storage. Future use of the facility may not be consistent with the potential hazards associated with residual levels of mercury and other facility limitations.

Response:

- Facilities selected for storage of chemicals are modified, maintained, and surveilled, as needed, to provide safe storage. Buildings which have been selected are adequate for this purpose and have required a minimum of new construction, avoiding unnecessary delays and escalated costs. The K-25 lithium hydroxide storage area has been modified to meet chemical storage area requirements.

Monthly inspections and surveillances are conducted of stored materials. These inspections are limited to accessible drums. Inspections include visual examination for corrosion and chemical leakage. Corrective actions are initiated on any identified deficiencies. In addition, the accountable material is subjected to an annual statistical sampling for the required inventory, and an audit is performed annually by the Nuclear Materials Control and Accountability personnel.

UF₆ is currently stored in containers manufactured per ASME boiler and pressure vessel codes and Department of Transportation (DOT) specifications (i.e., engineered controls). Although some external corrosion of the containers has occurred due to environmental exposure, these concerns are understood and are the focus of detailed technical evaluations. A compensatory management program consisting of monitoring, inspection, testing, and repair is in place to ensure the integrity of these containers. A management plan has the planning in place to replace the deteriorated yards and refurbish the cylinders. The design of the yard is to be completed in September 1994, but funding for construction has not yet been approved. The refurbishment facility design is funded and scheduled to be completed by October 1995.

Two breaches in cylinder containment have been identified with failure modes attributed to corrosion damage. Two other breached cylinders have been identified with failure attributed to handling damage. These cylinders were identified during a baseline inspection used to determine the current conditions of the containers and their storage environments. UF_6 is stored as a solid, and a breach in the container will typically result in reaction of the UF_6 with atmospheric moisture to produce gaseous hydrogen fluoride (HF) and solid uranyl fluoride (UO_2F_2). The solid UO_2F_2 quickly accumulates around the opening in the cylinder and seals it; thus limiting further release. Minimal release of both HF and UO_2F_2 has occurred from such cylinder breaching. In addition, the areas in which the UF_6 cylinders are stored are access controlled. Personnel performing work or inspections on the cylinders are instructed as to the appropriate actions to implement in the event that a breached cylinder is identified.

At Y-12, it is not known at this time how far the D&D of Building 9201-4 will be taken. Considerations and options range from "green field" to surveillance and maintenance. Y-12 and Energy Systems policies and procedures require that any change to a facility be evaluated for the existence of an Unreviewed Safety Question. Any further use of Building 9201-4 affecting worker or public safety will be analyzed, including chemical compatibility with the building contents.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSVV-OR-ORR-02

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> ● Lithium hydroxide drums were observed stored in the lower level of the K-25 Process Building. - No consistent policy was used for stacking drums. - Storage facilities do not have adequate temperature or humidity controls. 	<p><u>K-25</u>: Lithium hydroxide is a stable, nonflammable, water soluble solid, which is stored in plastic-lined steel drums and stacked up to three pallets high. The container protects the product from humidity and water in the event of leaks or fires. The containers also prevent direct contact of personnel with the product. Monthly inspections are used to identify and correct abnormal or unsafe conditions.</p> <p>The storage array is four drums to a pallet, two pallets high, with the exception of some drums in one vault that are stacked three pallets high. Plans are being developed to relocate and restack the three-high stacks near the aisles by July 31, 1995.</p> <p>The presence of a large volume of lithium hydroxide was analyzed in the K-25 Process Building Hazard Screening Report (HS/K-25/PK20.2/R0), dated March 1992. The hazard screening resulted in a moderate rating for the facility. The major contributor to the hazard classification of the K-25 Building was the toxicity of the uranium and not the lithium hydroxide. The lithium compounds stored in the vaults are not susceptible to reactions from the normal range of temperature and humidity experienced while in storage.</p> <p>In 1985/1986, the lithium hydroxide monohydrate originally packed in polyethylene-lined fiber drums was overpacked into DOT-approved, 80-gallon polyethylene-lined steel drums. The accountable materials, originally packaged in steel drums, are overpacked as needed.</p>	<p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-02

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> - Significant corrosion was evident on the exterior of many drums. 	<p>Some drums of the accountable lithium show signs of corrosion, but do not have visible penetrations. Over the past few years, approximately 45 drums of questionable condition have been overpacked. Monthly inspections and surveillances are conducted throughout the vaults. These inspections are limited to accessible drums since the facility does not have sufficient space to provide standard aisle spacing to optimize inspection. A drum-corrosion standard, complete with pictures illustrating surface and penetrating corrosion and instructions as to what corrosion levels are acceptable and which should be overpacked is incorporated into monthly inspections. Corrective actions are initiated on any identified deficiencies. The accountable material is subjected to an annual statistical sampling for the required inventory, and an audit is performed annually by the Nuclear Materials Control and Accountability personnel. During these activities, the condition of the accessible drums is also evaluated.</p>	<p>R.S.Eby</p>
<ul style="list-style-type: none"> - Deteriorated wooden pallets could fail, causing one or more drums to rupture and spill lithium hydroxide. 	<p>The pallets are in good condition. If, during inspection, damage pallets are identified, corrective action is initiated. The hazard of spilled lithium hydroxide is addressed in the following paragraph.</p>	<p>R.S.Eby</p>
<ul style="list-style-type: none"> - Potential personnel exposure to lithium hydroxide, resulting in caustic burns. 	<p>Lithium hydroxide has a health hazard rating of three, a fire rating of zero, and a reactivity of one. The health hazard is minimized since the lithium is contained and not available for skin contact, inhalation, or ingestion. If breaches are found, appropriate personal protective equipment is prescribed for cleanup.</p>	<p>R.S.Eby</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Oak Ridge

Vulnerability Number: CSV-OR-ORR-03

Vulnerability:

- Facilities were placed in caretaker status without appropriate cleanup or documentation.

Summary of Vulnerability:

- When a facility changes from operational to caretaker status without thorough cleanup operations, chemicals left in the facility can represent a potentially hazardous condition and/or environmental concern. Such chemicals may be hazardous in their original state or as degradation products that result over time. Chemicals and/or their degradation products may also cause damage to equipment or structures or be affected by building or container deterioration due to natural aging. The loss of corporate memory (e.g., as a result of personnel transfers and retirements, facility aging, downsizing, multiple usage, and adequate configuration management and recordkeeping in the past) may result in chemical hazards when new operations are attempted.

Response:

- Energy Systems policies and procedures require proper safety analysis documentation of areas before becoming a storage area for hazardous materials. Analyses will include compatibility with the building and its contents.

While no comprehensive program exists at ORNL to reduce excess chemical inventory, several mechanisms have been established which help reduce excess accumulation. For example, the Hazardous Materials Information System (HMIS) is used to track chemical inventory. In the HMIS system, chemicals are identified by a control area (building, room), and a responsible person for the chemical is assigned. Additionally, all new chemical requisitions are screened for hazards by industrial hygiene personnel, and the quantities of chemicals are entered into HMIS. For those chemicals identified as waste, ORNL has an effective organization for handling the disposition of those chemicals. Also, a "swap shop" system has been created which allows employees to identify and use excess inventory.

Many K-25 facilities were shutdown without proper post-operational cleaning and purging. D&D to cleanup the process equipment have not yet begun in the process buildings. Activities required to place the facilities in a safe shutdown condition are in process and are to be completed prior to process equipment cleanup. These activities are removing hazards which are either a health and safety concern or a regulatory issue and are similar to deactivation activities the EM-60 organization performs prior to facility transfer into the D&D program. The Deposit Removal project, currently underway, is specifically designed to remove large uranium deposits.

All facilities and operations at K-25 have been subjected to a preliminary hazard screening. Additional hazard analyses have been performed for the major facilities or those with unusual risks. This resulted in the identification of risk reduction activities, which has reduced or eliminated many hazards.

At K-25, each building has an individual assigned as the building operator. This individual is responsible for knowing the hazards of the building. The shutdown process buildings in the site's D&D program are subjected to routine surveillance and maintenance by a dedicated organization that evaluates the condition of the buildings' physical structures, as well as potential hazardous conditions or environmental concerns created from chemicals or degradation products.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-03

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> ● Visual observation and document reviews indicate that vaults for storage of various materials at K-25 need repair or rehabilitation. ● Limited capability to remove contaminated equipment from K-25 and elsewhere reflects insufficient management controls over the D&D process. Although Freon, lubricating oils, and uranium hexafluoride have been removed from process equipment, deposits and/or residues remain in place (including trace quantities of technetium and plutonium, as well as more substantial quantities of uranium). The presence of such materials limits removal efforts. ● Building K-725 was abandoned years ago without a cleanup. The building and, in particular, the ductwork are known to be contaminated with hazardous chemicals. Warning signs are posted around building. 	<p>The condition of the buildings and vaults are evaluated routinely as part of the surveillance and maintenance efforts at the site. For example, roof leaks are repaired in accordance with the Aging Facilities Program.</p> <p>The K-25 building was shutdown without proper post operational cleaning and purging. Freon and lubricating oils have been removed from process equipment. Deposits and/or residues remain in place. The Deposit Removal project, currently underway, is specifically designed to remove large uranium deposits.</p> <p>The K-25 Site is currently undergoing a residue characterization assessment to complete the Tennessee Oversight Agreement commitment B.6(2). The K-25 working group is performing hazard assessments by questioning facility managers or responsible persons concerning the management procedures or plans addressing potentially hazardous residues still present onsite. Part of this interview process specifically addresses the historical uses, contamination, and residues present at facilities onsite that are used for "new missions." Evaluation of the K-725 building will be conducted as part of the Environmental Restoration Program. In the interim, the area is appropriately posted.</p>	<p>R.S.Eby</p> <p>R.S.Eby</p> <p>M.F.P. Delozier</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Oak Ridge

Vulnerability Number: CSV-OR-ORR-04

Vulnerability:

- **Inconsistent formality rigor and formality are applied to managing hazardous materials.**

Summary of Vulnerability:

- **In the absence of specific DOE Orders and/or regulatory requirements, procedures and the conduct of operations related to handling and storing hazardous materials are not uniform between sites and, in some cases, between division and facilities within the same site.**

Response:

- **The wide variety of type, form, and quantity of hazardous materials in use and in storage hinders the application of generic requirements for their handling and storage. Additionally, differences in appropriate hazardous materials storage conditions can occur due to differences in the authorizing permits for the specific facilities. General requirements for safe handling and storage of chemicals are provided, but specific application is the responsibility of the qualified, immediate supervision with guidance from support organizations including hazardous waste operations, industrial hygiene, and industrial safety.**

The foregoing notwithstanding, Energy Systems has a detailed Policy Procedure, ESP-ESH-16, "Hazardous Materials Inventory Program," designed to uniformly track and control hazardous materials. Also, at the K-25 Site, SPP 4111, "Hazardous Material Storage and Inspection," applies to all organizations with hazardous materials holdings. This SPP provides consistent management practices for hazardous material. The lithium compounds management strategy, under development, will specify how the storage requirements will be implemented.

The DOE UF₆ cylinders are currently managed under one program to ensure uniform management.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-04

Supporting Observations	Response	Responsible Person
<p>a. Lithium hydroxide from Y-12 has been stored at K-25 by two different organizations. Storage is located in controlled access areas, but storage conditions are not consistent with "good management practices." Requested funds to upgrade storage conditions have not been obtained.</p> <ul style="list-style-type: none"> ● Storage Facility Condition <ul style="list-style-type: none"> - Lack of maintenance for heating, ventilation, air-conditioning, and fire protection systems has resulted in water leaks. - Eye wash stations and/or safety showers have not been installed at the storage areas. - Inadequate housekeeping was noted (e.g., dirty floors, discarded banding). 	<p>The lithium materials are packaged in steel drums lined with polyethylene that protect the contents from unfavorable humidity posed by the vault storage. Monthly inspections to monitor container condition will maintain this double containment and further mitigate any unfavorable conditions posed by vault storage. All lithium hydroxide storage facilities are managed by the Operations Division at the K-25 Site.</p> <p>During the severe winter of 1993/1994, the fire protection sprinkler systems experienced freeze damage. These systems have been repaired, inspected, and functionally tested to NFPA standards. Most systems in the vaults have been flushed to meet regulations; a few were not flushed because the volume of drums limited access to the systems.</p> <p>Lithium hydroxide has a health hazard rating of three, a fire rating of zero, and a reactivity of one. The health hazard is minimized since the lithium compounds are contained and not available for eye or skin contact, inhalation, or ingestion. Portable eyewashes are made available to personnel who may come in contact with the lithium during handling.</p> <p>Discarded banding cited in one vault was placed in a proper disposal container. Two vaults have been identified for floor cleaning; however, the existing condition does not present any health or safety concern. Cleaning will be completed by March 31, 1995.</p>	<p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSVR-OR-ORR-04

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> ● Drum Stacks <ul style="list-style-type: none"> - Pallets were stacked three high (four drums per pallet) in some areas. Some drum sets are not banded, and some wooden pallets are cracked, causing stacks to tilt slightly. The three-high stacks were reported to be early placements, and this practice is no longer followed. ● Drum Conditions <ul style="list-style-type: none"> - Not all drums were properly labeled. - Some drums showed significant exterior corrosion. - Lid lock-down band on one drum observed to be loose. 	<p>The pallets are in good condition; however, a few are slightly tilted due to pallets not being properly positioned or differing heights of a small number of drums. The drums are secure as currently stacked.</p> <p>All drums are labeled as to content; however, some drums in one vault were shipped from Y-12 before the hazard diamond warning label was required. The hazard diamond placard for each compound is posted at the entrance to this vault.</p> <p>Some drums of the accountable lithium hydroxide show signs of corrosion, but do not have visible penetrations. Over the past few years, approximately 45 drums of questionable condition have been overpacked. Monthly inspections and surveillances are conducted throughout the vaults. These inspections are limited to accessible drums since the facility does not have sufficient space to provide standard aisle spacing to optimize inspection. A drum-corrosion standard, complete with pictures illustrating surface and penetrating corrosion and instructions as to what corrosion levels are acceptable and which should be overpacked, is incorporated into monthly inspections. Corrective actions are initiated on any identified deficiencies. The accountable material is subjected to an annual statistical sampling for the required inventory, and an audit is performed annually by the Nuclear Materials Control and Accountability personnel. During these activities, the condition of the accessible drums is also evaluated.</p> <p>A loose band on a drum is considered a notable deficiency according to the monthly inspection criteria, and corrective actions are initiated as a result of the surveillances.</p>	<p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p> <p>R.S.Eby</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-04

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none">● Inspections<ul style="list-style-type: none">- A monthly inspection program has been instituted, but there is no evidence that drum corrosion is monitored. Inspections have not triggered timely corrective actions for labeling or to upgrade conditions.	Corrosion and labeling concerns are addressed in previous responses. Plans to upgrade conditions are cited in previous responses to stacking and housekeeping concerns. (See CSV-OR-ORR-02 for more information.)	R.S.Eby

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-04

Supporting Observations	Response	Responsible Person
<p>b. Examples of improper handling and storage of hazardous chemicals in laboratories and other conditions that are inconsistent with 29 CFR 1910.1450 were observed:</p> <ul style="list-style-type: none">● Flammables, carcinogens, and corrosive chemicals stored in the same cabinet. ● Ethers not analyzed for peroxides, bottles not dated, and bottles not stored in an explosion-proof refrigerator. ● Incompatible chemicals placed in an open, improperly labeled RCRA satellite storage "area" (container).	<p><u>ORNL</u> Laboratory activities will be relocated to a facility with proper handling techniques and storage facilities. Removal of any inappropriate chemical storage in the nuclear medicine laboratories of Bldg. 3047 will be completed by December 31, 1994.</p>	<p>Russ Knapp</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-04

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> • No potable water and no eyewash or safety shower station at one laboratory. c. Storage of uranium hexafluoride containers - see Vulnerability CSV-OR-ORR-05. 	<p>The nuclear medicine laboratories of Bldg. 3047 have safety showers but lack eye wash. These laboratory activities are to be relocated into renovated laboratories with proper eyewash and safety showers (due December 31, 1994).</p> <p>See response to Vulnerability CSV-OR-ORR-05.</p>	<p>Russ Knapp</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Oak Ridge

Vulnerability Number: CSVR-OR-ORR-05

Vulnerability:

- Large quantities of specialty and other industrial chemicals are stored without consistent strategic planning.

Summary of Vulnerability:

- The national defense mission of DOE prompted the purchase and stockpiling of industrial quantities of many unique chemicals. Because of changing strategic requirements, most of these chemicals are now surplus to DOE needs. The storage of these chemicals could result in unanticipated vulnerabilities caused by the absence of appropriate controls, chemical aging, and decomposition to unknown byproducts. It also represents the need for a long-term economic commitment by DOE.

Response:

- Energy Systems has safety programs in place that ameliorate this concern, i.e., material shelf life is monitored; the MSDS aging code is observed; inventories of materials in stores that are not moving are excessed; chemicals are purchased on an as-needed basis; and hazardous chemicals bought on direct purchase are tracked. A large amount of the chemicals stored at K-25 is lithium hydroxide from Y-12. This material has been placed in overpacks to protect the containers from contact with the chemical. Energy Systems has attempted to offer this material for sale; however, no bidder has expressed interest in the bid package as offered. Dialogue has been opened with DOE to modify the process so as to increase the prospect of sale.

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-05

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none"> ● Uranium hexafluoride is stored at a number of areas at K-25. The estimate of the total amount (from the site emergency plan) is more than 50,000 tons. This material is stored in several yards, generally segregated by size of containers and contents. These yards are fenced, and access is controlled. However, these areas lack engineered controls to minimize potential for environmental releases, and the conditions of the yards and containers is deteriorating. This has necessitated reliance on administrative controls (e.g., inspections and testing for container integrity). - Most of the containers are placed on concrete pads with full containers set on wooden saddles. There are numerous instances, however, where saddles have deteriorated or broken and areas where concrete has also deteriorated. - Many containers show evidence of excessive corrosion. A number of containers have leaked, and some may still be leaking. - The yards do not have containment or catch basins to control runoff. 	<p>These observations are generally correct; however, only four breaches have been identified at the K-25 Site out of the 4,700 cylinders stored there. Because of the relatively impervious barrier formed when solid UF_6 reacts with moisture, releases from these four breaches were minimal. Inspections of all accessible surfaces of all the cylinders has been completed.</p> <p>The current cylinder program has the planning in place to replace the deteriorated yard and refurbish the cylinders. The design of the yard is to be completed in September 1994, but funding for construction has not yet been approved. The refurbishment facility design is funded and scheduled to be completed by October 1995. This compensatory management program is designed to ensure the integrity of the cylinders and manage the material while the proposed long-term management strategy for ultimate disposition of the material is being evaluated.</p>	M.F.P. Delozier

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

SITE/FACILITY: Oak Ridge

Vulnerability Number: CSV-OR-ORR-05

Supporting Observations	Response	Responsible Person
<ul style="list-style-type: none">• There have been attempts to sell some surplus material (particularly lithium compounds) on the open market. Bids for this material received have been well below market value. MMES is attempting to dispose of lithium and beryllium to commercial vendors.• Lack of a definitive, long-term policy on the disposition of this excess material.• See Vulnerabilities CSV-OR-ORR-02, CSV-OR-ORR-03, and CSV-OR-ORR-04.	<p><u>K-25</u>: The DOE's current strategy for the disposition of approximately 23 million pounds of surplus Lithium Hydroxide Monohydrate (LiOH) stored at the K-25 site is to sell this material to private industries. Prior attempts to accomplish this goal through the use of the "Competitive Bid Sales" process have not been totally effective. A more promising effort is currently underway to use the "Negotiation Sales" approach by dealing directly with the Lithium producers to purchase this material.</p> <p>The DOE long-term policy on the disposition of the excess LiOH stored at the K-25 site is to have all the material removed from the facility within 8 years.</p> <p>See above response.</p> <p>See responses CSV-OR-ORR-02, CSV-OR-ORR-03, and CSV-OR-ORR-04</p>	

RECOGNIZED GOOD PRACTICES

During the April site verification visit many good practices were identified. These good practices included some of the following:

- Defense-in-depth against the hazards of Chlorine at the Water Treatment Facility, K-1515, contact R.S. Eby
- Surplus materials identification and consolidation program
- The Safety Analysis Review Update Program (SARUP), contact John Rayside
- Unreviewed Safety Question Determination (USQD) process, contact Dan Wilson
- Hazardous Materials Information System (HMIS), contact Larry Gray

Of the above, particular attention was given to HMIS and SARUP.

HMIS supports the health and safety, environmental, regulatory, and management needs of Energy Systems, its 20,000 employees at four installations and in the community. The system design is formulated to implement Energy Systems hazardous materials management strategy:

1. to perform an upfront hazard evaluation by an Industrial Hygienist of all material requisitions via the Hazardous Materials Procurement Interface;
2. to ensure a Material Safety Data Sheet (MSDS) is matched to all hazardous materials receipts and made readily available to employees; and
3. to ensure that all hazardous materials entering Energy Systems are tracked and managed.

The Hazardous Materials (HM) Procurement Interface supplies the Inventory Module, a transaction record of all HM receipts which includes the location (HM Control Area) where the material is to be initially stored or used, the volume or weight, the unique identifier (RECID), and basic SARA 312 reporting information. Hazardous items are associated with control lists to allow inventory reports to be generated for Carcinogens, Reproductive Toxins, Peroxidizables, EPA Extremely Hazardous Substances, Air Toxins, Chemical Process Safety List, etc. Authorized users of the Inventory Module are provided several methods to update their inventories electronically (record usage and transfers of materials to other users or to "consumed" control areas). One method of inventory control, used primarily by the labs, is the HMIS Bar Code Application, which allows custodians of HM to produce and attach bar code labels to their inventory items (chemicals); updating of their inventories is then accomplished by using a Bar Code Reader. Other Custodians who use the traditional keyboard method of transferring and updating their inventories may transfer by item, material type, or by RECID. Resource efficiency is achieved by utilizing the HM Inventory data for multiple management and reporting purposes and by incorporating the latest technology.

SARUP is a major Energy Systems program designed to bring existing safety analysis reports and associated documents into compliance with present DOE expectations.

Prior to and after the SARUP inception in 1989, equal consideration has been given to nuclear and nonnuclear hazards. Only standard industrial hazards, those routinely encountered by workers or the general public or those well understood and controlled by consensus standards, have been excluded.

Hazard screening methodology was developed for classifying facilities as High, Moderate, or Low Hazard. Parallel sets of criteria were developed for radiological and general hazards. During SARUP implementation, analysis has shown that chemical toxicity and other general hazards are at least as important as radiological hazards. Accordingly, safety class equipment has been identified and Operational Safety Requirements developed for chemical hazards when needed. Content and format guidance for nuclear safety analysis reports (SARs) will be adopted for SARs addressing only chemical or other general hazards.

INITIAL SITE RESPONSE PLAN

ROCKY FLATS PLANT



**EG&G ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

The Department of Energy (DOE) Office of Environment, Safety and Health (EH) coordinated a Chemical Safety Vulnerability Review with the intent of identifying and characterizing conditions or circumstances involving potentially hazardous chemicals at DOE sites and facilities. As part of this project, a field verification review was conducted at the Rocky Flats Environmental Technology Site (RFETS) from May 2 to May 11, 1994. This field verification review was conducted by a team sponsored by EH and was an expansion of a 1994 self-evaluation of chemical vulnerabilities at the RFETS.

Five vulnerabilities were identified in the final draft assessment report dated May 11, 1994. These vulnerabilities were categorized as follows: One short-term vulnerability with medium to high priority; two short-term vulnerabilities with medium priority; one short-term vulnerability with low priority; and one medium-term vulnerability with medium priority. None of the conditions or circumstances identified requires immediate action to prevent severe consequences. A discussion is provided below for each vulnerability, and the actions taken or planned are described.

Response Summary

The first vulnerability identified was that a lack of accurate and complete chemical inventories impedes the effective analysis of hazards posed to workers. The current inventory is designed for Emergency Planning and Community Right-to-Know Act materials and is inadequate for general worker hazard assessments. Additionally, there is not currently a systematic, integrated approach to management of chemicals at RFETS that includes purchasing controls, receiving, handling, storage, and disposal of chemicals in a uniform manner. This vulnerability was characterized as short term based on probability of occurrence and medium to high priority based on the potential severity of consequences. EG&G RFETS has established programmatic ownership for a plantwide chemical management program within Engineering and Safety Services. Additionally, actions completed and planned are detailed in the attached vulnerability form.

The second and third vulnerabilities concluded that chemical hazards received less precedence and management attention than radiation hazards and RCRA requirements, respectively. Less emphasis on chemical safety may lead employees to believe that nuclear and regulatory emphasis takes precedence over chemical safety. These vulnerabilities were characterized as short term based on probability of occurrence, and medium priority based on potential severity of the consequences. RFETS has initiated mandatory reviews of all FY95 Major Activity Documents (MAD) by Health and Safety personnel. This effort is intended to be a first step in emphasizing resources needed for chemical inventory/tracking, provision of health and safety support, and maintenance of facilities housing chemicals.

The fourth vulnerability concluded that deterioration of facility physical condition has the potential to create chemical safety hazards. The level to which specific RFETS facilities are maintained depends on mission status, with RCRA-regulated facilities and activities receiving priority for staffing and budget. This finding was characterized as short term and of low priority. RFETS is working to improve maintenance systems, including development of a comprehensive Preventive Maintenance program for evaluation of the integrity of liquid contaminants plantwide.

Finally, the fifth vulnerability identified was that decisions on budget content and priorities delay correction of known chemical safety vulnerabilities. Specifically, it was found that the continued existence of some chemical vulnerabilities could be directly traced to the relatively low priority assigned to chemical hazards and to the ability of line managers to unilaterally decide to down-scope efforts related to safe management of chemicals. This vulnerability was characterized as medium term and medium priority. As previously noted, all FY95 MADs are being reviewed for risk priority by Health and Safety personnel. Additionally, long term modifications for the health and safety review of Capital Projects have been proposed.

More detailed description of observations and corrective actions for each of the five identified vulnerabilities are contained in the attached Chemical Safety Vulnerability Review Forms.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-01

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
1.1	Lack of accurate and complete chemical inventories impedes the effective analysis of hazards posed to workers.	<p><u>Short-term Corrective Action:</u></p> <p>Programmatic ownership for plantwide chemical management has been assumed by the Engineering and Safety Services (E&SS) management organization. E&SS is responsible for integrating the various facets of chemical management. A chemical manager to oversee this effort was recently appointed (March 1994) by E&SS. Preparation of a comprehensive, plantwide Chemical Management Plan will begin shortly.</p>		
1.2		<p><u>Deliverable:</u> Chemical Management Plan</p> <p><u>Short-term Corrective Action:</u></p> <p>Health and safety considerations are included in the Chemical Tracking and Inventory Program (CTP). In addition, Health and Safety Practices Manual (HSP) Chapter 9.12 will be modified to include references to existing plant procedures that address health and safety concerns for chemicals.</p> <p><u>Deliverable:</u> Modification to HSP 9.12</p>	9/30/94	D. Costain
			9/1/94	D. Costain

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-01	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
1.3		<p><u>Short-term Corrective Action:</u></p> <p>A description of the scope, responsibilities, and work processes of the CTP are provided herein. This plan addresses the need to define the mission and scope for chemical tracking and clearly establishes what can and cannot be expected from the existing program.</p> <p><u>Deliverable:</u> Chemical Tracking and Inventory Program Management Plan</p> <p><u>Deliverable:</u> Technical Procedure on Chemical Tracking</p> <p><u>Deliverable:</u> Training Report on Management Briefings and Chemical User Training on the CCS.</p>	<p>Complete</p> <p>9/1/94</p> <p>9/14/94</p>	<p>D. Costain</p> <p>D. Costain</p> <p>D. Costain</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-01

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
1.4		<p><u>Short-term Corrective Action:</u></p> <p>Several actions have been completed, and additional efforts are underway, to apply more formal processes to the development and maintenance of the CCS database and supporting operations.</p> <p><u>Deliverable:</u> Data entry desktop instructions for chemical tracking.</p> <p><u>Deliverable:</u> Revised CCS User's Manual (Appendix H)</p> <p><u>Deliverable:</u> Correct Known Inaccuracies in CCS Database.</p> <p><u>Deliverable:</u> Functional Requirements for CCS.</p>	<p>Complete</p> <p>Complete</p> <p>Complete</p> <p>8/26/94</p>	<p>D. Costain</p> <p>D. Costain</p> <p>D. Costain</p> <p>D. Costain</p>
1.5		<p><u>Short-term Corrective Action:</u></p> <p>HSP 9.12 defines procedures for chemical tracking which, if followed, would provide for accurate information on the CCS. Plantwide training for managers and chemical users in FY94 has served to educate plant personnel on their responsibilities for chemical tracking.</p>		

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-01	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
1.6		<p><u>Short-term Corrective Action:</u></p> <p>Establish line control for chemical management. The ownership and responsibility for maintaining chemical inventories must be clearly established for each individual facility. HSP 9.12 establishes the Operations Manager as responsible for chemical inventories in the facilities for which they are responsible. A proposal for more directed management of chemical inventories is given in Section 15.0 and will be reflected in the plantwide Chemical Management Plan.</p> <p><u>Deliverable:</u> Chemical Tracking and Inventory Program Management Plan.</p> <p><u>Deliverable:</u> Plantwide Chemical Management Plan.</p>	<p>Complete</p> <p>9/30/94</p>	<p>D. Costain</p> <p>D. Costain</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-01

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
1.7		<u>Short-term Corrective Action:</u> A proposal to integrate the CCS and local databases and thus derive the best of both approaches to chemical management is given in Section 14.0 and will be reflected in the plantwide Chemical Management Plan. This proposal depends extensively on line control of chemical management and receipt of requested FY95 funds. Funds requested.	Complete	D. Costain

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-02	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
2.1	Chemical hazards are provided disproportionately less management support than radiation hazards.	<p><u>Short-term Corrective Action:</u></p> <p>Conduct Industrial Hygiene and Safety (IH&S) reviews of all work package (budgets) Major Activity Documents during the FY95 preparation cycle. IH&S will place a priority risk rating on all activities proposed in the FY95 budget. Risk ratings will be a function of hazard to the public, environment, and worker safety in regard to severity and probability of occurrence.</p> <p><u>Start:</u> 8/8/94</p> <p><u>Status:</u> Initial Reviews - Complete</p>	9/30/94	J. M. Brooks

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-02

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
2.2		<p><u>Short-term Corrective Action:</u></p> <p>Integrate the fragmented chemical management activities into a consolidated Chemical Management Program for the Rocky Flats site. In FY95, activities of six different organizations and six work packages are being consolidated into this organization and into one work package (#50210).</p> <p>Develop and implement a technical and administrative program for control of chemicals entering the site and disposition of thousands of regulated and nonregulated chemicals, including Reactive and Unidentified. Significant improvements are required in all areas: automation of data bases; building-level computer control systems; inventory, tracking, reporting, and disposition. An efficient, effective, and responsive system must be implemented (cradle to grave concept) to ensure maximum possible safety for employees, the public, and the environment, and to ensure that all required DOE Orders, Federal and state environmental and safety laws and regulations are met.</p> <p>Request funding for establishment of:</p> <ul style="list-style-type: none"> - Disposition of 4000 excess chemicals - Chemical Exchange Program - MSDS Automation System - Facility Chemical Control Program - Reactive Chemical Program <p><u>Start:</u> 8/8/94 <u>Status:</u> Initial Unfunded Activity Request Risk Risk Assessment Ranking - High</p>	Complete	E. Trujillo

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-02	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
2.3		<p><u>Long-term Corrective Action:</u></p> <p>A senior industrial Hygiene and Safety (IH&S) representative will be appointed to the Capital Project Planning Organization/Board to identify chemical safety risk priorities to the Board for all major facility projects/upgrades.</p>	12/19/94	R. E. Kell
2.4		<p><u>Long-term Corrective Action:</u></p> <p>Prepare comprehensive Chemical Management Program.</p>	9/14/94	D. Costain
2.5		<p><u>Long-term Corrective Action:</u></p> <p>Implement Chemical Management Program upon receipt of funding requested in short-term actions above. Funding requests were prioritized as high, based on IH&S Risk Review.</p> <p>Continue to integrate the fragmented chemical management activities into a consolidated Chemical Management Program for the Rocky Flats site. In FY95, activities of six different organizations and six work packages are being consolidated into this organization and into one work package (#50210).</p>	10/1/94	D. Costain

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-02

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
2.5 (cont.)		<p>Develop and implement a technical and administrative program for control of chemicals entering the site and disposition of thousands of regulated and nonregulated chemicals, including Reactive and Unidentified. Significant improvements are required in all areas: automation of data bases; building-level computer control systems; inventory, tracking, reporting, and disposition. An efficient, effective, and responsive system must be implemented (cradle to grave concept) to ensure maximum possible safety for employees, the public, the environment, and to ensure that all required DOE Orders, Federal and state environmental and safety laws and regulations are met. Provide a Chemical Management Plan for the Rocky Flats site. There is currently no such plan for the site.</p> <p align="center"><u>Excess Program</u></p> <p>Building Support/Excess Chemical Disposition of 4000 Excess Chemicals</p> <p align="center"><u>Chemical Management Program</u></p> <p>SARA III - Tier II report to EPA SARA III - Form R Report to EPA Chemical Control Database Sitewide Chemical Inventory Building-level Chemical Information System OSHA/SARA III - MSDS Compliance Management</p>	10/1/94	D. Costain

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-02	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
2.5 (cont.)		<p style="text-align: center;"><u>Unfunded Activities</u></p> <p>Pollution Prevention Act, Chemical Exchange</p> <p>MSDS Auto Phase 1 - Procure and Installation</p> <p>MSDS Auto Phase 2 - Pilot System</p> <p>Facility Chemical Control - Phase 1</p> <p>MSDS Auto Phase 3 - Operation</p> <p>Facility Chemical Control - Phase 2</p> <p>Facility Chemical Control - Phase 3</p> <p>Facility Chemical Control - Phase 4</p> <p>SARA III - Vendor Train/PPA Conference Other Chemical Activities</p> <p>Reactive Chemical Program</p> <p>Unidentified Chemicals</p> <p>Special Projects, Studies, Substitution, Experts</p> <p>Hazardous Materials Management Interface</p>	10/1/94	D. Costain

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: **Rocky Flats Environmental Technology Site**

Vulnerability Number: **CSRV-RFP-000-03**

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
3.1	RCRA requirements are given precedence over chemical safety.	<p><u>Short-term Corrective Action:</u></p> <p>Conduct Industrial Hygiene and Safety (IH&S) reviews of all work package (budgets) Major Activity Documents during the FY95 preparation cycle. IH&S will place a priority risk rating on all activities proposed in the FY95 budget. Risk ratings will be a function of hazards to the public, environment, and worker safety in regard to severity and probability of occurrence.</p> <p><u>Start:</u> 8/8/94</p> <p><u>Status:</u> Initial Reviews - Complete</p>	9/30/94	J. M. Brooks
3.2		<p><u>Long-term Corrective Action:</u></p> <p>A senior Industrial Hygiene and Safety representative will be appointed to the Capital Project Planning Organization/Board to identify chemical safety risk priorities to the Board for all major facility projects/upgrades.</p>	12/19/94	R. E. Kell

CHEMICAL SAFETY VULNERABILITY REVIEW				
Site/Facility: Rocky Flats Environmental Technology Site			Vulnerability Number: CSRV-RFP-000-04	
Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
4.1	Deterioration of facility physical condition has the potential to create chemical safety hazards.	<p><u>Short-term Corrective Action:</u></p> <p>A comprehensive Preventive Maintenance program is being implemented to test and evaluate the integrity of liquid containment structures facility wide.</p> <p><u>Status:</u> Presently Ongoing</p>		F. Pope
4.2		<p><u>Long-term Corrective Action:</u></p> <p>A Maintenance Implementation Plan has been developed to request funding for performance of predictive maintenance. Implementation in FY95 is dependent upon receipt of funding. IH&S reviews of Preventive and Predictive Maintenance Budget requests for FY 95 were conducted, and resulted in a high-priority risk ranking.</p>		F. Pope

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Rocky Flats Environmental Technology Site

Vulnerability Number: CSRV-RFP-000-05

Task #	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
5.1	Decisions on budget content and priorities delay correction of known chemical safety vulnerabilities.	<p><u>Short-term Corrective Action:</u></p> <p>Conduct Industrial Hygiene and Safety (IH&S) reviews of all work package (budgets) Major Activity Documents during the FY95 preparation cycle. IH&S will place a priority risk rating on all activities proposed in the FY95 budget. Risk ratings will be a function of hazards to the public, environment, and worker safety in regard to severity and probability of occurrence.</p> <p><u>Start:</u> 8/8/94</p> <p><u>Status:</u> Initial Reviews - Complete</p>	9/30/94	J. M. Brooks
5.2		<p><u>Long-term Corrective Action:</u></p> <p>A senior Industrial Hygiene and Safety representative will be appointed to the Capital Project Planning Organization/Board to identify chemical safety risk priorities to the Board for all major facility projects/upgrades.</p>	12/19/94	R. E. Kell

INITIAL SITE RESPONSE PLAN

**SANDIA
NATIONAL LABORATORIES**



**SANDIA NATIONAL LABORATORIES
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

A Chemical Safety Vulnerability Review of Sandia National Laboratories, New Mexico (SNL/NM), was conducted by the Department of Energy during the period of May 16 through May 25, 1994. The draft Field Verification Report was issued May 25, 1994. The review "determined that hazardous materials are being stored and handled in accordance with SNL/NM corporate procedures and applicable standards," but identified three potential vulnerabilities. The vulnerabilities were:

- *Inadequate integrated work control of maintenance and construction activities in multiuser facilities.*
- *Weaknesses in, and lack of, integration among SNL/NM programs for identifying, characterizing, and mitigating chemical hazards.*
- *Inadequate configuration management in aging laboratory facilities.*

This management response plan will address the issues raised by the vulnerabilities noted and will improve the safety and work processes at the laboratories. A description of the vulnerability, the planned management action, and the estimated schedule are included for each of the vulnerabilities.

Response Summary

The first vulnerability, inadequate integrated work in multiuser facilities, was determined to stem from there being no responsible individual who is cognizant of and controls all facility operations and maintenance activities. The management action to improve this vulnerability is to develop a "Zone Management" process to establish a clearcut ownership structure. Sandia has created a team which will work with the Sites Operations Director to develop this process.

The weakness and lack of integration of SNL/NM programs for identifying, characterizing, and mitigating chemical hazards result from the immaturity of several SNL/NM processes and needed refinement of other processes. Eight processes and procedures have been identified for improvement by continuing several existing actions and initiating other planned actions.

A lack of configuration management in older facilities has resulted in gradual degradation of essential building systems. A risk-based Configuration Management System is being initiated to mitigate this vulnerability. A team has been formed to develop a program plan and a specific implementation plan. The team will follow Department of Energy (DOE) Standard 1073-93 as a guide. Ownership of the Configuration Management System will be assumed by the Sites Operations Center.

**Chemical Safety Vulnerability Review
September 1994**

**Site/Facility: Sandia National Laboratories
Point of Contact: Sites Operations Management Center, 7300**

Vulnerability Number: CSVN-SNL/NM-FM-01

Vulnerability:

- Inadequate integrated work control of maintenance and construction activities in multiuser facilities.

Summary of Vulnerability:

- In multiuser facilities, the presence of several operations, confusion over responsibilities, and one group's actions may inadvertently impact another group. In these multiuser facilities, there is no responsible individual who is cognizant of and controls all facility operations and maintenance activities. This results in a lack of integration of work control and does not ensure that chemical-related work procedures are applied uniformly and are well-coordinated.

Response:

- Integration of work control of maintenance and construction activities in multiuser facilities must have, as a fundamental prerequisite, defined ownership of the facilities that is clear, unambiguous, and known to all.

Ownership must be based on the most stable foundation Sandia has, and the most unchanging entity in the Sandia framework is real property. Real property boundaries are precise, permanent, and can be clearly drawn, easily marked, and readily understood. Once defined, real property is unambiguous.

We believe that a system of "Zone Management" is the best method for constructing an unambiguous ownership structure. Integration of maintenance activities, storage, property control, and similar activities with ongoing operations and activities within a facility is the primary purpose for establishing the Zone Management Concept. In this system, specific individuals are assigned full-time management responsibility for specific, clearly defined areas. It is important to point out that this approach is conceptual. However, preliminary work causes us to believe it is the proper approach to the ownership problem which is at the root of many integration problems. Sandia is pursuing the Zone Management concept and has created a team to work under the leadership of the Sites Operations Director to fully develop this ownership concept.

Estimated Cost:

\$250 K
Funded in current FY94 and FY95 budgets.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-01

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
<p>In multiuser facilities, the presence of several operations, confusion over responsibilities, and one group's actions may inadvertently impact another group. In these multiuser facilities, there is no responsible individual who is cognizant of and controls all facility operations and maintenance activities. This results in a lack of integration of work control and does not ensure that chemical-related work procedures are applied uniformly and are well-coordinated. Overall, eight service organizations from different research and matrix support groups were identified, each of which may be involved with maintenance functions in a single facility. While these organizations each have their own effective safety procedures, their approaches to work control varied. There was no clear indication that work is being controlled in a fully integrated manner to ensure chemical safety. As a result, there is a potential that maintenance or construction activities in one area of an equipment room may adversely affect activities in another area of that space. This may lead to inadvertent exposure of workers to hazardous chemicals or the compromising of safety equipment integrity. This vulnerability was prioritized as one which could result in short-term consequences of medium severity.</p>	1	Presentation of the Zone Management concept to the Sandia Line Implementation Working Group.	8/31/94	Sites Operations Management Center, 7300
	2	Fully define roles and responsibilities and prepare Job Descriptions for Zone Managers.	9/30/94	
	3	Present Zone Management Plan to Senior SNL management.	10/31/94	
	4	Fully develop and implement Zone Management Plan.	12/31/95	

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Sandia National Laboratories
Point of Contact: Sites Planning and Integration Center, 7200

Vulnerability Number: CSVN-SNL/NM-MO-02

Vulnerability:

- Weaknesses in, and lack of, integration among SNL/NM programs for identifying, characterizing, and mitigating chemical hazards.

Summary of Vulnerability:

- SNL/NM has not implemented integrated and effective programs for identification, analysis, and mitigation of all chemical hazards. The SNL/NM hazard analysis processes are sometimes inadequate because the level of rigor applied is not appropriate for the level of hazard present. The facility maintenance and design engineering processes do not ensure a level of safety review, approval, and testing that is commensurate with the consequences of failure or the risk involved. Emergency preparedness sector plans vary in quality and usefulness in a manner that does not necessarily correlate to the hazards present. These conditions may result in unrecognized hazards, less than adequate engineering and administrative controls, and a decreased capacity to respond to emergency situations.

Response:

The hazards identification, analysis, and mitigation processes and procedures for chemicals and other hazards will be improved through continuing several existing actions and initiating other planned actions. These activities include the following: (1) qualification and training criteria for ES&H Coordinators and Zone Managers will be developed, to include identification of chemical hazards and requirements for worker protective measures; (2) Chapter 13, "Risk Management," of the Environment, Safety, and Health (ES&H) Manual will be extensively revised to define an integrated risk management methodology which will cover the entire life-cycle of an operation, facility, or idea and to provide supplemental guidance on the preparation of safety documents; (3) a comprehensive strategy for integrating hazard-related information, analyses, and reports across all Sandia sites and facilities will be created, allowing management to obtain a comprehensive view of facility hazards; (4) the Preliminary Hazards Assessment (PHA) and preliminary Hazards Classification processes will be revised to ensure that chemical hazards are adequately assessed according to criteria established in Industrial Hygiene and that the hazard classification process incorporates worker safety issues; (5) an online capability for collecting hazard-related information by facility and for applying the graded approach to determine the necessary level of safety analysis will be established and prototyped for at least one SNL facility; (6) at least one Sandia Center will evaluate the methods developed to revise the PHA and PHC processes; (7) all Sandia facilities will be reviewed against DOE 5481.B hazard classification levels and emergency response planning criteria and guidance, and a schedule for revising safety documentation and Emergency Preparedness Sector Plans based on the level of hazard present will be developed; and (8) The configuration management, maintenance management, design engineering, and self-assessment processes will be integrated into the overall management of risks at Sandia. The Sandia facility used to prototype the online capability for collecting hazard information will be selected in cooperation with Sandia's Industrial Hygiene Department. The methods to

revise the PHA and PHC classification processes will be evaluated by at least one Sandia Center by March 1995. This is the responsibility of the Risk Management and NEPA Department.

Estimated Cost:

\$1.9M

FY94 and FY95 actions are funded.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-MO-02

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
<p>SNL/NM has not implemented integrated and effective programs for identification, analysis, and mitigation of all chemical hazards. The SNL/NM hazard analysis processes are sometimes inadequate because the level of rigor applied is not appropriate for the level of hazard present. The facility maintenance and design engineering processes do not ensure a level of safety review, approval, and testing that is commensurate with the consequences of failure or the risk involved. Emergency preparedness sector plans vary in quality and usefulness in a manner that does not necessarily correlate to the hazards present. These conditions may result in unrecognized hazards, less than adequate engineering and administrative controls, and a decreased capacity to respond to emergency situations; thereby, potentially increasing both the probability and severity of accidents involving chemicals. This vulnerability was prioritized as one which could result in short- to long-term consequences of medium severity.</p>	1	Define ES&H Coordinator and Zone Manager qualification and training.	8/31/94	<p>Sites Planning and Integration Center, 7300</p>
	2	Revise Chapter 13, ES&H Manual.	10/31/94	
	3	Develop a hazard information integration strategy.	12/31/94	
	4	Revise PHA and PHC processes to reflect Industrial Hygiene criteria for initiating job analyses and worker protective measures.	12/31/95	
	5	Demonstrate an online capability for at least one SNL facility designated by the Industrial Hygiene Department to collect hazard-related information at SNL/NM.	1/31/95	
	6	At least one Sandia Center will evaluate methods developed to revise the PHA and PHC processes.	3/31/95	
	7	Review SNL facility hazards and determine required safety and emergency response planning documentation.	6/30/95	
	8	Integrate configuration management, maintenance management, design engineering, and self-assessment processes with risk management processes.	9/30/97	

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Sandia National Laboratories
Points of Contact: Sites Operations Management Center, 7300
Facilities Development Center, 7900

Vulnerability Number: CSVN-SNL/NM-FM-03

Vulnerability:

- Inadequate configuration management in aging laboratory facilities.

Summary of Vulnerability:

- Inadequate configuration management in an aging SNL/NM, hazardous-chemical-containing, laboratory complex has resulted in the gradual degradation of essential utility and ventilation systems. These systems were reported to be operating at, or slightly beyond, maximum design capacities, to be experiencing a higher than normal breakdown incidence rate, and to be a contributing cause of suspect indoor air quality issues. The chemical research laboratories undergo many small-scale modification projects, which, typically, do not provide sufficient funding for full system engineering evaluations during the design phase. The problem is exacerbated by the many independent tenant organizations attempting to exert control over portions of these buildings without a responsible individual who is cognizant of all facility operations and maintenance activities.

Response:

- SNL concurs that configuration management is lacking, particularly in our older facilities. An improved Configuration Management System will be an important tool for the Zone Managers, referred to in the management action for Vulnerability 1 above, and for the general application in the overall Zone Management System. Configuration management improvements need to be developed in parallel with the Zone Management System, though it is likely that Zone Management will be implemented before a Configuration Management System is fully implemented.

A team has been formed to initiate development of a Configuration Management System. The current objective of this team is to provide a program plan and specific implementation plan to this end. A specific schedule for this objective will be prepared in August 1994. Utilizing DOE Standard 1073-93 as a guide, this team will provide the framework for a Configuration Management System and develop organizational responsibilities necessary to implement the program. Responsibility for development of the Configuration Management Program resides with the Facilities Development Center. Ownership of the Configuration Management System, once developed, will be assumed by the Sites Operations Center. This Configuration Management System, working through the Zone Management System, should greatly alleviate, if not eliminate, the problems identified in this vulnerability.

A risk-based Configuration management System will be developed and implemented to ensure that high, medium, and low risk and general use structures, system, and components (SSC) are identified, operated, and maintained to ensure the continued protection of people, property, and the environment during the useful life of the system.

The following actions will be taken: (1) conduct a review of the indoor air quality systems operations that exist in Buildings 805, 806, and 807; (2) compile recommendations to resolve any problems identified in the review just mentioned; (3) identify facilities with chemical exhaust systems greater than 5 years old, using existing industrial hygiene records; (4) test the exhaust systems in those identified facilities to ensure that performance meets usage requirements, curtailing operations and effecting corrections where performance fails to meet usage requirements; (5) review the maintenance records of the exhaust systems identified in the third action above and determine if trends exist which indicate that components (motors, blowers, switches, etc.) should be replaced or serviced more frequently than now scheduled; and (6) review and modify, if needed, the Sandia Facilities Design Manual to ensure that system engineering/evaluations of local ventilation and building HVAC systems are considered when projects require either new systems or modifications to local ventilation and building HVAC systems.

We recognize that building complex 805, 806, and 807 is one of our older facilities and is a prime example of this vulnerability. Immediate action was taken to alleviate the ventilation issue in this complex as evidenced in paragraph 1 of the letter from M. Lynn Jones, Vice President, Laboratories Services Division to Kathleen A. Carlson, Area Manager, DOE/KAO, subject: Progress Report on Issues Requiring Immediate Response from the Chemical Safety Vulnerability Review Field Verification, dated June 3, 1994. In addition, in the near future, many of the occupants of these buildings will relocate to new facilities, the Integrated materials Research Laboratory (IMRL) and the Explosives Component Facility (ECF). Sandia will assure that the enduring documentation accurately reflects the as-built state and that proposed changes are evaluated for possible impact on the environment and the health and safety of our employees, thus preventing problems now existing in the 805, 806, 807 complex.

Estimated Cost:

\$130K

FY94 and FY95 actions are funded. Steps 10-16 funding will be determined on a facility-by-facility basis.

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-03

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
<p>Inadequate configuration management in an aging SNL/NM, hazardous chemical-containing, laboratory complex has resulted in the gradual degradation of essential utility and ventilation systems. These systems were reported to be operating at, or slightly beyond, maximum design capacities, to be experiencing a higher than normal breakdown incidence rate, and to be a contributing cause of suspect indoor air quality issues. The chemical research laboratories undergo many small-scale modification projects, which, typically, do not provide sufficient funding for full system engineering evaluations during the design phase. The problem is exacerbated by the many independent tenant organizations attempting to exert control over portions of these buildings without a responsible individual who is cognizant of and controls all facility operations and maintenance activities. As a result, there is a significant potential for the exposure of laboratory personnel to hazardous chemicals when essential ventilation and other support equipment fails in service. This vulnerability was prioritized as one which could result in short-term consequences of medium severity.</p>	1	Complete review of Buildings 805, 806, and 807's indoor air quality systems operations.	7/15/94	Sites Planning and Integration Center, 7300; and Facilities Development Center, 7900
	2	Complete compiling recommendations to resolve any problems identified in the review mentioned in milestone 1.	7/31/94	
	3	Identify facilities with chemical exhaust systems greater than 5 years old.	10/31/94	
	4	Complete testing of exhaust systems greater than 5 years old.	12/31/94	
	5	Complete the review of maintenance records of exhaust systems greater than 5 years old.	12/31/94	
	6	Complete the review and modifications, as required, of the Sandia <i>Facilities Design Manual</i> .	12/31/94	
	7	Complete schedule for developing program and implementation plans.	9/2/94	
	8	Develop the Configuration Management Program Plan. This will establish requirements for each risk level (high, medium and low risk and general use) of a facility.	3/31/95	

CHEMICAL SAFETY VULNERABILITY REVIEW

Site/Facility: Sandia National Laboratories

Vulnerability Number: CSVN-NSL/NM-FM-03

Vulnerability	Task/ Step No.	Action/Product	Completion Date	Responsible Organization
	9	Review current Configuration Management for SNL high risk facilities, i.e., review the ongoing process in the SNL reactor area. Document gap analysis between current practices and Configuration Management Program Plan.	11/24/95	Sites Planning and Integration Center, 7300; and Facilities Development Center, 7900
	10	Establish procedures and processes for Configuration Management in high risk facilities.	3/29/96	
	11	Prototype Confirmation Management for a medium risk facility.	10/25/96 6/27/97	
	12	Establish procedures and process for Configuration Management in medium risk facilities.	3/28/97	
	13	Prototype Configuration Management for low risk facility.	3/27/98 6/27/97	
	14	Establish procedures and processes for Configuration Management in low risk facilities.	6/26/98	
	15	Prototype Configuration Management for general use facility.		
	16	Establish procedures and processes for Configuration Management in general use facilities.		

INITIAL SITE RESPONSE PLAN

SAVANNAH RIVER SITE



**SAVANNAH RIVER SITE
MANAGEMENT RESPONSE PLAN
FOR THE
CHEMICAL SAFETY VULNERABILITY FIELD ASSESSMENT**

Introduction

As part of the U. S. Department of Energy's (DOE) initiative to identify potential chemical safety vulnerabilities in the DOE complex, the Chemical Safety Vulnerability Core Working Group issued a field verification assessment report. While the report concluded that Savannah River Site (SRS) is moving in a positive direction, the report also identified five chemical safety vulnerabilities with broad programmatic impact that are not easily or quickly remedied. The May 1994 SRS Management Response Plan addressed the five SRS vulnerabilities identified in the field assessment report. The SRS response plan listed observations supporting the vulnerabilities and any actions taken or planned toward resolution. Many of the observations were resolved by simple explanations, such as the existence of implementation plans for Safety Analysis Report updates. Recognizing that correcting individual observations does not suffice in remedying the vulnerabilities, a task team was assembled to address the broader programmatic issues and to recommend corrective actions.

Response Summary

This September 1994 SRS Management Response Plan outlines the corrective actions SRS will take to provide a coordinated chemical safety program. The foundation for a sitewide coordinated chemical safety program is based on using the existing safety infrastructure ensured by the Site Safety Review Committee (SSRC). The SSRC has assumed responsibility for ensuring that a coordinated site chemical safety program will be implemented through the existing Process Safety Management (PSM) subcommittee and the newly formed Chemical Commodity Management Center (CCMC) per Figure 1. The PSM Subcommittee will establish a sitewide PSM program consistent with the DOE requirements and site policy. The CCMC will be responsible for the acquisition of new chemicals/chemical products and will work with chemical and environmental coordinators to manage the disposition of excess chemicals and to maintain a site chemical inventory.

In response to the observation that hazards analysis/reviews of DOE-related projects were inadequate, Westinghouse Savannah River Company (WSRC) is applying an overall, programmatic approach rather than several superficial fixes. First, an Industrial Hygiene Screening Checklist is being developed to provide a uniform approach to the review of work packages. Second, an industrial hygienist has been assigned to review transition, decontamination and decommissioning (D&D), and environmental restoration projects. In addition, two procedures in the Site Safety Manual are being revised to require a graded approach hazards review appropriate to the scope of the job and applicable to activities requiring a Works Clearance Permit and Process System Access. A Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," was issued in June 1994. This document outlines the requirements and the sequence of activities required to transition a facility from deactivation to safe storage and eventual D&D.

The last part of the coordinated chemical safety program is the chemical inventory management and enhanced sitewide hazard communication. The mission of the CCMC will include the acquisition of all chemicals and chemical products, the disposition of unused or excess chemicals, and database support for site groups required to report chemical data and waste minimization initiatives to external agencies. This will include the maintenance of a sitewide chemical inventory and a means of tracking chemicals from procurement, to ultimate use, to excessing. As a part of the writing/reviewing/approving process for the procurement of chemicals, criteria will include

evaluating nonhazardous substitutes and re-using current excess and existing inventories. Current stock items will be reviewed for opportunities to reduce inventory and toxicity levels.

Because of the timing of this response plan, Action Items committed for FY95 are not included in the FY95 Annual Operating Plan. A change control notice may be required in order to shift priorities and provide funding for these activities.

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

Vulnerability:

Some facility work packages are not receiving adequate hazards analysis.

Summary of Vulnerability:

In some cases, the chemical safety and hazard analyses for work planning and emergency response planning are not complete or adequate. This problem is compounded for Decontamination and Decommissioning (D&D) activities due to inexperience in conducting these types of activities, lack of overall understanding of the associated problems, and lack of defined operating parameters. Also, chemical safety has not been given sufficient priority in the past.

Response:

WSRC continually strives to improve safety documentation and has submitted a detailed implementation plan for DOE Order 5480.23. Basis for Interim Operations (BIO) documents are being developed on an accelerated basis and will satisfy the need for chemical safety analysis. A thorough characterization and hazards analysis will be required before any D&D activity will be performed by the WSRC Solid Waste/Environmental Restoration and Transition D&D Department. A Basic Requirement document, "SRS Requirements Applicability Evaluation Program for Decommissioning," was issued in June 1994.

Industrial Hygiene (IH) will develop a screening checklist for the site procedures manual outlining work package and job plan review criteria to be submitted to Standards Management by November 30, 1994. Once this procedure has been approved, a letter will be sent to affected divisions and facility management for implementation into work control procedures to direct the work planners, operators, and engineers.

A supporting observation associated with this vulnerability was a restricted workday case recorded when an employee received second-degree burns after being sprayed with 94 percent sulfuric acid from a broken acid line. An enhancement to the site maintenance programs in response to this incident will be the integration of the Predictive and Preventative Maintenance programs of various site maintenance organizations by March 1995.

Since lead is anticipated to be a major concern in future TD&D projects, the site established a Lead Committee to address programmatic issues involving lead. The Site Lead Committee will develop a lead compliance program to coordinate lead removal and management. The program will be consistent with initiatives to address employee exposure, waste, and environmental issues associated with lead.

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0195	Industrial hygiene review of work packages for hazard analysis is not always thorough and complete and may result in workers not being knowledgeable of the hazards associated with the job being performed. This is, in part, due to (1) pressure from work-package originators for quick turnaround of the work packages in the work review cycle and (2) not being requested to be involved in the pre-bid phase for subcontracts. The Lead job at 784-A and the carpet removal at 773A & 735A are examples described below.	An Industrial Hygienist has been assigned to review TD&D and environmental restoration projects. This will help IH make better use of its staff.	Closed 5/94	R. E. Moore
94-0196		An Industrial Hygiene Screening Checklist Procedure for the Site Industrial Hygiene 4Q Manual will be delivered to the Management Standards Review by November 30, 1994. This procedure will outline work package and job plan review criteria.	11/94	E. J. Kahal
94-0197		After approval of the Screening Checklist Procedure, a letter will be sent to the affected divisions and facility management for implementation.		E. J. Kahal
		Revise Employee Safety Manual 8Q procedures 35 and 36 to better address hazards review for D&D activities.	3/95	S. Patton

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0198	<p>Lead job at 784-A(U). Initially, the contract specified a torch-cutting operation. Instead, work involved torch-cutting of carbon steel painted with a lead-based paint. This change in process required the subcontractor to provide medical surveillance and lead training for personnel before the work was started. Consequently, the project was delayed. Had the work been allowed to start, overexposure to lead was possible.</p> <p>773-A and 735-A Carpet Removal. Initially, the industrial hygiene representative was informed that the project was only to remove a carpet. During removal of that carpet, asbestos-containing tile was found under the carpet. Due to the asbestos, this project required several personnel numerous overtime hours to complete.</p> <p>DOE 5480.23 requires chemical safety analysis and hazard analysis information to be developed or updated for nuclear facilities.</p>	<p>The Site Lead Committee will develop a lead compliance program to coordinate lead removal and management to be consistent with initiatives to address employee exposure, waste, and environmental issues associated with lead.</p> <p>An asbestos management function was formed in the Engineering & Projects Division to ensure that SRS cost-effectively complies with existing asbestos regulations through following a dedicated central direction and by controlling sitewide asbestos abatement functions.</p>	<p>10/94</p> <p>In progress</p>	<p>S. Jahn</p> <p>R. Blundy</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>DOE 5481.1B requires chemical safety analysis to be developed for nonnuclear facilities. Nonnuclear facility SARs have not been developed at SRS. Chemical safety analysis and hazards analysis are not complete for the nonnuclear facilities.</p> <p>Headquarters, DOE, implementation guidance has not been provided.</p>	<p>The assessment team recognized that SRS is taking positive actions to determine which nonnuclear facilities will be required to have an SAR. WSRC and DOE-SR are currently determining the best way to implement DOE 5481.1B in the absence of definitive HQ guidance.</p> <p>SRS will be implementing STD-5502-94. This DOE Standard addresses chemical hazard analysis.</p> <p>Chemical hazard analyses are performed per the "Toxic Chemical Hazards Classification and Risk Acceptance Guidelines for Use in DOE Facilities," a Westinghouse M&O guidance document.</p>	<p>In progress</p> <p>In progress</p> <p>In progress</p>	<p>S. R. Salaymeh</p> <p>S. R. Salaymeh</p> <p>S. R. Salaymeh</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>A thorough hazards analysis review for chemical safety concerns related to D&D activities is especially important due to the lack of experience in this area. While most operating facilities have fairly well defined safe operating envelopes, the same can not be said for D&D activities. Many procedures to be used during D&D are relatively new to site personnel. Chemical residuals may also introduce unknown variables that must be addressed. The problems that can occur if hazards analysis is not adequately performed are demonstrated in the incident that happened at the 412-D Heavy Water Extraction facility. On November 11, 1993, a worker appeared to have inhaled toxic gases after a pipe that contained chemical residues was cut. Lack of an appropriate technical assessment and an appropriate chemical characterization was a contributing cause in the incident.</p>	<p>A thorough characterization and hazards analysis will be required before any D&D activity by the SRS SWER/TDD Department that is responsible for D&D of facilities. The Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," was issued in June 1994.</p> <p>The Type B investigation was completed January 25, 1994.</p>	<p>Closed 6/94</p> <p>Closed 1/94</p>	<p>G. Street/ B. Myers</p> <p>B. Myers</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0195	In addition to their other duties, some members of the Industrial Hygiene staff review as many as 50 work packages per week. Pressure is exerted on the department by work-package originators to provide quick turnaround of work packages. As D&D activity increases, this problem will increase. In addition, the industrial hygiene staff is not always required to be involved during pre-bid activities for subcontracts. As a result, industrial hygiene review of internal work packages may not always provide for a complete and thorough job hazards analysis before work is started.	An Industrial Hygiene Screening Checklist Procedure for the Site Industrial Hygiene 4Q Manual will be delivered to the Management Standards Review by November 30, 1994. This procedure will outline work package and job plan review criteria.	11/94	E. J. Kahal
94-0196		After approval of the Screening Checklist Procedure, a letter will be sent to the affected divisions and facility management for implementation.		E. J. Kahal
94-0197		Revise Employee Safety Manual 8Q procedures 35 and 36 to better address hazards review for D&D activities.	3/95	S. Patton

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>The Westinghouse Savannah River Company (WSRC) technical staff believes that the use of pre-mixed sodium tetraphenylborate solution at the In-Tank Precipitation Facility, being delivered on an as-used basis, will preclude the possibility of excessive in-tank degradation of the active reagent and minimize the inventory (and hence chemical vulnerability) of this process chemical. The decision to proceed in this manner has not been finalized even though the facility is being prepared for startup. The 188,000-gallon tank was designed and constructed based on limited options related to existing vendor capability. The requirement for this large tank has now disappeared, and recent vendor problems with sodium tetraphenylborate storage and processing indicate that smaller onsite quantities of this solution are advisable.</p>	<p>A task team reviewed potential storage and delivery options. The team recommended (and the plant has accepted) modifying the unloading station such that the storage tank is bypassed. The sodium tetraphenyl borate (STPB) will be unloaded from the tanker straight to Tank 48 (thus alleviating the need for storage of large quantities of STPB in the facility).</p>	<p>Closed</p>	<p>D. Wood</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0199	A restricted workday case was recorded when an employee received second degree burns after being sprayed with 94 percent sulfuric acid from a broken (1-inch diameter) acid line. This line was not insulated, was unsurveyed for wall-thickness and deterioration, and was located such that the failure resulted in a 20- to 30-foot spray distance (which reached an employee walkway).	SRS will integrate the Predictive and Preventative Maintenance programs of various site maintenance organizations by use of a single set of procedures in the Maintenance Administrative Procedure 1Y Manual.	3/95	D. Harrison

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-01

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>It was reported by WSRC emergency management personnel that there was a lack of concise facility-specific chemical safety analysis and chemical hazards analysis for facilities at SRS and this adversely affected the emergency preparedness program. Information from chemical safety analysis and hazard analysis is a basis for developing emergency preparedness plans and implementing procedures. These personnel also stated that hazardous chemical information has not been kept current in safety-related documents.</p>	<p>EMPP-001, "Standards for Development and Maintenance of Hazards Assessment," (5/2/94), establishes the SRS process for developing Emergency Preparedness (EP) Hazards Assessments (HA). The HA process includes the identification and characterization of hazardous materials performed in accordance with S-ESR-G-0001, "Electronic Screening of Chemical Inventory Information," Rev. 0 (12/28/93). Chemical inventory information specific to the EP HA criteria is made available in each HA that is issued as a facility engineering technical report. EP HAs establish the basis for facility emergency planning programs. Safety documentation is being upgraded in accordance with an Integrated Plan, and it addresses chemical hazards analysis within the context of revising each facility's SAR. SAR Preliminary Hazards Analysis reports, based on DOE Standard 1027 screening criteria, identify hazardous materials inventories to establish SAR analytical approaches and provide an additional source of chemical inventory information.</p>	<p>In Progress</p>	<p>J. W. Lightner</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSV-R-SRS-0000-02

Vulnerability:

The knowledge and characterization of chemical residuals at some facilities are not adequate.

Summary of Vulnerability:

There is inadequate knowledge and characterization of chemical residuals at some facilities being prepared for D&D. Poor configuration management in the past, and loss of experienced personnel, have contributed to this lack of knowledge regarding chemical residuals. A formal program to characterize residuals at surplus facilities being prepared for Decontamination And Decommissioning (D&D) is not established. Also, hazards analysis performed related to D&D activities in some cases is inadequate.

Response:

At SRS, the Transition D&D (TD&D) Department is responsible for D&D after facilities are transferred from DP to EM. In transition, surplus facilities are first deactivated, and a safe-storage mode is established with surveillance and maintenance. D&D will not begin at most facilities for several years after shutdown. Before any D&D begins, characterization and hazards analysis will be completed. Specific requirements and procedures for the facility involved will be provided before D&D. These activities are specified in the Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," issued in June 1994.

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-02

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0200	<p>The knowledge and characterization of chemical residuals at some facilities is not adequate.</p> <p>A formal program to characterize residuals at surplus facilities being prepared for D&D is not established.</p>	<p>Determine method of choice for atmospheric sampling of unknown gases.</p> <p>Ensure that all transition and D&D related activities conducted by all divisions follow guidelines of the TD&D manual regarding characterization, etc. Most facilities will proceed from operations to D&D via the Transition Process outlined in the TD&D Manual. The Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," was issued in June 1994.</p>	<p>12/94</p> <p>Closed 6/94</p>	<p>C. Stoyle</p> <p>G. Street</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-02

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>Welding and cutting procedures were not in place to guide activities in which potentially hazardous materials existed. The final report was issued on January 25, 1994; however, recognition of the need for technical assessment of internal contaminants that could be encountered during welding or cutting of a pipe or vessel has not been incorporated in either of the site welding and cutting manuals, SRSESM 050507-10-R or CMP 11-10.1.</p> <p>The Board also recognized the lack of experienced technical personnel to support the work planning process. Many workers have taken early retirement (approximately 2500), resulting in loss of historical familiarity with facilities. Facility shutdown and preparation of facilities for transition to D&D have forced many workers to find new jobs on site, sometimes using new skills in new surroundings.</p>	<p>SRSESM 050507-10-R (dated 9/30/92) identifies the need for technical assessment of potential internal contaminants. Several precautions addressed in this welding manual make special mention of fumes and precautions to address such hazards (ventilation, exhaust hoods, air flow rates, respirators).</p> <p>CMP 11-10.1 was revised and training began.</p> <p>WSRC has consolidated the welding programs of WSRC and BSRI to ensure that welding control is uniform.</p> <p>A highly experienced core group of personnel was left in the Reactors Division to plan and implement transition. This was the SRS operation most influenced by the reduction-in-force and is the area now involved most in transition.</p>	<p>Closed 2/94</p> <p>Closed 6/94</p> <p>Closed 2/94</p> <p>Closed</p>	<p>D. Harrison</p> <p>D. Harold</p> <p>D. Harrison</p> <p>G. Street</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSVR-SRS-0000-02

Point of Contact: E. J. Kahal/S. R. Salaymeh

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>During a walkthrough of the 412-D Heavy Water Extraction Facility by team members, chemical residue was observed in a section of pipe that had been cut by a welding torch. The residue appears to be very similar to the residue involved in the incident on November 11, 1993. Pipes continue to be removed using the original welding and cutting procedures. On April 25, 1994, a work package, dated March 1994, was reviewed by team members to determine what employee protective measures were taken. The package requires fans when prevailing wind conditions are not adequate to remove toxic fumes. At times, asbestos and acid gas respiratory protection is required (The employee at the site was wearing respiratory protection.). The supervisor verified this procedure was required to ensure protection. Employees are trained concerning hazards to be expected during the job. Water is sprayed on the cut after completion to reduce the temperature and, thus, stop any exothermic reaction.</p>	<p>The residue shown to the investigators was present in various amounts throughout the entire complex at 412-D. Piping has continued to be removed but not using the original procedures.</p> <p>An engineer was assigned for technical review of all 412-D work packages.</p> <p>The original package has been revised to mandate forced air ventilation, if existing draft ventilation is insufficient. It also requires the dousing of any torch cut residue to ensure gases are not generated, and it requires the use of barricades. Employees received further training once the hazards were identified.</p>	<p>Closed</p> <p>Closed</p> <p>Closed</p>	<p>B. Myers</p> <p>B. Myers</p> <p>B. Myers</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-02

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>During a walkthrough of the 184-P Power House, which is an abandoned facility, chemical residue was observed at a clean-out door of the smoke stack. The residue was yellow-gray in color and approximately 4 feet in diameter. The area in which the residue was located was open to the elements and drained to the coal-runoff basin. WSRC personnel questioned regarding the chemical composition of the residue did not know the characterization. Subsequent to the walkthrough, WSRC used x-ray diffraction techniques to analyze the deposit, and it found iron aluminum sulfate as the major constituent. Analysis for organic compounds has not been conducted. The analysis for organic compounds would be necessary before this facility is transitioned to EM-60 for D&D. Having an uncharacterized chemical residue is a concern for planning any D&D activity.</p>	<p>The chemical residue initially observed has been disposed of. More has been located inside the stack. It has been sampled, and analyses have been performed. The results were issued at the end of June 1994. Results of the report were negative for organics.</p>	<p>Closed 6/94</p>	<p>P. Livengood</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-R-SRS-0000-03

Vulnerability:

In some areas, knowledge about chemicals and chemical inventory and the hazard communication programs is not adequate.

Summary of Vulnerability:

In some cases, important information relevant to chemical safety is not being communicated to workers and management. Situations exist where extremely hazardous chemicals are not tracked, hazards are not adequately communicated, and understanding of chemical safety is incomplete. Expertise is not always shared by divisions and facilities to provide the most up-to-date working knowledge of hazards associated with operations activities.

Response:

WSRC has a mechanism for tracking extremely hazardous chemicals; however, the system does not operate in real-time. Site procedures require operating groups to report the presence of any extremely hazardous chemical within 30 days so that it can be reported to the local Emergency Planning Commissions and State authorities (as well as to the Site Fire Department). The issue of real-time reporting will be explored as the new Chemical Commodity Management Center (CCMC) begins to enhance the current Chemical Inventory and Information System.

The WSRC CCMC concept was initiated in May of 1994. An Industrial Hygienist was assigned to this group in July 1994. Its mission will include the acquisition of all chemicals and chemical products, the dispositioning of unused or excess chemicals, and database support for site groups required to report chemical data and waste minimization initiatives to external agencies. These changes will help maintain a sitewide chemical inventory and a means of tracking some chemicals from procurement to ultimate use to excessing.

As a part of the writing/reviewing/approving process for the procurement of chemicals, criteria will include such things as evaluating non-hazardous substitutes and re-using current excess and existing inventories. Stores stock items will be reviewed for opportunities to reduce inventory and toxicity levels.

CHEMICAL SAFETY VULNERABILITY REVIEW				
September 1994				
Site/Facility: Savannah River Site			Vulnerability Number: CSVR-SRS-0000-03	
OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	There is no system in place at Westinghouse Savannah River Company (WSRC) for managing all aspects of chemicals from procurement to ultimate use and final disposition as either waste or excess. Furthermore, there is no system for tracking extremely hazardous chemicals once they arrive onsite. Although WSRC has recognized this issue and is establishing a Chemical Commodities Management Center, this organization is not expected to be fully functional until the end of 1994. Lack of a system to track extremely hazardous chemicals represents a vulnerability over the short-term (until the new group is functional).	<p>The WSRC CCMC concept was initiated in May of 1994. Its mission will include the acquisition of all chemicals and chemical products, the dispositioning of unused or excess chemicals, and database support for site groups required to report chemical data and waste minimization initiatives to external agencies. This will include the maintenance of a sitewide chemical inventory and a means of tracking some chemicals from procurement to ultimate use, to excessing.</p> <p>As a part of the writing/reviewing/ approving process for the procurement of chemicals, criteria will include such things as evaluating nonhazardous substitutes and re-using current excess and existing inventories. Current stores stock items will be reviewed for opportunities to reduce inventory and toxicity levels.</p>	Closed 5/94	R. W. Reynolds
		An Industrial Hygienist was assigned to the CCMC in July 1994.	Closed 7/94	R. E. Moore
94-0201		Benchmark Study of Chemical Tracking/Excess.	11/94	R. W. Reynolds

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-R-SRS-0000-03

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0202		CCMC will be fully staffed/functional, which includes review of chemical requisitions for industrial hygiene/environmental concerns and consolidation of excess chemical data from current excess chemical facilities onsite.	12/94	R. W. Reynolds
94-0203		Evaluate Stores' Chemical Stock Items.	3/95	R. W. Reynolds
94-0204		Write/review/approve Site Chemical Requisitions Centrally.	6/95	R. W. Reynolds
94-0205		Initiate Upgrade for Excess Chemical Warehouse.	6/95	R. W. Reynolds
94-0206		Initiate Excess Chemical Tracking System.	6/95	R. W. Reynolds
94-0207		Initiate Excess Chemical Sale System Resulting In High Re-use Rate.	6/95	R. W. Reynolds
94-0208		Enhance current site chemical inventory system that will improve timeliness and quality of data.	9/95	E. J. Kahal
94-0209		Initiate Site Chemical Tracking System to include extremely hazardous chemicals.	12/95	R. W. Reynolds
94-0210		Finalize Excess Chemical Warehouse Upgrade.	6/96	R. W. Reynolds

CHEMICAL SAFETY VULNERABILITY REVIEW September 1994				
Site/Facility: Savannah River Site			Vulnerability Number: CSVR-SRS-0000-03	
OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	The present WSRC lessons-learned program provides thorough information for WSRC management and operating personnel from both internal and external sources. The program does not specifically separate and highlight chemical safety topics for use by WSRC organizations. This hinders communication of important chemical safety information to workers. WSRC plans to modify the lessons-learned program within the next six months to identify chemical safety as a specific topic.	<p>The implemented corrective action program:</p> <ul style="list-style-type: none"> - Identified a list of chemical industry periodicals that provide a good coverage of current chemical industry issues, events, and significant technical findings, and - Have the Site Lessons Learned Staff screen the material in these sources for use in the Lessons Learned Program. 	Closed 5/94	G. Ridgely
94-0211	A comprehensive Hazard Communication Program that included hazard evaluation, Material Safety Data Sheets (MSDS), hazard warning labels, and information and training has been prepared and implemented at the Savannah River Site (SRS). Most aspects of the program are in place. However, flaws were observed in this program.	<p>A committee was formed to investigate alternatives and propose recommendations to improve the distribution of MSDS.</p> <p>Recommendations from the committee are expected to be complete by October 1994.</p>	Closed 7/94 10/94	E. J. Kahal E. J. Kahal

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSVR-SRS-0000-03

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0212	<p>Inadequate labeling of containers was observed in the 320-M Analytical Laboratory, Reagent Preparation Laboratory. Several chemicals did not have the National Fire Protection Association (NFPA) labels that are required by the SRS Hazard Communication Program, and one bottle containing nitric acid was labeled with the chemical formula only. The NFPA labeling system does not consider the target organ in its warning of hazards associated with a chemical.</p>	<p>Training on labeling was addressed at a meeting of the site's Chemical Coordinators.</p> <p>Submit proposed new chemical label for management review.</p>	<p>Closed 6/94</p> <p>12/94</p>	<p>E. J. Kahal</p> <p>E. J. Kahal</p>
94-0213	<p>MSDSs are the major tools for identifying hazards associated with chemicals and the actions necessary to mitigate exposures. Many MSDSs were not readily accessible at SRS. At the 734-A Cylinder Shed, MSDSs were stored in a trailer located more than 1 block from the storage area; in the Environmental Laboratory, room 129, MSDSs were kept in an administrative office isolated from normal laboratory activities; for the L Reactor Chemical Storage Building, Building 110-L, MSDSs were kept in the maintenance shop.</p>	<p>A committee was formed to investigate alternatives and to propose recommendations for improving the distribution of MSDS.</p> <p>Recommendations from the committee are expected to be complete by October 1994.</p>	<p>Closed 7/94</p> <p>10/94</p>	<p>E. J. Kahal</p> <p>E. J. Kahal</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSVR-SRS-0000-03

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>When incompatible chemicals are stored together, spontaneous combustion is a concern. Incompatible chemicals were stored next to unsupported flammable gas cylinders; cylinders containing 10 percent methane and 90 percent argon were stored in an area labeled for storage of oxygen cylinders; cylinders containing 10 percent methane and 90 percent argon were stored in an area labeled for storage of empty oxygen cylinders. In the research laboratory supply room, 773-A Chemical Stores, gallon containers of nitric acid and hydrogen chloride acid were stored in the corrosive storage cabinet. A representative from the Industrial Hygiene Department took the compatibility chart for use as a training tool.</p>	<p>A safety Representative and a Reactor Supervisor responded the next day. A site memo was issued to all chemical coordinators stressing the importance of cylinder storage.</p> <p>No incompatibility problem is seen with the storage of nitric and hydrochloric acids within the same corrosive cabinet. As stated in the observation, concerns were stated about the possibility of incompatible chemicals stored together causing spontaneous combustion. The immediate mixing of nitric acid and hydrochloric acid should not cause a spontaneous combustion.</p> <p>Industrial Hygiene instructed site chemical coordinators on chemical compatibilities.</p>	<p>Closed 8/94</p> <p>Closed</p> <p>Closed 6/94</p>	<p>L. Averette</p> <p>E. J. Kahal</p> <p>L. Averette</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
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Site/Facility: Savannah River Site

Vulnerability Number: CSV-0000-03

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0196		After approval of the Screening Checklist Procedure, a letter will be sent to the affected divisions and facility management for implementation.		E. J. Kahal
94-0198	Lead Job at 784-A(U). Initially, the contract specified a torch-cutting operation. Instead, the work involved torch cutting of carbon steel painted with a lead based paint. This change in process required the subcontractor to provide medical surveillance and lead training for personnel before the work was started. Consequently, the project was delayed. Had this work been allowed to start, overexposure to lead was possible.	The Site Lead Committee will develop a lead compliance program to coordinate lead removal and management to be consistent with initiatives to address employee exposure, waste, and environmental issues associated with lead.	10/94	S. Jahn
94-0197	773-A and 735-A Carpet Removal. Initially, the industrial hygiene representative was informed that the project was only to remove a rug. During removal of the rug, asbestos containing tile was found under the rug. This process required several personnel to work numerous overtime hours.	An asbestos management function was formed in the Engineering & Projects Division to ensure that SRS cost-effectively complies with existing asbestos regulations through following a dedicated central direction and by controlling sitewide asbestos abatement functions.	In progress	R. Blundy

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-0000-04

Vulnerability:

The Westinghouse Savannah River Company (WSRC) lacks a fully developed and implemented chemical safety program.

Summary of Vulnerability:

WSRC management systems for chemical safety are not fully implemented, and no overall program is in place for the entire site. This situation arises in part from chemical safety requirements being spread throughout multiple Department of Energy (DOE) Orders. Chemical safety initiatives have been started by several different WSRC organizations, and a Chemical Commodities Management Center concept is in the early stages of development. Until these management systems are developed and implemented uniformly across the site, the effective management and control of hazardous chemicals at the Savannah River Site (SRS) are diminished.

Response:

Chemical safety, as a sitewide program, has not been coordinated as a single unit or under a single group. Figure 1, discussed earlier, shows how the Site Safety Review Committee charter will be enhanced to include a person assigned with the responsibility of sitewide coordination of the chemical safety program. The Site Safety Review Committee is made up of senior managers whose mission has been to ensure that programs are covering all aspects of safety and that safety issues are resolved. The Process Safety Management Subcommittee, which addresses the Occupational Safety and Health Administration Process Safety Management requirements rule (and will address the EPA proposed RMP rule as appropriate), and the newly formed Chemical Commodity Management Center, will both serve as key resources for the Site Safety Review Committee. These groups will establish sitewide networks of line organization coordinators to address chemical safety issues. The line organizations will be responsible for implementation of any new initiatives.

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSV-R-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>WSRC has not implemented a consistent site-wide program to manage hazardous chemicals from procurement to ultimate use and/or disposition. Several organizations at SRS have established individual systems for handling chemicals, particularly those chemicals no longer needed. However, this is being carried out on a fragmented basis. Other aspects of managing chemicals on site, such as evaluating non hazardous substitutes, minimizing chemical inventories, tracking "bad actor" chemicals, and ultimately disposing of chemicals no longer needed, are either not in place or are being accomplished in a fragmented manner. In addition, discussions with Savannah River Operations Office (SR) personnel, who are completing a management assessment related to chemicals, confirmed the need for WSRC to implement a sitewide system for managing chemicals that are no longer in use.</p>	<p>The WSRC CCMC concept was initiated in May of 1994. Its mission will include the acquisition of all chemicals and chemical products, the dispositioning of unused or excess chemicals, and a database support for site groups required to report chemical data and waste minimization initiatives to external agencies. This will include the maintenance of a sitewide chemical inventory and a means of tracking some chemicals from procurement, to ultimate use, to excessing.</p> <p>As a part of the writing/reviewing/ approving process for the procurement of chemicals, criteria will include such things as evaluating nonhazardous substitutes, and re-using current excess and existing inventories. Current stores stock items will be reviewed for opportunities to reduce inventory and toxicity levels.</p>	<p>Closed 5/94</p>	<p>R. W. Reynolds</p>
<p>94-0201</p>		<p>Benchmark Study of Chemical Tracking/Excess.</p>	<p>11/94</p>	<p>R. W. Reynolds</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0202		CCMC will be fully staffed/functional, which includes review of chemical requisitions for industrial hygiene/environmental concerns and consolidation of excess chemical data from current excess chemical facilities onsite.	12/94	R. W. Reynolds
94-0203		Evaluate Stores' Chemical Stock Items.	3/95	R. W. Reynolds
94-0204		Write/Review/Approve Site Chemical Requisitions Centrally.	6/95	R. W. Reynolds
94-0205		Initiate Upgrade for Excess Chemical Warehouse.	6/95	R. W. Reynolds
94-0206		Initiate Excess Chemical Tracking System.	6/95	R. W. Reynolds
94-0207		Initiate Excess Chemical Sale System Resulting In High Re-use Rate.	6/95	R. W. Reynolds E. J. Kahal
94-0208		Enhance current site chemical inventory system that will improve timeliness and quality of data.	9/95	R. W. Reynolds
94-0209		Initiate Site Chemical Tracking System To Include Extremely Hazardous Chemicals.	12/95	
94-0210		Finalize Excess Chemical Warehouse Upgrade.	6/96	R. W. Reynolds

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVN-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>WSRC management has recognized the need for developing programs to deal with most of the above issues. In response, WSRC is developing a Chemical Commodity Management Center that will provide centralized management of chemicals across SRS, but that center is not scheduled to be fully operational until the end of 1994.</p>	<p>See response on previous page.</p>	<p>6/96</p>	<p>R. W. Reynolds</p>
	<p>DOE has not promulgated the requirements for chemical safety in a single DOE Order. Instead, the requirements are spread throughout multiple orders that have the effect, in part, of making different parts of the contractor organization responsible for their implementation. This in turn makes chemical safety program implementation more susceptible to fragmented implementation, Particularly at large sites such as SRS.</p>	<p>In the absence of DOE-HQ integrated requirements for chemical safety, WSRC is integrating the chemical safety programs and associated activities as described in this report.</p>	<p>Closed</p>	<p>F. Beranek</p>

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>In the P-Reactor Area, personnel have been assigned to identify excess chemicals in various locations throughout the area. Chemicals found are placed in the Reactor Division Chemical Salvage program. Some of the chemicals found were not clearly identified or labeled. This indicates a lack of chemical inventory control and has a negative effect on emergency planning for chemical releases from the area.</p>	<p>An excess chemical facility has been established in P Area. This facility is not so much established to identify chemicals, as all chemicals are inventoried on the annual SARA Tier II, but rather to collect and distribute those chemicals that are no longer used. During the collection process, some chemicals did not have labels. These chemicals are sampled for content and labeled accordingly. All Reactor Division areas have been resurveyed, and it is estimated that the program is 90 percent complete, with expected completion by the end of the fiscal year.</p>	Closed	B. Myers
	<p>WSRC plans to implement a Surplus Facilities Transition Program to formalize requirements for transitioning surplus facilities from an operating status to decontamination and decommissioning (D&D). When implemented, this program will require characterization of each facility with respect to chemical residues. This program is not currently in place.</p>	<p>At SRS, no facilities have made the transition to EM-60. In this survey, the transition process was not understood. The transition program does not lead to early D&D. Most facilities will proceed from operations to D&D via the Transition Process outlined in the TD&D Manual. The Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," was issued June 1994.</p> <p>DOE is in the process of making a decision on the date for transfer of facilities at SRS from DP to EM. This could occur as early as January 1995. However, proper planning and characterization will occur. Characterization can occur after facilities are transferred to EM-60.</p>	EM-Closed 6/94	G. Street

CHEMICAL SAFETY VULNERABILITY REVIEW
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Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	A recent SR surveillance report (94-SD-150143) on the WSRC Process Safety Management (PSM) program required by 29CFR1910.119 concluded that "WSRC has not provided site-wide direction or established a site-wide approach to PSM compliance and issues." The report noted that each WSRC line organization approached and interpreted the standard applicability requirements of PSM without clear sitewide involvement.	The WSRC Process Safety Management (PSM) Subcommittee has been given the task of providing sitewide direction regarding PSM issues and establishing a sitewide approach to PSM compliance. This subcommittee includes representatives from all site operating organizations, as well as SRTC, E&PD, Site Utilities and Analytical Laboratories, thus ensuring consistent interpretation and application of PSM requirements. The PSM Subcommittee will take the following actions:		S. R. Salaymeh
94-0215		Expand charter to include PSM criteria of 29 CFR 1910.119 PSM Rule (and 40 CFR 68 RMP as required).	11/94	S. R. Salaymeh
94-0216		Rewrite PHA procedure in 11Q Manual to reflect new PSM criteria and screening to identify SRS processes covered by PSM.	2/95	S. R. Salaymeh
94-0217		Rewrite SRS PSM Manual to incorporate new PSM criteria and PHA procedure.	4/95	S. R. Salaymeh
94-0218				

CHEMICAL SAFETY VULNERABILITY REVIEW
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Site/Facility: Savannah River Site
 Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0218		Provide training on new procedure and expanded PSM program.	6/95	S. R. Salaymeh
94-0219		Monitor consistency of PHAs for input to SARs and BIOS.	8/95	S. R. Salaymeh
94-0219	WSRC does not plan to formally implement a PSM program until Fiscal Year 1995 because there are no hazardous chemicals onsite in quantities that meet or exceed Threshold Quantity Levels (TQLs). Nevertheless, this program will be required for compliance with the currently proposed Environmental Protection Agency rule for hazardous chemicals or when quantities of chemicals meet or exceed the TQLs.	PSM will be implemented as described above.	8/95	S. R. Salaymeh
	The present WSRC lessons-learned program provides thorough information for WSRC management and operating personnel from both internal and external sources. However, the program does not specifically separate and highlight chemical safety issues and information for use by the WSRC organizations.	The implemented corrective action program: <ul style="list-style-type: none"> - Identified a list of chemical industry periodicals that provide a good coverage of current chemical industry issues, events, and significant technical findings, and - Have the Site Lessons Learned Staff screen the material in these sources for use in the Lessons Learned Program. 	Closed 5/94	G. Ridgely

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0220	Completion of training is not consistently verified before personnel access is granted to work areas where hazardous chemicals are located. An exception to this is at the Tritium and HB-Line areas where access is limited through issuance of proximity badges to only those personnel who have completed facility-specific orientation training. No other area of SRS has this requirement. Under these conditions, the potential exists that personnel could be exposed to hazards due to lack of training and would not know what to do in the event of an emergency.	Item will be introduced to the Executive Committee of the Facility Management Council for consideration.	9/94	George Clare, Chairperson

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSV-R-SRS-0000-04

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
94-0221	<p>Training requirements for many contractor and subcontractor positions at SRS are not consistently defined or controlled. Training and qualification programs for operators and supervisors are being upgraded substantially in some facilities, such as the H and F Tank Farms and the Effluent Treatment Facility. In these facilities, a qualification and requalification program is being established, although it is not scheduled to be fully implemented before 1996. Formal training improvement plans do not exist for most remaining facilities at the site, and a goal for sitewide consistency has not been established.</p>	<p>Site Training Manual 4B will be rewritten to cover the training and qualification program.</p> <p>Training and qualification requirements for operators and supervisors at all site nuclear facilities are identified in DOE 5480.20. These requirements are either met for the operators and supervisors in these nuclear facilities or will be met on schedule* approved by the Savannah River Operations Office. Chemical Safety considerations are addressed in training for personnel in nonnuclear facilities onsite via GET, CAT, and, where applicable, OSHA training.</p> <p>* WSRC Training Implementation Matrix WSRC-FP-92-226</p>	6/95	Tony Hinson

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site
Point of Contact: E. J. Kahal/S. R. Salaymeh

Vulnerability Number: CSVR-SRS-0000-05

Vulnerability

Shifting Departmental priorities are having an adverse effect on the site's overall chemical safety program.

Summary of Vulnerability:

Evolving DOE and SRS missions are resulting in workers being shifted from production work in facilities they are familiar with to cleanup work in less familiar surroundings. Declining budgets are resulting in limited resources to address chemical safety. Continued loss of experienced personnel through early retirement, and possible reductions in environment, safety, and health (ES&H); quality assurance; and facility maintenance resources may occur in future years at the same time that D&D activities are increasing.

Response:

Conduct of Operations, a formal, disciplined process for conducting work, is especially important when change is taking place. The correct process for decommissioning a facility must be followed to reduce chemical safety vulnerabilities. Shutdown facilities will be deactivated by experienced personnel who have operated the facility; this includes removing all waste and chemicals from the facility. Vessels and lines will be flushed, and the facility will be characterized and conditions documented. A safe storage condition will be achieved and surveillance and maintenance provided to ensure conditions remain acceptable. After consideration of reuse and analysis of options, D&D will be planned. In most cases, D&D of facilities will occur 5 to 10 years after the facility is shutdown. A critical need is that adequate resources be provided to ensure that the proceeding sequence of activities occurs and that the knowledge of current operating personnel is used to achieve these conditions. These activities are specified in the Basic Requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," issued in June 1994.

CHEMICAL SAFETY VULNERABILITY REVIEW
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Site/Facility: Savannah River Site

Vulnerability Number: CSVN-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	A critical need is that adequate resources be provided to ensure that the sequence of deactivation, safe storage with surveillance and maintenance, and, finally, D&D occurs and that the knowledge of current operating personnel is used to achieve these conditions.	These activities are specified in the basic requirements document, "SRS Requirements Applicability Evaluation Program for Decommissioning," which was issued in June 1994.	Closed 6/94	G. Street
	Many facilities are being shut down and prepared for transition to D&D. This has forced many workers to find new jobs onsite, sometimes using new skills in new surroundings. Additionally, many workers have taken early retirement (approximately 2500), which has resulted in a significant loss of experience. While training programs are in place, the loss of experienced personnel with extensive experience in working with hazardous chemicals can have adverse affects on the overall chemical safety program.	Facilities are being shut down and deactivated; however, D&D will not occur immediately. Although there was a Reduction-in-Force in 1993, over 17,000 WSRC employees remain. The loss of experienced personnel working with chemicals was not significant.	Closed	G. Street

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-R-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>WSRC does not have a formal program to address the loss of experienced personnel due to retirement and declining budgets. However, WSRC (1) regularly recalls retirees to review various areas when questions arise, (2) supports annual gatherings of SRS retirees, and (3) makes use of log books and operating records retained at the site. WSRC plans to continue this approach as SRS moves to increased D&D activity in the future. However, this leaves the potential for loss of corporate memory. To offset this loss, WSRC management plans to pursue conduct of operations and training when approaching future D&D projects. Nevertheless, erosion of the experience base is expected to occur as SRS moves to increased D&D activities.</p>	<p>While erosion of the experience base is a normal expectation, the actions described in the observation help minimize any adverse impact to site activities. The few SRS facilities now in D&D have been shut down from 8 to 30 years; however, adequate records and/or experienced personnel are available to assist in D&D planning. For example, retired personnel who operated 232-F are being contracted on a part-time basis to assist in D&D planning for 232-F. Some personnel who were involved in 412-D operation are still at SRS.</p>	<p>Closed</p>	<p>G. Street</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-R-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>Poor configuration management practices in the past have resulted in less than adequate documentation of chemical residuals at some older facilities. In many cases, knowledge related to problems that may be encountered during cleanup resides only in the memories of experienced workers. As older workers are lost through early retirement (or are replaced by employees not historically familiar with the facility) old problems may surface. This is exacerbated by the length of time between facility shut-down and the time the facility enters D&D.</p>	<p>Existing hazard analyses and SARs were prepared in accordance with requirements that were in place at the time of preparation. However, those requirements did not mandate full assessment of chemical hazards. BIOs and DOE 5480.23 SARs now being prepared will establish requirements for "residuals" with respect to ER and D&D activities. Currently, there is no DOE guidance for addressing residual quantities of hazardous chemicals.</p>	Closed	E. Hallinan

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSV-R-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>The availability of industrial hygiene staff to support activities at SRS is limited. Industrial hygiene support has been noted in past assessments as an area that needs improvement. However, due to continuing constraints on budgets, the situation remains about the same. Despite budget declines, the workload for industrial hygienists has not changed, and extensive overtime is required (the average industrial hygienist works 17 hours of overtime per week). This situation may result in people being less effective, with the possibility of important items being overlooked. WSRC industrial hygiene management is evaluating ways to make more effective use of these personnel, such as allocating them to more critical, higher priority work, and eliminating or changing the way existing lower priority tasks are performed.</p>	<p>The Industrial Hygiene & Respiratory Protection Section is faced with the same budget reductions that are impacting all WSRC organizations. Industrial Hygiene Management continues its aggressive programs of cost effectiveness and focusing resource allocation to high value services. While the initiatives have been successful to date, the ability of the IH&RP Section to continue achieving higher standards of service necessary to meet the demands of increasing regulatory compliance and changes in new Site missions are ultimately dependent upon maintaining current budget and staffing levels.</p>	<p>In progress</p>	<p>L. Thebo</p>

CHEMICAL SAFETY VULNERABILITY REVIEW
September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSVR-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	As part of an internal budget exercise, WSRC is studying the impact of funding decrements of as much as 30 percent in areas of ES&H, quality assurance, and maintenance. Such reductions, if implemented, would continue to diminish the overall industrial hygiene program effectiveness. (Hazardous Communication, Health Hazard Assessment, Hazard Prevention and Control, Purchase Approval Program, Chemical Monitoring, Heat Stress Management, Hearing Conservation).	These case studies are a part of the budget process.	In progress	L. Thebo

CHEMICAL SAFETY VULNERABILITY REVIEW

September 1994

Site/Facility: Savannah River Site

Vulnerability Number: CSVR-SRS-0000-05

OSPACTS	Vulnerability/Observation	Action/Product	Due Date	Responsible Person
	<p>The current five-year WSRC budget plan indicates an essentially constant Full-Time Equivalent (FTE) level for industrial hygiene and safety staff for Fiscal Years 1994 and 1995. However, the plan indicates a decline from 120 FTEs in Fiscal Year 1995 to 114 FTEs in Fiscal Year 1996 and a further decline to 107 FTEs by Fiscal Year 2000. This declining level of resources, crucial to supporting chemical safety, comes at a time when D&D and waste management activities are increasing at SRS. This apparent disparity, not having sufficient resources available to review the type hazards associated with an increasing and diverse D&D work environment, represents a potential vulnerability.</p>	<p>A team consisting of representatives of affected programs was assembled to address the identified chemical safety vulnerabilities. The team developed this management response plan.</p>	<p>Closed 9/94</p>	<p>F. Beranek</p>
	<p>Lack of sufficient resources and a DOE-imposed accelerated schedule for implementing the surplus facilities transition program may not permit proper planning and characterization of chemical hazards before D&D activities start.</p>	<p>D&D activities at SRS will not begin before proper planning and characterization are completed. Transition schedules may be accelerated, but this only means that ownership of the facilities is transferred from DP to EM. Characterization and deactivation can be completed after transfer. D&D will probably not begin for several years after deactivation is completed.</p>	<p>Closed</p>	<p>G. Street</p>