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U.S. DEPARTMENT OF ENERGY
HANDBOOK
FOR
CHEMICAL MANAGEMENT PROGRAMS

DOE-HDBK-XXXX
SAFT-0073

Prepared by
The Office of Worker Protection Programs
and Hazards Management
(HQ DOE)
and
The Chemical Safety Topical Committee

(Formerly the Chemical Safety Interest Group (CSIG))

August 1999

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Appendices

ACRONYMS

AIChE.....American Institute of Chemical Engineers
CC.....Chemical Coordinator
CCMS.....Chemical Commodity Management Center
CCPS.....Center for Chemical Process Safety
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act
CFR.....Code of Federal Regulations
CHO.....Chemical Hygiene Officer
CMA.....Chemical Manufacturers Association
CMC.....Chemical Management Council
CMO.....Chemical Management Program
CSIG.....Chemical Safety Interest Group
CSTC.....Chemical Safety Topical Committee
DNFSB.....Defense Nuclear Facilities Safety Board
DOT.....Department of Transportation
EADS.....Energy Asset Disposal System
ECMP.....Excess Chemical Management Program
EFCOG.....Energy Facility Contractors Group
EH-5.....DOE Office of Worker Health and Safety
EPA.....Environmental Protection Agency
HazCom.....Hazard Communications
ISM.....Integrated Safety Management
ISMS.....Integrated Safety Management System
MAC.....Material Access Centers
MSDS.....Material Safety Data Sheet
MVS.....Management Verification System of CMA
OSHA.....Occupational Safety and Health Administration
PHR.....Process Hazard Review
PSM.....Process Safety Management as defined by OSHA
RMP.....Risk Management Plans as defined by EPA
SAWG.....Safety Analysis Working Group
SRS.....Savannah River Site
SRTC.....Savannah River Technical Center
TSP.....Technical Standards Program
TSPO.....Technical Standards Program Office
WSRC.....Westinghouse Savannah River Company

PREFACE

The Department of Energy Office of Worker Health and Safety in cooperation with the Chemical Safety Interest Group (CSIG) prepared this handbook. The CSIG, now chartered as the Chemical Safety Topical Committee (CSTC), was established during the November 1998 Chemical Safety Issues Workshop. The Energy Facility Contractors Group (EFCOG) Safety Analysis Working Group (SAWG) and the DOE Office of Worker Health and Safety jointly sponsored the workshop. The Chemical Safety Team Leader co-chairs the CSIG with the chair of the EFCOG/SAWG Chemical Safety Subgroup. Appendix B contains the CSTC Charter.

The CSTC membership is comprised of a broad spectrum of DOE contractors and Federal employees responsible for chemical safety. Bill Adair of the Hanford Site and Jim Morgan of the Savannah River Site served as joint champions of the CSTC issue, which identified the field's need for a CMP Handbook. The champions closely coordinated their efforts with Billy Lee of the EH-5 Chemical Safety Team. This handbook is the product of the issue champions and the CSTC members from DOE Headquarters, operations and field offices, and laboratories. In addition, Lou Soler of Hanford was instrumental in writing essential parts of this handbook and bringing together the diverse views of the CSTC membership.

The CSTC intends for the Chemical Management Program (CMP) Handbook to be a supplement to DOE P 450.4, "Safety Management System Policy," and DOE G 450.4-1, "Integrated Safety Management System (ISMS) Guide." This handbook addresses important aspects of Integrated Safety Management (ISM) core safety functions which include: defining the scope of work; analyzing hazards; developing and implementing appropriate hazard controls; performing work within the controls; and assuring continuous improvement. The handbook will assist those DOE sites that need help in the development of a CMP and to comply with the numerous industrial standards and regulatory requirements for chemical safety, some of which are listed in appendix A.

The CSTC membership believe that a useful handbook needs two things:

1. Information on controls for onsite chemical activities that protect personnel, the public, and the environment from the hazards of chemicals; and

2. Assistance to the field to comply with applicable regulatory requirements. For sites having more mature CMPs, the sites can use this information to

augment their programs while making use of infrastructure and management systems previously established.

This handbook describes the elements found in a recommended model CMP. It includes the requirements for management review of system performance that are applicable to the many chemical operations within the DOE complex. The handbook addresses essential management program components including inventory tracking and control of chemicals, identification and analysis of chemical hazards, and management of change for chemicals. It addresses functional requirements for chemical management from acquisition to final disposition and considers factors such as mission, life cycle of interim operations, complexity of operations and associated hazards. The handbook incorporates "best management practices" from DOE Headquarters, DOE field operations, and the private sector including the Chemical Manufacturers Association (CMA) and the American Institute of Chemical Engineer's (AIChE) Center for Chemical Process Safety (CCPS). The handbook also provides a "benchmark" for evaluating the adequacy of Chemical Management Programs (CMP). The CSTC expects this document to serve as an invaluable source of information on chemical safety programs for site professionals and for those managers responsible for the Department's Integrated Safety Management (ISM) process.

During the development of this handbook, the Defense Nuclear Facilities Safety Board (DNFSB) staff visited Rocky Flats, Oak Ridge, Hanford and the Savannah River Site (SRS). The purpose of these visits was to review the chemical policies, procedures and practices in operational and inactive facilities. The Board staff was impressed with the SRS chemical management program and suggested that SRS share their program successes with the rest of the complex. To assist the field this handbook provides, in appendix C, a description of the SRS Chemical Management Program developed by the Chemical Commodity Management Center, Westinghouse Savannah River Company.

The CSTC and I appreciate your comments on this draft handbook

George W. Schlossnagle, Ph.D., P.E., DEE
Team Leader, DOE Chemical Safety Team
Office of Worker Health and Safety (HQ DOE/EH-5)

U.S. DEPARTMENT OF ENERGY
DRAFT HANDBOOK
FOR
CHEMICAL MANAGEMENT PROGRAMS

1.0 INTRODUCTION

This DOE handbook for chemical management incorporates best practices from the Department of Energy (DOE) Headquarters and field operations and private industry as represented by the Chemical Manufacturers Association (CMA) and the Center for Chemical Process Safety (CCPS), an affiliate of the American Institute of Chemical Engineers (AIChE). The purpose of this handbook is to assist DOE sites in their development of a Chemical Management Program (CMP) that controls onsite chemical activities, protects personnel, the public, and the environment from the hazards of chemicals and is compliant with applicable regulatory requirements. DOE and CMA have entered into a Memorandum of Understanding (MOU) because DOE wishes to pursue an environmental, health, and safety program that draws appropriately upon the principles of Responsible Care® and Management System Verification (MSV) to strengthen the Integrated Safety Management (ISM) verification process. This handbook fulfills, in part, the spirit of the MOU with CMA.

2.0 SCOPE

This handbook is applicable to all chemical management activities including the acquisition, use, storage, transportation and final disposition of all chemicals. The scope of this handbook includes, but is not limited to, hazardous chemicals as defined in the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 Code of Federal Regulations (CFR) 1910.1200 and their appendices A and B) and substances regulated under the OSHA Standard on Process Safety Management of Highly Hazardous Chemicals (29 CFR 1910.119), and the Environmental Protection Agency (EPA) Risk Management Plans (RMP) (40 CFR Part 68). The authors recognize that the sites should apply the handbook using a graded

approach based upon the complexity of chemical management operations and the nature and severity of associated hazards.

3.0 OWNERSHIP

The site contractor needs to identify a manager as the responsible steward for the overall administration, management and maintenance of their chemical management program. For sites having more than one contractor, each contractor should appoint a manager responsible for chemical management. These managers should share overall responsibility for the CMP and ensure that adequate integration occurs when chemical operations among several contractors coexist at the same location or may affect the safety envelope of another contractor's operation.

4.0 CHEMICAL MANAGEMENT PROGRAM (CMP)

The CMP consists of several essential components that responsible managers need to support in their onsite chemical safety programs. These essential components are:

- Inventory Tracking and Control of Chemicals;
- Identification and Analysis of Chemical Hazards; and
- Management of Change.

In addition, the CMP should be an integral part of the contractors' Integrated Safety Management (ISM) system(s) with the overall intent of assuring adequate integration with other applicable functional areas. Those areas may include, but not be limited to, the following programs:

- Emergency Preparedness and Response;
- Environmental Reporting, Documentation, and Permitting;
- Fire Protection;
- Hazard Communication;
- Industrial Hygiene;
- Laboratory Safety;
- Occupational Medicine;

- Pollution Prevention and Waste Minimization;
- Property Management (excessing chemicals);
- Quality Assurance;
- Training;
- Transportation; and
- Waste Management.

4.1 Inventory Tracking and Control of Chemicals

Sites should track chemicals from acquisition, through storage and use, to their final disposal. Elements of a system for the tracking and control of chemicals are as follows:

- Acquisition;
- Pollution Prevention, Waste Minimization and Final Disposition;
- Storage;
- Transportation;
- Use; and
- Work Planning (chemical selection).

4.1.1 Work Planning

Managers and supervisors should consider a number of factors during the work planning. These factors include the hazards of the chemicals, waste minimization, and pollution prevention, as well as aspects of good business management. In addition, work planning should include the application of applicable lessons learned from DOE and industry.

4.1.2 Acquisition

Acquisition includes approval, procurement, onsite makeup and mixtures of chemicals, individuals/organizations bringing chemicals onsite and any other mechanism in which sites acquire chemicals. Excess chemicals should be the first source of supply considered.

4.1.3 Storage

Storage includes bulk, tank, piping, cylinder and container storage of solid, liquid or gaseous chemicals. Storage includes used and unused chemicals, those stored in partially filled containers and in containers other than their original container, and chemical "heels" left within tanks, piping, or containers.

4.1.4 Use

Use includes routine and nonroutine use of chemicals including onsite recycling/reutilization.

4.1.5 Transportation

Transportation includes all movement of chemicals subject to the U.S. Department of Transportation (DOT) or site transportation requirements.

4.1.6 Pollution Prevention, Waste Minimization, and Final Disposition

Waste minimization and final disposition include consumption, excessing, recycling and waste disposal. If the CMP does not cover the contractor's waste management program, including treatment, storage, and disposal, it should at least provide adequate interface between their CMP and waste management program.

4.2 Identification and Analysis of Chemical Hazards

The CMP should include appropriate hazards identification and analysis either generically (e.g., for a store stock item) or as part of a facility-specific chemical process or operation. The hazards analysis should identify bounding conditions and assumptions. The CMP should address hazards of job activities including laboratory operations. Sites should use a graded approach to hazard analysis based on the severity of the hazards and complexity of the operation. Chemical hazards may be identified and analyzed by using formalized programs such as:

- Job Hazards Analysis;
- Process Hazards Analysis; and
- Safety Basis Documentation.

Informal programs may also be used. These may include walkthroughs, safety meetings, pre-start meetings (e.g., tailgate/toolbox meetings), surveys, shift turnovers, etc., and be documented as appropriate.

Hazard analysis should consider possible interaction of chemicals with the following:

- Building structure materials;
- Containment vessels and the general environment; and
- Other chemicals including those used or stored nearby during transient or accident conditions.

4.3 Training

Contractors and responsible managers should provide appropriate training in accordance with applicable requirements to personnel who manage and use chemicals and to all personnel who may be potentially exposed. Contractors should base training on specific job assignments consistent with ISM.

4.4 Management of Change

The contractor(s) should conduct an analysis of their chemical management operations to include acquisition, storage, use, transportation and final disposition of chemicals for establishing a baseline of their operations against this chemical management handbook. The contractor(s) should then develop implementation plans for each chemical management area to identify the actions and schedules for completing the activities necessary to be in conformance with this chemical management handbook.

Sites should maintain the baseline for chemical management operations. Baselines should accurately document chemical management operations and their conformance to this handbook. Updates to the baseline should be made, as appropriate, pending acquisition of new chemicals, implementation of new chemical processes, facility modifications and changes to the mission.

4.5 Functional Integration

Integration of the following functions may be necessary to support management of chemical activities at the site:

- Chemical Safety;
- Emergency Preparedness;
- Emergency Responders;
- Environmental Reporting, Documentation and Permitting;
- Fire Protection;
- Industrial Hygiene;
- Material Safety Data Sheet (MSDS) System;
- Occupational Medicine;
- Pollution Prevention and Waste Minimization;
- Procurement;
- Property Management;
- Quality Assurance;
- Training and Emergency Preparedness Drills and Exercises; and
- Transportation.

For effective implementation of the CMP, responsible managers should require full integration of all these functions.

5.0 Chemical Management Program Elements

All site contractors should create plans and programs to ensure adherence and maintenance of CMP components in this handbook.

5.1 Administrative Controls

The administrative controls apply to policies and planning, operations, and management reviews.

5.1.1 Policy and Planning

Policy and planning includes the following elements:

- Site contractors should have a clearly written commitment by senior management to minimize and prevent, where feasible, chemical releases to the air, water and land at each of the company's facilities. Site contractors should reduce or eliminate the generation of wastes resulting from chemical management practices.
- Site contractors should fully incorporate their CMP into the Integrated Safety Management System.
- Site contractors should commit to eliminate, where feasible, or to minimize the use or creation of hazardous chemicals.
- Site contractors should commit to eliminate, where feasible, or to minimize the exposure of workers and the public to hazardous chemicals in accordance with applicable standards.

5.1.2 Operations

Site contractors need to integrate chemical safety into their operations. This handbook provides the following points to consider when using chemicals in operations:

- Chemical management operations, including acquisition, use, storage, transportation, and final disposition, should conform to the applicable OSHA, EPA, state and local regulations and good industrial practice standards.
- Chemical management operations, including acquisition, use, storage, transportation and final disposition should comply with the applicable authorization basis envelope.
- Chemical management operations should include appropriate hazards analysis and should be consistent with the elements listed in section 4.2, above.
- Chemical management operations should include management of change of chemicals.
- Managers of operations involving significant quantities of hazardous chemicals, but less than threshold amounts under Process Safety Management (PSM) (OSHA Std. 29 CFR 1910.119) and EPA Risk Management Plans (RMP) (40 CFR Part 68), should,

nevertheless, consider adopting applicable parts of the PSM standard in a graded approach as part of best management practices. The authors of this handbook encourage the application of chemical management documentation previously established. Sites should ensure that existing documentation is consistent with this handbook and integrated within the CMP.

- Chemical management operations should include a documented process for the identification, evaluation and control of chemicals whose characteristics might have changed due to factors such as storage, mixing or exposure to radiation.
- Managers should forward newly obtained Material Safety Data Sheets (MSDS) to the appropriate MSDS coordinators for ready availability to workers and support of chemical management activities.
- Necessary chemical compatibility information should be obtained or developed and be readily available.
- Management should define and document interfaces between infrastructure support functions and chemical management system components.
- The CMP should ensure the ready availability of chemical information to support organizations such as Emergency Preparedness and Environmental Reporting and other contractors as appropriate. This information includes inventory, hazards and MSDSs.
- Site contractors should develop a list of applicable rules, regulations and guidelines, including best management practices. Contractors should make this information readily available. Refer to section 6.0, "Key Regulations Related to CMS," for examples.

5.1.3 Management Review

- The site contractor and their respective DOE field representative should review and update the contractor's CMP every two years, or every year as applicable with the annual renewal of the site's ISM description.
- Senior Management and the DOE field officer should annually review and document, as appropriate, the contractors' CMP performance.

- Where there is more than one prime site contractor, the DOE field office should annually review each contractor's CMP performance. The field office should evaluate performance consistency among the contractors. This evaluation should include an assessment of cooperation among contractors in the area of chemical safety management. For example, how well do the contractors share and exchange good practices, expertise, and excess chemical inventory?

5.2 Acquisition

Acquisition of chemicals should be documented in a controlled process that addresses, as appropriate, the following:

- Identification of roles and responsibilities of those individuals who are responsible for safely managing chemicals;
- Identification of those individuals who are authorized to request, approve, and sign for receipt of chemicals; and
- Identification of the individual (usually the requester) and group responsible for a chemical from time of purchase to final disposition.

The acquisition process should consider the following elements:

- Need for the chemical;
- Need for quantity explaining measures taken to minimize the quantity needed;
- Use of available excess chemicals in lieu of new purchases;
- Use of non-hazardous or less hazardous substitutes;
- Amount required;
- Stability/shelf life;
- Suitability of storage facilities;
- Final disposition plans;
- Required safety documentation (e.g., MSDS); and

- Input of chemical information into the site CMP tracking system.

5.3 Storage

Storage of hazardous chemicals includes, as appropriate, the following:

- Proper and safe storage of chemicals at the appropriate facilities (e.g., flammable storage cabinet for flammable solvents);
- Records of quantities and types of chemicals at each storage location;
- Control and documentation of addition or removal of chemicals from inventory at each location;
- Periodic physical confirmation and validation of inventory records; and
- Documented maintenance and inspection programs that ensure facility integrity.

5.4 Transportation

Transportation of chemicals on the site directs the contractor to:

- Comply with procedures and all applicable regulations (e.g., DOT)
- Ensure appropriately updated documentation

5.5 Use

Use of chemicals includes the following:

- Appropriate hazards analysis either generically (e.g., for a store stock item) or as part of a facility-specific chemical process, operation, or job planning activity, and should be consistent with the elements listed in section 4.2, above.
- Applications may include an update to the hazards analysis when the original use is changed or the activity goes beyond the current hazards analysis.
- Appropriate use of design and controls in the following hierarchy: inherently safe design, engineering controls, administrative controls and personal protective equipment.
- Tracking.
- Coverage by procedures and/or an MSDS as appropriate.

5.6 Waste Minimization and Final Disposition

Waste minimization and final disposition of chemicals include the following:

- Emphasis on minimizing purchase or creation of a chemical followed by recycling as the first choice in lieu of the purchase of new chemicals;
- A documented process, compliant with all applicable regulations, to identify in a timely manner chemicals appropriate for excessing consistent with the DOE property management requirements for re-distribution, recycling, or waste disposal;
- Compliance with all applicable laws and regulations; and
- Transfer of relevant chemical documentation and information to the appropriate infrastructure support functions.

5.7 Tracking

Tracking of chemicals incorporates at least the following:

- A record of site chemicals that includes, but is not limited to, locations, amounts; use(s); hazards, and custodians; and
- The capability for retrieving necessary data and generating reports

5.8 Management Review of Chemical Management Program Performance

All contractors should establish a system that provides quantifiable, documented, and measurable performance of their CMP. Contractors should review their CMP performance with the DOE field office annually. All CMP management reviews should include the following steps, at a minimum:

- Corrective action and associated results;
- Performance results for objectives and targets;
- New or changed legislation and other requirements;
- Incidents, noncompliance, and performance inconsistent with the CMP; and
- CMP monitoring and measurement data and accomplishment.

APPENDIX A

Key Environment, Safety and Health Directives Applicable to Chemical Management Programs

The directives below are not all inclusive. The authors provide this list as guidance regarding some of the pertinent regulations applicable to all prime contractors:

DOE P 450.4	Safety Management System Policy
DOE G 450.4-1	Integrated Safety Management System Guide (ISMS)
DOE O 440.1	Worker Protection Management for DOE Federal and Contractor Employees
29 CFR 1910	OSHA Subpart Z - Toxic and Hazardous Substances
29 CFR 1910.20	OSHA Access to Employee Exposure and Medical Record
29 CFR 1910.106	Flammable and Combustible Liquids
29 CFR 1910.119	Process Safety Management of Highly Hazardous Chemicals
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response (HAZWOPER)
29 CFR 1910.160	Fixed Extinguishing Systems, General
29 CFR 1910.1200	OSHA Hazard Communication Standard
29 CFR 1910.1450	OSHA Occupational Exposure to Hazardous Chemicals in Laboratories
29 CFR 1926.59	OSHA Hazard Communication for Construction Activities
40 CFR Part 68.....	EPA Risk Management Program
40 CFR 370 and 372.....	EPA Superfund Amendments and Reauthorization Act (SARA)
Title III of SARA	Known as the Emergency Planning and Community Right-to-Know Act
40 CFR 261,262, and 263.....	EPA Resource Conservation and Recovery Act (RCRA)
41 CFR 101	Public Contracts and Property Management
49 CFR.....	Transportation

State and Local Regulations

APPENDIX B

CHARTER

Chemical Safety Topical Committee

U.S. Department of Energy

PURPOSE

The purpose of the Department of Energy (DOE) Chemical Safety Topical Committee (CSTC) is to provide a forum for DOE and DOE contractor personnel to identify chemical safety-related issues of concern to the DOE and pursue solutions to issues identified. The committee also exchanges lessons learned and best practices that promote continuous improvement and excellence in chemical safety. The CSTC will seek to promote chemical safety initiatives consistent with DOE policy on Integrated Safety Management (ISM) and environment, safety and health. The CSTC will coordinate its activities with the DOE Safety Management Implementation Team (SMIT) to ensure that CSTC activities further Departmental implementation of ISM.

The work of the CSTC will be conducted in coordination with the DOE Technical Standards Program (TSP), as prescribed by the Department's Standards Program, mandated by Public Law 104-113, "The National Technology Transfer and Advancement Act of 1995," and the Office of Management and Budget Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities."

VALUE STATEMENT

The CSTC will promote excellence in chemical safety throughout the DOE complex by sharing technical information, expertise and resources. This sharing will facilitate the application of management systems, processes and tools that reflect the best practices and standards used in government and in private industry. Such practices and standards will promote a level of chemical safety at DOE that will ensure and enhance the protection of workers, the public and the environment. The CSTC will make recommendations to the Department on chemical safety issues. The CSTC will develop its recommendations using consensus-building processes with its participating members. No CSTC recommendation will be binding or mandatory unless carried forward by the DOE as a Directive or Policy.

OBJECTIVES

The CSTC will identify chemical safety issues of concern for the Department, pursue the resolution of those issues through the identification and dissemination of successful practices and work products across the complex. Opportunities will be identified for improved chemical safety management and the sharing of tools that are of interest to multiple sites across the DOE complex, and pooled resources will be used to develop and communicate the improvements to all sites. In addition, the CSTC will:

1. Proactively identify chemical safety issues of concern for the Department and recommend solutions to identified issues;
2. Serve as the DOE focal point for chemical safety technical standards issues and practices;
3. Provide input to the DOE-wide position on DOE, non-DOE government and non-government consensus chemical safety standards published or in comment coordination;
4. Assist in the production of national or international chemical safety standards when in the Department's interest;
5. Promote DOE-wide best practices in chemical safety;
6. Work cooperatively with established groups, including other TSP topical committees, investigating related issues and areas of concern and interface with non-DOE standards development bodies, such as the American National Standards Institute (ANSI), when the need arises; and
7. Participate with representatives of other topical committees and the TSP manager to establish guidance and protocols for topical committee operations under the TSP.

MEMBERSHIP

Membership in the Chemical Safety Topical Committee (CSTC) is open to all DOE Federal employees and DOE contractors with responsibility for managing and overseeing chemical safety programs at DOE facilities and laboratories. Representation will be encouraged from every major DOE field element and Headquarters office with significant chemical activities. The CSTC

membership will establish ad hoc working subgroups to address specific issues and needs, developing tasking agreements with milestones for the completion of their specified work within a finite period of time.

STEERING COMMITTEE

The overall activities and business of the CSTC will be co-chaired by the sponsors, with one lead and one alternate lead each, from the DOE Chemical Safety Team and from the Energy Facility Contractors Group (EFCOG) Chemical Safety Subgroup. The Chemical Safety Team Leader and the Chair of the EFCOG Chemical Safety Subgroup will annually select the leads and alternate leads. Working subgroups formed from the CSTC membership for the identification and resolution of individual issues of concern will identify their own chairs, co-chairs and alternates. The subgroup chairs and co-chairs will form the steering committee of the CSTC. The CSTC sponsors will co-chair the steering committee.

SPONSORSHIP

The Chemical Safety Topical Committee (CSTC) is a standing standards topical committee sponsored by the DOE Chemical Safety Team, and the EFCOG Chemical Safety Subgroup. The following principles will govern its operation:

Balance of Interests: A committee comprised of representatives of all categories of interest that relate to the subject matter will undertake standards development. The CSTC committees comprised of representatives of all DOE and DOE contractors with an interest in the subject matter of concern will also undertake other chemical safety-related activities.

Due Process: The CSTC will ensure that any individual or organization within the DOE who believes that an action or inaction of the Topical Committee causes unreasonable hardship or potential harm is provided the opportunity to have a fair hearing of his/her concerns.

Openness: Participation in the CSTC will be open to all DOE Federal employees and DOE contractors who are directly and materially affected by CSTC activities and interested in pursuing excellence in chemical safety in their areas of responsibility.

Reporting: The CSTC Steering Committee will provide an annual report of CSTC activities and accomplishments to the Department of Energy and EFCOG. The CSTC will report on any of its chemical standards-related activities to the DOE Technical Standards Program Office (TSPO) on a frequency, which is appropriate and consistent with TSPO needs.

MEETINGS

The co-chairs will normally schedule CSTC meetings in conjunction with generally scheduled workshops and conferences at which chemical safety engineering management and oversight personnel attendance is expected. In addition, the co-chairs will regularly schedule conference calls to facilitate the on-going pursuit of CSTC activities. The co-chairs will schedule a special meeting when the physical presence of the CSTC is required. The contractor or DOE Field Office at a DOE facility will normally host the meetings.

RENEWAL

Six years after the date of its adoption, this charter will be re-evaluated for relevance and need for continuation. By vote of the CSTC and with the concurrence of the Technical Standards Program Office, the charter will be renewed for six years.

This Charter is adopted by:

(Signed 9/8/99)
Douglas Heal
Chair, Chemical Safety
Subgroup of EFCOG

The DOE Technical Standards Program (TSP) Office approves this Charter.

(Signed 9/10/99)
George W. Schlossnagle
DOE Chemical Safety Team Leader
Office of Worker Health and Safety

(Signed 9/10/99)
Richard J. Serbu
TSP Manager

APPENDIX C

Savannah River Site Chemical Management Program

Savannah River Site
Chemical Management Program
AID-AMS-99-0052

Revision 0
September 3, 1999

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Savannah River Site
Chemical Management Program
AID-AMS-99-0052

I. Formalization of the SRS Chemical Management Program (CMP)

Westinghouse Savannah River Company (WSRC) manages the Savannah River Site (SRS) for the Department of Energy (DOE). Past, present, and future missions have used a variety of processes that involve the use of chemicals. The SRS Chemical Management Program (CMP) is necessary to ensure that management complies with State, Federal and DOE regulations. In addition, the SRS CMP ensures that the concepts of an Integrated Safety Management System are adapted.

The Chemical Commodity Management Center (CCMC) at SRS is the cornerstone of the SRS CMP. The SRS CMP does not rely on the CCMC alone; it takes input from the SRS Chemical Management Council, the department chemical coordinators, and all employees. The designated manager of the CCMC serves as the single point of contact for all chemical issues and as such coordinates the SRS CMP.

WSRC has empowered a site-level Chemical Management Council (CMC) to address chemical safety management. The Council is comprised of members that have the authority to address issues for their Division Vice-President and the responsibility to implement all CMC decisions in their division. The manger of the CCMC chairs the CMC. The CMC has approval authority over site procedures dealing with chemical safety.

All organizations have a chemical coordinator who is a qualified, facility-level person responsible for day-to-day chemical safety and OSHA HazCom compliance issues. The CCMC qualifies the chemical coordinators (CC) through a formal training program. They are matrixed to the CCMC. The site chemical coordinator training program includes mandatory training and regular updates and retaining as necessary.

All site employees receive initial OSHA HazCom training during General Employee Training, a requirement for all new employees. Every two years all employees receive HazCom refresher training during Consolidated Annual Training. The facility-specific chemical safety training requirements are developed on-site by the Central Training organization with input from qualified personnel in the CCMC. This ensures a consistent training program for the entire site. Individuals take site-wide training covering specific chemical safety and OSHA Hazard Communication Standard compliance responsibilities. All employees have access to a chemical coordinator for their area and the Chemical Lifecycle Management homepage on the SRS Intranet. The CCMC maintains the Chemical Lifecycle Management homepage.

A diverse organization, the CCMC oversees chemicals and chemical safety from purchasing, to storage and use in operating divisions (the site HazCom program), through the Excess Chemical Management Program, and limited disposal.

The CCMC is the only site organization authorized to approve the purchase of chemicals and chemical products. Chemical request forms sent to the CCMC undergo a review to ensure the following:

- The chemical or chemical product is not a current Stores stocked item;
- The chemical is not available through the site Excess Chemical Management Program;
- The site MSDS system has a current material safety data sheet (MSDS); and
- The chemical does not pose an unreasonable risk to the workers or the environment.

Once the review is complete, the CCMC buyers place the orders using existing just-in-time (JIT) contracts as much as possible. This expedient process has reduced the amount of chemical products warehoused and the cost associated with their warehousing. The Operating and Support organizations have reduced the need to store chemical products as they see the improved service provided by the CCMC chemical buyers. With fewer chemical products in these organizations, the risk of employee exposure to the chemicals decreases, as does the risk of a chemical release. The total amount of chemicals stored at SRS has been reduced 52% over the last four years.

The CCMC administers the site's OSHA Hazard Communication (HazCom) Standard Program. The site HazCom coordinator is located within the CCMC and is responsible for all aspects of the HazCom program including training. The Savannah River Technical Center (SRTC) has sections regulated under the OSHA Laboratory Standard. SRTC has a Chemical Hygiene Plan and a Chemical Hygiene Officer (CHO). The CHO is matrixed to the CCMC to provide consistent guidance across the site.

The site uses the WSRC Excess Chemical Management Program to accept chemicals and chemical products having no immediate use. This program avoids the costly disposal of chemicals and chemical wastes. This CCMC-led effort provides excess chemicals at no cost to on-site users. This saves on acquisition costs and provides the chemicals in a timely manner. If the organizations do not consume the chemicals on-site then they pursue other avenues of disposition. The chemicals are:

- Advertised for donation to another DOE site through the Energy Asset Disposal System (EADS) program;
- Sold at a site auction;
- Offered for sale on a competitive bid to different companies through the SRS procurement department;
- Offered for donations to state agencies or charitable organizations through state screening programs; or

- After all other avenues have been exhausted, declared as waste and disposed of in the appropriate manner.

The CCMC works to reduce the amount of hazardous chemicals and chemical products procured, finds non-hazardous substitutes for environmentally unfriendly chemicals and chemical products, and reviews the excess chemical warehouse to assess viability of the products stored. The CCMC is responsible for the disposal of all non-viable material from the excess chemical warehouse.

The CCMC is responsible for the Chemical Lifecycle Management homepage on the SRS Intranet. The homepage lists the CCMC staff, the CMC representatives and the chemical coordinators. Employees with a chemical safety concern can quickly identify and reach anyone on any of the three lists. Other elements on the homepage include chemical ordering information, chemical compatibility, disposal, excess chemical information, a link to the SRS MSDS database, links to useful information, policies and procedures, SRS chemical hazard ratings, and target organ effects.

ADMINISTRATIVE COMPONENTS

II. Life Cycle Management of Chemicals

The SRS CMP requires the examination of chemical hazards in each stage of the life cycle of the chemical. The first option is to eliminate the use of a hazardous chemical if possible. If elimination is not possible, then other areas to be examined include, but are not limited to, selection, onsite warehousing, onsite transportation, designation of storage areas in operating facilities, use of, and the disposal of the chemical. WSRC uses both in-house technical support and subcontracted technical support to perform these functions.

III. Inventory and Tracking Control

The SRS CMP addresses the inventory and tracking of chemicals. This is not only important for worker safety, but is also necessary to comply with Emergency Planning and Community Right-to-know Act (EPCRA) requirements. The WSRC site-wide chemical inventory is maintained in a controlled database. Access to this database is granted to members of the CCMC and site CCs. Procedures require the CCs to update their chemical inventories monthly. Westinghouse Safety Management Solutions (WSMS) uses this inventory to identify chemicals regulated under the Environmental Protection Agency (EPA) Risk Management Plan (RMP). This inventory also alerts the facility manager if an inventory of a regulated chemical approaches the RMP threshold limit. WSMS is a spin-off company of WSRC with extensive knowledge and skill in developing safety documentation, including chemical safety.

IV. Management of Change

WSRC conducts facility-level self-assessments to help document the status of the SRS CMP and identify facility-specific problems. In addition, WSRC conducts a site-level management review to identify any needed programmatic changes. The CCMC manager (the program owner)

coordinates the site-wide review. Additionally, a formal Management of Change Program for Safety Analysis is in place.

V. Hazard Analysis, Emergency Planning, and Response

Chemicals are identified during the initial stages of the facility design Process Hazard Review (PHR) for new and upgraded facilities. Engineering controls are designed into the facilities, administrative controls are specified in facility operating procedures and facility-specific chemical safety training requirements are developed. The facility-specific chemical safety training includes identification of unique hazards posed by the chemicals used, response to spills and leaks, facility evacuation routes, etc. WSRC utilizing WSMS prepares design PHRs and the Safety Basis documentation. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is utilized as a reference to set some of the requirements in the Safety Basis documentation. The CERCLA requirements are not regulatory requirements, but are added as a safety margin.

Chemicals that have threshold amounts under PSM (OSHA Std. 29 CFR 1910.119) and EPA RMP (40 CFR Part 68) are reviewed annually. The site conducts emergency preparedness drills to evaluate its responsiveness to emergencies. These drills and exercises may identify additional training needs.

In the case of existing facilities, any change in process, or process chemicals, will result in a Screening PHR that evaluates the change for impacts on safety and worker protection. If the Screening PHR results in a finding that the change may have a negative impact on safety or worker protection, a full PHR is performed to identify existing protection and any additional safety measures to be implemented.

The onsite warehousing of chemicals uses two different types of facilities, Central Receiving/Warehousing and Material Access Centers (MACs). The decision to use Central Receiving/Warehousing versus a MAC is based on safety, security and usage concerns. Central Receiving/Warehousing is utilized for bulk orders and for material that will not be consumed shortly after delivery. Central Receiving/Warehousing is designed and staffed to store large amounts of material. MACs are small warehouses located near operating facilities. The MACs are designed to accept, store and issue materials that are quick turn-around items. These customer-friendly units have reduced procurement times and increased customer satisfaction.

Safety Basis documentation identifies bulk chemical storage areas and the impact of releases from this storage areas with respect to worker safety, environmental impact and off-site release. Conduct of Operations, including facility procedures and job hazards analysis, ensures safe use of the bulk chemicals. As an independent check, the facility self-assessment program reviews chemical storage areas for proper storage, chemicals for unlabeled or mislabeled containers, and damaged, degraded or leaking containers. A checklist for the audit of chemical storage areas is available site-wide.

OPERATIONAL COMPONENTS

VI. Handling, transportation, storage, inventory, and disposition or disposal

Using a graded approach, the most important aspect of the SRS CMP is the safe handling and storage of the chemicals once they arrive on site. Most chemicals arrive at Central Receiving or at a MAC. General guidelines are used to govern the handling of the chemicals in this environment as the chemicals are not used, but only handled and transported. Federal Regulations and Industrial Best Practices are used to formulate Site and Facility specific procedures.

Upon receipt of the chemicals, they are distributed to their appropriate locations on site. DOT regulations are incorporated into procedures used for transportation of chemicals. This is particularly important whenever a chemical will travel on roads that have public access, cross the same, or are shipped off site.

Once the chemicals have arrived at their use or storage locations, a determination is made as to the storage requirements. The storage requirements for chemicals awaiting shipment to another location are less stringent than for chemicals stored in that location for a longer period.

References for the proper storage and handling of the chemicals in this environment are numerous. If the chemicals were actually used in this location, the requirements would be more stringent. There is a greater potential for exposure to chemicals during use than during storage. At this point, a graded approach is used to determine any needed correct actions to assure no unacceptable risks are taken.

Inventory and tracking of chemicals are primarily driven by regulatory requirements such as: the annual Tier II inventory, the precious metals inventory, the ozone depleting substances inventory, and the air emissions inventory. This list is not all-inclusive. Different organizations on site accumulate the inventory information and submit it to the CCMC. The CCMC compiles the data and prepares the report for the Environmental Protection Department who in turn reviews the report and submits the compiled data to the proper regulatory agencies.

Disposition or disposal of chemicals from the location of consumption follows established programs for the disposal of chemicals according to their classification. Different classifications are radioactive wastes, hazardous wastes, mixed wastes, sanitary wastes and high level wastes. This list is not all-inclusive. The chemicals, which are not consumed, are evaluated by the CCMC for usability. If it is determined that the chemicals are viable and usable, they are declared as excess and made available for use to any organization on site.

The CCMC administers the site Excess Chemical Management Program (ECMP). Most excess chemicals are stored in a central warehouse for disbursement to the site, free of charge to the receiving organization. The CCMC keeps an inventory in a database that requestors and buyers review before processing a chemical purchase requisition. In the case where a facility's excess chemical inventory is too large, the materials are left in that facility and marketed "in place."

For additional information on the SRS CMP, contact James A. Morgan III at 803-557-4668 or james.morgan@srs.gov.