

**Chemical Safety Management
Program for Lockheed Martin
Energy Systems Operations at the
Y-12 Plant**

Environmental Compliance Department

**Environment, Safety, Health & Quality
Y-12 Plant**

**Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
Under Contract DE-AC05-84OR21400**

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CHEMICAL SAFETY MANAGEMENT PROGRAM

Introduction

Operated by Lockheed Martin Energy Systems (Energy Systems), the Department of Energy (DOE) Oak Ridge Y-12 Plant is a manufacturing facility that plays an integral role in the DOE nuclear weapons complex. Fulfilling our national security mission at the Y-12 Plant, continuing to be the cornerstone of uranium and lithium technologies for DOE, and providing our customer with solutions for challenging manufacturing needs requires usage of a variety of chemicals and chemical processes. Performing this work safely while protecting workers, the public, and the environment is our commitment. The purpose of this document is to provide a description of the essential components of chemical safety, the integration of these components into the Y-12 Integrated Safety Management System (ISMS), and the functional integration of chemical safety issues across Y-12 organizations and programs managed by Energy Systems.

Ownership

The Y-12 ISMS is built on established Environment, Safety, and Health (ES&H) programs. The line manager is the focal point through which all work activity is planned and authorized. Y-12 Plant line operations are responsible for execution of work in accordance with ES&H requirements and safe operations of their facilities and systems. As such, line management (Operations Managers, Organization Managers and Facility Managers) serves as the approval authority for the introduction of radioactive and/or hazardous materials into their facility/building. This authority may be designated, i.e., if multiple organizations conduct operations within a facility, the designated individual acts on behalf of all organizations.

To provide a focal point for concerns related to chemical safety management at Y-12, senior management has chartered the Chemical Safety Program Task Team. The team is comprised of members that have authority to address issues and responsibility to support implementation of chemical safety actions for and within their organization. Specific responsibilities of the task team are to:

- develop and obtain approval of this program description,
- integrate responsibilities regarding chemical safety between functional areas,
- clarify responsibilities regarding stewardship of the overall program,
- develop an implementation plan for any elements not currently in effect at Y-12, and
- develop interim measures for improvement of inventory tracking and control of chemicals.

Define the Scope of Work

Chemical Selection

The design of processes to prevent pollution and, where feasible, eliminate the use of toxic and hazardous materials is the initial consideration. Pollution prevention (P2) principles and methods are incorporated into Engineering Services command media such that use of hazardous materials, as well as inventories of hazardous materials, are minimized.

The Y-12 Energy Systems *Lessons Learned Program* (Y60-331) provides a tool for identifying, disseminating and utilizing positive and negative operating experiences which may be applicable to chemical selection and chemical safety management. Organization managers should consider lessons learned information as a resource to improve day-to-day operations/activities. The Energy Systems Lessons Learned web page, <http://qualserve5.y12.doe.gov/IssuesMan/lesson/LessonLogin.asp> provides a search routine, a chronological listing, as well as related links. Another tool to assist in the safe management of chemical operations is the DOE Chemical Safety Team Web site (http://tis.eh.doe.gov/web/chem_safety/). The site includes a link to summaries and reviews of chemical occurrences reported via the DOE Occurrence Reporting and Processing System.

Acquisition of Chemicals

The various organizations in the Y-12 Plant take advantage of each other's excess chemicals, turning potential waste into process materials when possible. As part of the plant-wide effort to reduce hazardous material inventories, chemical reuse is expected to become standard practice. The use of the Oak Ridge Reservation Swap Shop and the DOE Complex-Wide Material Exchange Program is encouraged. Procedure Y73-181INS, *Hazardous Material Management Program (HMMP)*, outlines the methods for proper request, receipt, generation, transfer and storage of hazardous materials for Energy Systems facilities. This instruction also applies to subcontractors as communicated through their contracts. These methods include the procurement systems, the Hazardous Material Information System (HMIS), excess material lists, and Material Safety Data Sheets (MSDSs). The HMIS is an electronic record keeping system designed to collect inventory data for use in controlling, managing, and reporting hazardous materials and selected chemicals and their MSDSs.

All hazardous materials should be procured through the Energy Systems procurement system. The HMMP manager reviews purchases through the procurement system (excluding credit card and petty cash) and ensures that purchases of materials within Energy Systems receive a quality assurance (QA) review to determine if the material has been appropriately identified as hazardous. If the material is hazardous, the QA review ensures that the following data are available.

- The correct MSDS record identification number has been assigned.
- The associated Superfund Amendments and Reauthorization Act (SARA) data is available [(1) quantitative data (volume/weight amount) and (2) storage conditions (temperature, pressure, container type)].
- The Control Area Number (which indicates building, room, and/or area where the hazardous material is to be used or stored) is assigned.

This QA review is a manual review of purchase orders and ensures that any hazardous material purchased through the Energy Systems procurement system is identified, quantified, tracked, and controlled, and appropriate health and safety data are obtained. QA reviews are not conducted on credit card and petty cash purchases. Hazardous materials are not to be purchased in this manner except in emergency situations and then only with notification to the requesting organization's hazardous material (HMIS) representative.

The HMIS requires the HMMP manager to review newly purchased materials to be added to a control area. In addition, a field has been added to HMIS to record maximum anticipated quantities (MAQs) of hazardous materials inventory limits. HMIS will generate a report which sums current inventory for comparison against the allowable quantity. These capabilities provide a tool for line organizations to ensure that their facility configuration control methods allow them to remain within their inventory in accordance with requirements established in Procedure Y74-801INS, *Hazard Identification*. However, HMIS cannot accommodate classified information and is not electronically linked to the Procurement System (SAP) such that purchase orders for hazardous materials may be readily screened against a facility's MAQ of that material on a real-time basis.

It is the responsibility of each individual who collects information on the hazardous materials to have it properly reviewed for classified information, Unclassified Controlled Nuclear Information, or other sensitive information prior to distributing it. All classified information must be handled in accordance with Document ES/PSO-1, *Manual for the Protection and Control of Classified Matter and Other Protected Information*.

Current reporting options when the hazard identification process involves classified information include:

- preparing a classified document addressing all reportable materials or
- preparing a classified addendum to an unclassified document.

A proposal (scope, schedule, and budget) to strengthen the present inventory control and tracking system by electronically linking HMIS with SAP and providing a classified version of HMIS to control and track classified

inventories will be prepared and submitted as a funding request. Implementation of this plan would be contingent on available funding.

The Operations Manager is responsible at the task/project level to ensure all activities in the facility are authorized within the safety envelope. This includes ensuring the selected or purchased chemicals brought into the facility will not exceed the MAQs of radioactive and hazardous materials identified in the facilities Hazard Identification Documents prepared in accordance with Procedure Y74-801INS, *Hazard Identification*. Providing an electronic link between HMIS and SAP to facilitate the Operations Manager review/approval of hazardous material purchases is necessary to ensure facility MAQs are not exceeded without delaying purchase orders or expending limited staff resources to conduct the necessary reviews.

Transportation and Storage

Procedure Y70-916, *On-Site Transportation Safety*, describes the packaging and safe movement of hazardous and nonhazardous materials on site, including storage and packaging incidental to transport. Procedure Y70-913, *Off-Site Transportation Safety*, establishes guidelines for commercial motor vehicle operations and the shipments of hazardous materials off site from the Y-12 Plant. This ensures compliance with applicable requirements. These compliance requirements also include those operations involving construction, maintenance, and inspection of shipping containers and all modes of transport vehicles.

At the Y-12 Plant, a variety of containers (drums, cans, dumpsters, boxes, cylinders, and portable tanks) are used to store a variety of liquid and solid raw materials. Procedure Y70-934, *Environmental Requirements for Portable Container Storage*, which deals with the storage of chemicals and petroleum-based materials, establishes requirements for regular inspections of storage areas. The predominant type of primary containment unit for oil and hazardous substances at the Y-12 Plant is the bulk storage tank. The Y-12 Plant adheres to nationally recognized codes and standards for the design, construction, inspection, and testing of tanks. In addition, Y-12 design standards for hazardous substance/oil/hazardous waste storage tanks are presented in the current revision of Y/TS-104, *Environmental Standards for Primary and Secondary Containment Systems and Transfer Stations*. The standards set forth in this document apply to projects in the design, construction, and final acceptance phases. This means many of the older bulk storage tanks do not meet the Document Y/TS-104 standards. These inadequacies are being resolved as time and money permit through tank renovation, replacement, decommissioning, and controlling the quantities of material stored in these tanks. Despite these inadequacies, the older tanks meet minimum regulatory requirements stipulated in Title 40 Code of Federal Regulations (CFR) Part 112 through the use of diking and other secondary containment systems.

Identification, Analysis, and Control of Chemical Hazards

At the Y-12 Plant, identification, analysis, and control of chemical hazards can be described at three levels: site-level, facility-level, and activity/task-level processes.

Site-Level Process

Under the Oak Ridge Operations (ORO) Chemical Safety Action Plan, chemical vulnerabilities are identified and prioritized for the Y-12 Plant in accordance with guidance from ORO. A chemical vulnerability may be defined as a chemical hazard, condition, and/or circumstance that poses or could pose an unacceptable or unknown risk that endangers the worker, the public, and/or the environment. The Chemical Safety Program Task Team is responsible for developing and maintaining a prioritized list of vulnerabilities. A preliminary list of vulnerabilities and list of open actions related to chemical safety issues has been prepared (letter from T. R. Butz, Energy Systems, to Corey A. Cruz, DOE-ORO, *DE-AC05-84OR21400, Support of the Oak Ridge Operations Chemical Safety Action Plan*, dated February 10, 2000). The reduction of unnecessary chemical hazards will be identified and tracked by the Chemical Safety Program Task Team. Team members will support line management in the development of fiscal year budgets and work plans to ensure the reduction of chemical hazards is considered in the risk-based prioritization of activities.

Procedure Y74-801INS, *Hazard Identification*, delineates requirements for preparing, approving, and revising Hazard Identification Documents which provide the basis for facility classification and subsequent Authorization

Basis (AB) documents, Emergency Management Hazards Assessments (EMHA) and Emergency Planning, and Fire Hazard Analyses. The Hazard Identification Document provides a standardized format for line management to establish, as limits, the MAQs of radioactive and hazardous materials for each facility. This process insures that chemical hazards are identified in a systematic process such that the information supports a variety of needs by support organizations (Emergency Management, Facility Safety, Fire Protection, etc.).

The *Oak Ridge Y-12 Plant Emergency Management Hazards Assessment Process* (EMPO-558) establishes requirements and standard methods for the development and maintenance of the Emergency Management Hazards Assessment process used by the lead and all event contractors at the Y-12 Plant. Energy Systems Procedure Y40-137, *Y-12 Emergency Management Hazards Assessment Process*, identifies and establishes roles and responsibilities for implementing the DOE-approved Emergency Management Hazards Assessment Program at Y-12. Using information from the Hazard Identification Document, Emergency Management Organization personnel screen the chemicals against the lowest quantity listed as a threshold quantity in 29 CFR 1910.119 or 40 CFR 68.130, or the threshold planning quantity listed in 40 CFR 355 for those chemicals listed. In addition, chemicals with reportable quantities listed in 40 CFR 302.4 and those that exceed established National Fire Protection Association rating criteria are considered. For radioactive materials, the quantities listed in 10 CFR 30.72, Schedule C, are used as screening thresholds. The result of this screening process is documented in a qualitative hazard survey for each facility. Facilities having significant quantities of hazardous materials equal to or in excess of predetermined thresholds require a quantitative EMHA.

Procedure Y74-800PD, *Facility Safety Program*, specifies requirements, roles, and responsibilities for implementing the Facility Safety Program within Energy Systems. This program applies to facility operations having the potential for significant nuclear and/or chemical hazards and is focused on the prevention and/or mitigation of accidents having potentially significant consequences. Each facility is screened to determine the facility hazard category based on the facility's inventory of material handled and other categorization criteria. Nuclear and Process Safety Management/Risk Management Program (PSM/RMP) facilities are identified in accordance with criteria in DOE-STD-1027-92, 29 CFR 1910.119, and 40 CFR 68. Detailed guidance and criteria for determining facility classifications are found in Procedure Y74-800PD. Preparation of AB documents – Safety Analysis Reports (SARs), Technical Safety Requirements, and Hazard Evaluation Reports (HERs) – is governed by Procedure Y74-802, *Authorization Basis Documents for Nuclear, PSM/RMP, and Specified Chemically Hazardous Facilities*, and Procedure Y74-803, *Authorization Basis Documents for Chemically Hazardous Facilities*.

In the establishment of safety controls, Y-12 utilizes the hierarchy outlined in DOE Order 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*:

1. Engineered controls,
2. Work practices and administrative controls that limit worker exposures, and
3. Personal protective equipment (PPE).

At Y-12, engineered barriers are used to control hazards and mitigate potential accidents. Administrative controls are used to maintain the integrity of the engineered systems (configuration management); add additional margin through the implementation of a quality assurance program; and provide the administrative structure for operations, maintenance, and ES&H programs. PPE is utilized when engineered barriers and administrative controls are either unavailable or insufficient to mitigate the hazards. An additional control is the worker who provides the link between the engineered, administrative controls and PPE and also provides the ability to analyze off-normal situations that are not covered by the first three categories of controls.

To ensure that the engineered controls are reliable, administrative controls are needed to maintain system configuration and operability. Reliability of the engineered systems is dependent on adequate operating and maintenance procedures, configuration management, and current safety documentation. The implementation of controls identified in approved SARs and HERs ensures that engineered barriers and operating parameters are maintained within the facility's safety authorization basis.

Technical procedures provide additional administrative controls. Procedures provide directions to ensure that Y-12 facilities are operated within their design basis and used to support safe operations of those facilities. It is Y-12

policy that any time work cannot be performed consistent with applicable procedures, the work shall be stopped, supervision notified, and the work shall remain stopped until the discrepancy is resolved.

Facility-Level Process

Depending on the classification of the facility (based on the types and inventories of materials used, created, and stored), a formal safety analysis may be performed leading to a SAR or HER. Energy Systems Facility Safety command media defines the process and requirements for formal safety analysis. Results of the safety analysis are documented in an appropriate AB document. The AB document identifies those systems, structures, and components important to safety and the requirements necessary to keep them operational. AB documents are approved by the Operations Manager of the facility, Energy Systems General Manager, and DOE. Procedure Y74-802, *Authorization Basis Documents for Nuclear, PSM/RMP, and Specified Chemically Hazardous Facilities*, and Procedure Y74-803, *Authorization Basis Documents for Chemically Hazardous Facilities*, delineate requirements for preparing, approving, revising, and implementing AB documents for facilities meeting classification requirements specified in Procedure Y74-800PD. The applicability of the documents is, in large measure, reflected by the titles. An important caveat is noted for Chemically Hazardous Facilities. These facilities are subject to Procedure Y74-803 and HERs will be prepared unless the responsible director specifies that a specific Chemically Hazardous Facility shall prepare a SAR, in which case, the facility is subject to Procedure Y74-802 directives. All facilities subject to Procedure Y74-802 are also subject to Procedure Y74-809, *Unreviewed Safety Question Determinations*. Procedure Y74-809 is not applicable to Chemically Hazardous Facilities that are subject to Procedure Y74-803; however, such facilities are subject to the change evaluation requirements contained in Section II.B of Procedure Y74-803.

Activity/Task-Level Process

Analysis of potential hazards associated with a task/project is the responsibility of line management, assisted by the Operational Safety Boards (OSBs). The OSB is the staff of technical, ES&H, and support personnel who assist the line manager in the evaluation, analysis, planning, and oversight of activities in the organization/facility. Procedure Y15-636, *Integrated Safety Management Program*, contains the requirements for the establishment of OSBs. Procedure Y15-012, *Hazard Identification*, identifies a variety of hazards, including chemical hazards, for specific task/projects whenever an activity is planned. This procedure incorporates a reference to Procedure Y78-002, *Identification of Employees Requiring Medical Surveillance*, and a checklist item to assess the work activity against those potential hazards that require medical surveillance. After the hazards are identified, Procedure Y73-043, *Job Hazards Analysis*, is used, as applicable, to analyze the hazards and identify preventive/mitigative controls. The Job Hazard Identification/Job Hazard Analysis process identifies the controls/barriers for potential chemical and radiological hazards, as well as standard industrial hazards such as confined space, elevated work, work requiring the use of respirators, and asbestos.

These work control processes implement the safety management functions at the work activity level. These processes ensure that with the utilization of the OSB (line management, ES&H experts, and workers) and before any activity is performed, the scope of work is understood; the associated hazards have been identified and analyzed; and controls commensurate with the hazards have been integrated, established, and remain in place throughout work execution. The work control processes ensure that planned work or changing scope of work falls within the facility's authorization agreement.

The specific controls and barriers are prescribed by the site-level ES&H procedures that contain the requirements associated with each particular hazard. Controls are integrated and implemented through engineered design of the process; administrative controls that flow into work instructions, procedures, and permits; and through required PPE.

A key component of the chemical safety program is the Energy Systems command media to implement the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Communication Standard, Procedure Y73-208INS, *Hazard Communication Program Instruction*. The program is designed to ensure that all containers are labeled, employees are provided access to MSDSs, and an effective training program is conducted for all potentially exposed employees. The program provides workers with the right-to-know the hazards and identities of the chemicals to which they are exposed in the workplace. When workers have this information, they can effectively participate in their employers' protective programs and take steps to protect themselves.

Recognizing the unique characteristics of the laboratory workplace, a laboratory is required to produce a Chemical Hygiene Plan which addresses the specific hazards found in its location, and its approach to them. Procedure Y73-220PD, *Hazardous Chemicals in Laboratories Program*, describes how procedures, equipment, and work practices will protect workers from hazardous chemicals.

Perform Work/Operations

After the scope of work is well understood, hazards have been identified and analyzed, and controls established to prevent or mitigate the hazards, Instruction Y14-001INS, *Conduct of Operations Manual*, is used to ensure that all work is authorized and established controls remain in place throughout work execution. The Operations Manager is responsible to ensure that workers are properly trained, current procedures are available, orders are posted and executed, and technical support is available as needed to ensure the safe conduct of work. The Operations Manager, assisted by the OSB, is responsible for authorizing all work that takes place in the facility, regardless of the type of work or who is performing it. When approved work is authorized by the Operations Manager through the "Plan of the Day" meeting, the work is executed according to established procedures, approved work packages, or checklists.

Work is performed by personnel who are trained and, as necessary, qualified or certified to perform their assigned task/project. Pre-job briefs are conducted and the work procedures or instructions, results of hazard analysis, and the required permits and controls necessary to the job are reviewed with the worker. Work is performed in a disciplined manner with strict adherence to procedures. The Conduct of Operations program establishes these requirements, roles, and responsibilities for work execution.

Line supervision and members of the OSB are responsible to ensure that controls remain in place during work execution. Line managers are experienced personnel who receive the necessary training and qualifications to carry out their assigned duties and responsibilities.

Employee hazard communication training stresses hazard recognition and acceptance of individual roles and responsibilities for worker safety. When abnormal conditions arise, or whenever there is a perceived threat to the safety of the worker or the public, or to the protection of the environment, all workers are trained to execute stop work authority, as governed by Procedure Y60-551, *Stop Work/Restart Authority*.

Work Place Monitoring

Industrial Hygiene (IH) Department personnel perform periodic surveys and/or exposure monitoring using recognized exposure assessment methodologies and accredited IH laboratories to evaluate the adequacy of controls and/or need for controls. Employee exposure records are maintained in accordance with 29 CFR 1910.1020. Procedure Y73-200PD, *Industrial Hygiene Program*, fully describes the IH program elements. Beryllium work at Y-12 is conducted in accordance with Procedure Y73-201PD, *Chronic Beryllium Disease Prevention Program*. This program description defines the actions and responsibilities to effectively manage beryllium and beryllium compounds, including the use of a Beryllium Work Plan, a permitting document required for beryllium activities.

The Y-12 IH Department's process for integrating hazard information/inventory, exposure assessment data, and exposure grouping into an automated system was recognized as a "benchmark" for the DOE community in the DOE-Headquarters *Independent Oversight Special Study of the Effectiveness of DOE Occupational Medical Programs*, July 1999, report. Procedure Y78-001, *Occupational Medicine Program*, establishes the program requirements and implements the requirements of DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*.

Configuration Control

Procedure Y15-187, *Integrated Safety and Change Control Process*, is the primary procedure governing configuration control. The process specified in Procedure Y15-187 refers users to other procedures to ensure existing ABs are maintained (specifically, Procedures Y74-809 and Y74-803). MAQs identified in accordance with Instruction Y74-801INS are operational limits which must not be exceeded without proper review and authorization, including appropriate review and revision of SARs, HERs and EMHAs pursuant to applicable procedures.

Waste Management

Waste management and P2 requirements are addressed in the Y-12 environmental program. Procedure Y71-903, *Y-12 Waste Management*, defines the elements of managing waste and preventing pollution for Y-12 activities. Work is assessed for impacts on waste management and P2 through the maintenance, operations, and construction work planning mechanisms and Procedure Y71-915, *National Environmental Policy Act (NEPA) Review and Compliance*. Procedures Y71-932 and Y71-933 define the requirements of hazardous waste accumulation at Y-12. Hazardous waste is transferred from Energy Systems to Bechtel Jacobs Company LLC for disposal in accordance with established contractual requirements and agreements with the DOE.

Feedback/Improvement

Assessments

Within each facility, management assessments are performed. Procedure Y60-902, *Management Assessment Program*, identifies the requirements for each Y-12 organization to implement management assessments of operations in various functional areas such as Conduct of Operations, Conduct of Maintenance, Configuration Management, Radiological Control, training, etc. Line managers are responsible for ensuring that facility management assessment programs include assessments of key ES&H requirements applicable to their facilities. A checklist of key ES&H program elements has been provided to line management for use in developing their organization's Fiscal Year 2000 Management Assessment Program schedule.

One of the most important elements of Y-12's assessment program, Y60-901PD, *Energy Systems Assessment Program Description*, is management presence in the work place. Management observation of daily activities is considered one of the primary and most effective techniques for performance of management assessments. Post-job critiques, toolbox safety meetings, assessments, and continuing training all take place where the work is performed and provide face-to-face communication and feedback from the line management to the worker.

Assessment of compliance to environmental requirements, including waste management and P2, is accomplished through independent assessments from the ES&H support organization, as well as self-assessments.

Training and Command Media

A number of training opportunities are available to ensure workers are trained and qualified to work with chemicals. Prior to performing work, an employee must meet the applicable qualification or certification program. Also, the qualification and certification programs undergo continuous review to ensure that they adequately capture the training requirements for the work presently being performed or anticipated. In addition, Y-12 Procedure Y90-027, *Conduct of Training Procedure*, identifies and assigns responsibilities for training program execution to ensure that personnel receive training commensurate with the hazard level and complexity of operations associated with their job assignments. Instruction Y14-001INS, *Conduct of Operations Manual*, requires managers and supervisors to assign activities only to those who are qualified to perform them. Personnel must possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities. A Training Working Group (TWG) coordinates and integrates training program execution across the site. The TWG is made up of the training managers from each organization who report in a matrix fashion to the Y-12 Plant Training Manager.

Environmental and Waste Management Training

40 CFR and Energy Systems procedures mandate the requirements for waste management training. Waste management training focuses on the generating, handling, and managing of hazardous waste. The target audience ranges from employees who need a general awareness of Resource Conservation and Recovery Act (RCRA) to those who certify that waste is hazardous and no radiation has been added to the waste. Environmental Management training addresses the regulatory compliance areas of:

- environmental restoration,
- environmental management,

- decontamination and decommissioning, and
- technology development activities.

Topics include the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund", Title III of the SARA, the Clean Water Act, the Clean Air Act, the National Environmental Policy Act, the Safe Drinking Water Act, and the Toxic Substances Control Act with the focus on polychlorinated biphenyl management issues, environmental compliance audits and self-assessments, and certain topics under RCRA that relate to environmental restoration, such as the Land Disposal Restrictions and the RCRA/CERCLA interface.

Hazardous Waste Operations and Emergency Response (HAZWOPER) Training

The HAZWOPER standard, 29 CFR 1910.120, mandates training for workers directly involved in hazardous waste site clean-up operations; RCRA corrective actions; RCRA treatment, storage, and disposal facilities (TSD); and emergency response to hazardous materials releases.

Training for different hazardous waste workers is as follows.

- Hazardous waste workers conducting environmental restoration activities receive a minimum of 40 hours of generic HAZWOPER training, followed by 24 hours of supervised experience at the work site.
- Low-exposure work sites (those requiring Level D PPE) receive a minimum of 24 hours of classroom training, followed by 8 hours of supervised, hands-on experience at the work site.
- RCRA TSD workers receive 24 hours of classroom training.

After meeting the initial training requirements, workers attend annual refresher training. Various union grantees, who receive grants from the National Defense Authorization Act, conduct the initial training. Instructors from both the Center for Continuing Education and the union grantees conduct the refresher training.

Transportation Hazardous Materials (Hazmat) Training

The Hazmat Employees' Standard, 49 CFR 172.700, requires training for anyone who, in the course of employment, directly affects hazardous materials in transportation safety including, but not limited to, the following: loading hazardous materials, marking containers for use in transport of hazardous materials, preparing hazardous material for shipment, and/or operating a vehicle transporting hazardous waste. Several Transportation Safety courses are provided for hazardous materials transportation training. A Hazmat employee may need all of them, part of them, or substitute modules to satisfy their Hazmat employee training requirements. Hazmat employees are grouped by levels, or categories, of training based on their job functions.

Industrial Hygiene and Health (IHH) Training

The IHH program is primarily concerned with the recognition, evaluation, and control of occupational health hazards. IHH designs its training programs to incorporate these elements to help workers recognize the potential hazards associated with their work environment. IHH programs include:

- General Employee Training (GET)

Energy Systems requires all persons employed either full- or part-time to be trained in appropriate subject areas to establish an initial, baseline knowledge of safe work practices and other pertinent information. GET assures participants adequate working knowledge to access Energy Systems sites. All employees must be aware of the safety guidelines in the IH programs. Asbestos, beryllium and Hazard Communication have been highlighted in GET.

- Hazard Communications

OSHA personnel established the Hazard Communication Standard (29 CFR 1910.1200) with a goal to reduce the risk of injury and illness caused by hazardous chemical materials in the workplace. The Hazard Communications course covers:

- the hazardous chemical materials that employees may encounter,
- the physical and health hazards of these materials, and
- how to work with these materials safely.

Additional facility-specific training is provided to address facility-specific hazards.

- Respirator

The respiratory protection training program is designed to provide employees with the knowledge, skills, and an awareness of their responsibilities to ensure that each respirator wearer is properly protected against respiratory hazards in the workplace.

Asbestos Training

The asbestos program includes awareness training for general employees and training for custodial/maintenance employees. Additionally, two new courses are now offered for persons performing repairs or maintenance activities where asbestos is likely to be disturbed. The four accredited courses are:

- Asbestos Abatement Worker (Initial),
- Asbestos Abatement Worker (Refresher),
- Supervisors of Asbestos Abatement Workers (Initial), and
- Supervisors of Asbestos Abatement Workers (Refresher).

OSHA Program Training

The OSHA training program provides an overview and utilization of OSHA subparts in 29 CFR 1910, classroom instruction and activities to assist in the identification and recognition of OSHA deficiencies in the work environment, and compliance with specific OSHA tasks.

Hazard Identification Training

A web-based training course provides awareness training on Procedure Y74-801INS, *Hazard Identification*. The goal of this course is to help operations staff identify radioactive and hazardous materials and meet requirements for Hazard Identification Documents that provide information supporting Facility Safety, Emergency Management, and Fire Protection.

Emergency Management (EM) Training

EM training programs ensure that personnel are prepared to respond to, manage, mitigate, and recover from emergencies associated with DOE operations. Y-12 EM required readings and courses are now available via the web. Energy Systems recently completed a significant milestone in our program to improve the emergency preparedness posture of Y-12. Every member of the Emergency Response Organization has completed his/her requirements for final qualification. In addition to the implementation of a formal training and qualification program for the Emergency Response Organization, the Emergency Operations Center, Technical Support Center, and Incident Commander positions have had a basic fitness-for-duty policy defined. Each cadre primary member on duty, or alternate members when they have assumed responsibility to cover a primary position, shall be capable of responding to his/her assigned duty location within one hour of notification (assuming nominal traffic conditions) and must be fit for duty.

Future Training Needs

Revisions to current command media are in process to better address chemical safety issues, including the classification of chemically hazardous facilities and configuration control of MAQs of hazardous materials. These efforts will better integrate requirements for chemical safety into the current ISM infrastructure and require additional training of personnel to ensure requirements are safely and effectively implemented.

Learning from Others

In November 1998, members of the DOE and contractor community formed the Energy Facility Contractors Group (EFCOG)/DOE Chemical Safety Interest Group to provide a forum for DOE line management and EFCOG personnel to focus attention on chemical safety vulnerabilities. That group has since been chartered under the Technical Standards Program as the Chemical Safety Topical Committee (CSTC).

The purpose of the 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 seeks 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 to ensure that CSTC activities further departmental implementation of ISM.

CSTC has recommended that line management more effectively use its chemical safety resources, such as those available through the relationships established with the chemical industry through the Center for Chemical Process Safety (CCPS) and the Chemical Manufacturers Association (CMA). DOE began its sponsorship of the CCPS in 1995 to share best management practices with industry. DOE and CMA entered into a memorandum of understanding in 1997 to establish a cooperative arrangement to exchange ES&H information.

Membership in the 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. Energy Systems supports this effort and provides team members to CSTS. 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. CSTC meetings are normally held in conjunction with generally scheduled workshops and conferences at which chemical safety engineering management and oversight personnel attendance is expected.

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