Assistant Secretary for
Environment, Safety
and Health

U.S. Department of Energy
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ES&H SYNERGY

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Year End Message From Peter N. Brush

Looking back over the past year, I am struck by the many challenges we have faced as an organization and how we have emerged from those challenges with the strength to continue our mandate to protect the environment and the safety and health of DOE workers and the public.

We have successfully shifted the Department away from a top-down, prescriptive approach to safety and health and are beginning to see this approach bear fruit with the development of WorkSmart standards. We are seeing DOE endorsement of Integrated Safety Management from the Secretary and his commitment to institutionalize it throughout the Department. Our leadership on the issue of external regulation holds promise for major achievements in 1998, and we look forward to the appointment of a new Assistant Secretary.

I know that events over the past year have shaken the sense of security we once felt as federal employees, a sense that is not likely to return. But while it has been difficult, it has demonstrated what binds us together and brings us strength as an organization— our commitment to our work and our dedication to protecting the environment and worker and public safety and health as the Department carries out its missions.

I wish each of you a happy, healthy, and safe holiday season and look forward to our working together next year.

Thanks from the *Synergy* Staff

The *Synergy* staff would like thank everyone who contributed to making the publication successful during this past year. First and foremost, we'd like to thank the Associate Editors. It would not be possible to publish the *Synergy* without your help. We'd also like to thank the Deputy Assistant Secretaries, who take time from their busy schedules to review each issue and comment on it. And, special thanks to Mary Jo Zacchero (EH-1) for her support and speedy reviews. Thanks also go to all of you who contributed articles. We know it requires effort and initiative on your part, and we appreciate your support tremendously. Most importantly, we'd like to thank our readers. You are the reason we try to improve *Synergy* with each and every issue. This issue includes a reader survey so you can let us know just how well we are doing our job. Please take a few minutes to respond so we can meet your needs and expectations in the year to come. Along with our thanks, each of us sends all of you our best wishes for a Happy Holiday Season and a healthy, happy, and prosperous New Year.

Workers and Managers Partner For Safety at DOE-VPP Workshop

Over 1,000 attendees were welcomed by John Wagoner, Manager, Richland Operations Office (RL), and Hank Hatch, President and Chief Executive Officer, Fluor Daniel Hanford (FDH), to the Department of Energy (DOE) Voluntary Protection Program (VPP) "Partnering for Safety" Workshop at the Doubletree Hotel, Pasco, WA, September 22-24, 1997. DOE employees, contractors, and subcontractors, as well as industry, other government, and union representatives explored the VPP process through 4 keynote speeches, 4 plenary panels, and 20 breakout sessions.

"One of the beauties of the VPP program [is that] you're always striving for continuous improvement," Gerard Scannell, President, National Safety Council, said in his

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(Left to right) John Wagoner, Manager, Richland Operations Office, and Tara O'Toole, former Assistant Secretary for Environment, Safety and Health, listen as Alvin Alm, Assistant Secretary for Environmental Management, answers a question from the audience during a Workshop plenary.

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Readers Survey

PLEASE take a few minutes to answer the following questions about ***SYNERGY***. Please fax your completed form to EH-72 at (301) 903-0118 or you may complete the survey online.

1. How often should the newsletter be published?
☐ The same (every 3 months) ☐ More frequently ☐ Less frequently

2. How current is the information provided in the newsletter?
☐ Current ☐ Somewhat current ☐ Out of date

3. Are the articles well written and easy to understand?
☐ Most of them ☐ Some of them ☐ None of them

4. How would you rate the newsletter?
☐ Excellent ☐ Very Good ☐ Good ☐ Needs improvement

5. How useful are the newsletter articles to your position?
☐ Very useful ☐ Somewhat useful ☐ Rarely useful

6. How do you use the newsletter to help you in your job?
☐ Worker safety and health program ☐ Training program ☐ Lessons learned program ☐ Safety and health awareness program
☐ Other _____

7. Which of the following areas would you like to see more articles published?
☐ Features ☐ Training Opportunities ☐ Field Activities ☐ Orders, Regulations, and Guidance
☐ Current Projects ☐ Resources ☐ Noteworthy Practices ☐ Future Workshops and Meetings
☐ Updates ☐ Other _____

8. Do you think the newsletter has contributed to improved safety performance at your facility?
☐ Yes ☐ No

9. How would you improve Synergy?
_____
_____
_____

10. Should DOE publish an index of newsletter article titles to help readers easily locate articles about similar subjects?
☐ Yes ☐ No

11. Are you able to electronically access the newsletter by modem or computer network access?
☐ Yes ☐ No

12. Who is your employer?
☐ Department of Energy (DOE) ☐ Other Federal agency ☐ Operating contractor to DOE ☐ State regulatory agency
☐ Subcontractor ☐ Employee Representative ☐ Occupational Safety and Health Administration
☐ Other _____

13. What is your job title?
☐ Supervisor ☐ Program Manager ☐ Occupational Safety and Health Manager
☐ Facility Manager ☐ Industrial Hygienist ☐ Engineer ☐ Health Physicist
☐ Program Analyst ☐ Technician ☐ Other _____

14. In which area do you usually work?
☐ Occupational Safety and Health ☐ Health Physics ☐ Industrial Hygiene ☐ Training
☐ Occupational Medicine ☐ Technical Support ☐ Risk Management ☐ Quality
☐ Facility Operations ☐ Other _____

15. How long have you been in your current position?
☐ Less than 1 year ☐ 1-3 years ☐ 3-5 years ☐ 5-10 years ☐ More than 10 years

16. Do you share your copy of the newsletter with colleagues?
☐ Yes ☐ No

Fossil Energy Conducts Environment, Safety, and Health Commitment Workshop

Assistant Secretary Patricia Fry Godley with participants from the Fossil Energy ES&H Commitment Workshop.

The Fossil Energy (FE) Environment, Safety, Security and Health (ESS&H) Team recently sponsored a 2-day workshop to assess FE's progress in meeting the environment, safety, and health goals and expectations expressed in the FE ES&H Commitment. More than 30 experts representing FE Headquarters and field facilities participated in the event. Patricia Fry Godley, Assistant Secretary for Fossil Energy, opened the program with welcoming remarks that focused on the need for teamwork in ES&H and underscored the importance of ES&H as the foundation for all of DOE's work. She urged participants to capitalize on the synergy of the workshop and to share successes and lesson learned.

Earlier this year, Senior Management defined the goals and objectives of the FE Office in the ESS&H Commitment. Participants in the Workshop examined progress with respect to the key concepts of this Commitment, which are as follows:

- Strive for zero injuries and incidents.
- Promote environmental protection and pollution prevention.
- Adopt the highest standards of performance.
- Ensure management and employee accountability.
- Facilitate public participation.
- Encourage worker participation.
- Implement integrated management.

In an informal atmosphere of roundtable discussions, attendees summarized progress, shared success stories, and identified barriers. Participants also identified program shortcomings and developed action items that will ensure FE's continued progress in protection of its workers, the public, and the environment.

For additional information, contact Craig Zamuda, Office of Fossil Energy, Environment, Safety, Security and Health Team at (202) 586-6367.

Fossil Energy Environment, Safety and Health Achievement Award for 1997

The Federal Energy Technology Center (FETC) is the recipient of the Fossil Energy (FE) Environment, Safety and Health Achievement Award for 1997. Assistant Secretary Patricia Fry Godley instituted the annual FE ES&H Achievement Award to recognize contributions that have significantly increased efficiency, reduced costs, or markedly improved ES&H programs within the Office of FE Headquarters and field sites. The FETC was honored for their Inactive Waste Sites Management Program (IWSMP), which developed a cost-effective, risk-based approach for performing contract closeouts in an environmentally sound manner. The IWSMP was among the many programs nominated by the FE field organizations and was selected on the basis of several factors, including cost savings, originality, and potential application at other FE and DOE sites.

At an award ceremony held on October 23, 1997, Assistant Secretary Godley presented the Achievement Award to Joe Martin and Roy Spears, who represented the FETC team. The team also included Joe Maury, Trent Hsiao, Richard Harrington, and John Quaranta. Team members received certificates of merit, a monetary award, and inscribed coffee mugs. They also accepted a plaque on behalf of the FETC. Assistant Secretary Godley received an Achievement Award Headquarters Plaque that bears the names of award winners and is on permanent display in her front office.

For addition information, contact Craig Zamuda, Office of Fossil Energy, Environment, Safety, Security and Health Team at (202)-586-6367.

Joe Martin and Roy Spears, representing the FETC Team, accept the FE ES&H Achievement Award for 1997 from Assistant Secretary Patricia Fry Godley.

1998 Compliance Deadline for Underground Storage Tank Systems

Environmental Protection Agency (EPA) regulations specify that by December 22, 1998, all underground petroleum and hazardous substance underground storage tank (UST) systems that were installed before December 22, 1988, must meet certain spill, overfill, and corrosion protection requirements. In addition, some UST systems must meet more stringent leak-detection requirements. Part 280 of Title 40 of the Code of Federal regulations details standards for these "existing" petroleum and hazardous substance UST systems.

Need for UST Regulations

Federal regulations govern roughly 1.1 million active USTs. About 96 percent of these contain petroleum products, including used oil. Fewer than 1 percent contain hazardous materials, and about 2 percent are empty. Petroleum or hazardous substance releases from USTs can occur during tank filling. They can also occur from leaks in tanks or piping that result from corrosion, structural failure, or faulty installation. As of September 1996, EPA has reported nearly 318,000 confirmed releases at Federally regulated USTs. More are expected. These releases can contaminate soil and groundwater and cause fires or explosions.

USTs Subject to Upgrading Requirements

EPA regulations define an existing UST system as one that was installed before December 22, 1988, and systems installed after December 22, 1998, as "new" UST systems. A petroleum UST is defined as one that contains petroleum or a mixture of petroleum with very small quantities of other regulated substances.[1] Petroleum USTs typically contain motor fuels, distillate fuel oils, lubricants, petroleum solvents, and used oils. A hazardous substance UST contains a hazardous substance defined in 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. However, hazardous substance USTs do not include hazardous wastes regulated under Subtitle C of RCRA; therefore, USTs containing such hazardous wastes are exempt from the upgrading requirements. Also exempt are tanks containing radioactive materials regulated under the Atomic Energy Act of 1954. Thus, Hanford tanks containing hazardous and radioactive wastes are not subject to the upgrading requirements described in 40 CFR 280.

Upgrading Requirements

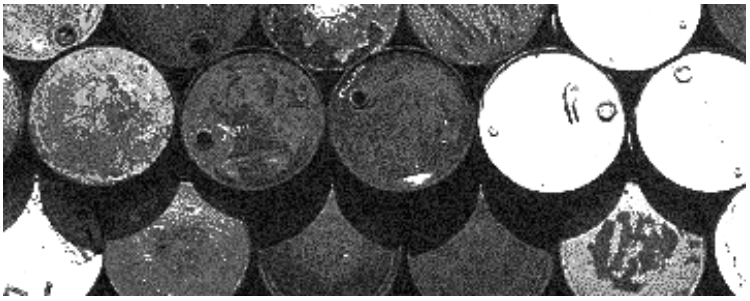
By December 22, 1998, all existing petroleum and hazardous substance USTs must be equipped with spill protection, overfill protection, and corrosion protection devices. Owners/operators have the following three choices for complying with these requirements:

- Add spill, overfill, and corrosion protection;
- Close the existing UST; and,
- Replace the closed existing UST with a new UST. (When new USTs are installed, they must have spill, overfill, and corrosion protection, as well as leak-detection devices.)

Summary of Basic Requirements

The following paragraphs summarize the basic upgrading requirements for existing USTs.

Spill Protection—Spills cause releases at many UST sites. Generally, spills occur at the fill pipe when a delivery truck hose is disconnected. Such spills are usually small, but repeated small releases can lead to significant environmental problems. The regulations require that by December 22, 1998, existing tanks must have catchment basins to contain spills from delivery hoses 280.21(d) and 280.20(c)).



Overfill Protection—Overfilling a tank can lead to large releases at the fill pipe and through loose fittings on the top of the tank. Existing USTs must have overfill protection devices by December 22, 1998 that will do *one* of the following:

- Automatically shut off flow into the tank when the tank is no more than 95 percent full;
- Alert the operator when the tank is no more than 90 percent full;
- Restrict for 30 minutes prior to overfilling, then alert the operator 1 minute prior to overfilling or,
- Automatically shut off flow so that none of the fittings on the top of the tank are exposed to product (280.21(d) and 280.20(c)).

Corrosion Protection—Corrosion occurs when bare metal, soil, and moisture combine to produce an underground electric current that destroys hard metal. Because unprotected steel USTs can corrode and release product through corrosion holes, Federal regulations require owners/operators to install corrosion protection in existing tanks by December 22, 1998. Existing tanks may already meet the corrosion protection requirements if *one* of the following performance standards is satisfied.

- The tank and piping are made entirely of noncorrodible material, such as fiberglass;
- The tank and piping are made of steel having corrosion-resistant coating and having cathodic protection; or,
- The tank is made of steel clad with a thick layer of noncorrodible material.

Because it is impractical to coat or clad unprotected steel USTs, owners/operators of such tanks must choose *one* of the three following methods to provide corrosion protection.

- Add cathodic protection;
- Add interior lining to the tank; or,
- Combine cathodic protection and interior lining ('280.21(b)).

The regulations also require that by December 22, 1998, *existing piping* meet *one* of the following characteristics:

- Uncoated steel piping has cathodic protection;
- Steel piping has corrosion-resistant coating and cathodic protection; or,
- Piping is made of, or enclosed in, noncorrodible material, such as fiberglass (280.21(c)).

Additional Requirement for Hazardous Substance UST Systems

Besides the spill, overfill, and corrosion protection upgrades required of all existing petroleum and hazardous substance USTs, hazardous substance USTs must meet additional leak-detection requirements by December 22,1998, as discussed below.

Background—The UST regulations are intended in part to ensure that releases or leaks from USTs are discovered before contamination can spread. All petroleum and hazardous substance USTs must provide for leak detection. New USTs (those installed after December 22, 1998) must have leak-detection systems when they are installed. EPA has found that hazardous substances that have leaked into the soil are more difficult to detect and to clean up than petroleum leaks. Consequently, leak-detection requirements for new hazardous substance USTs are more stringent than those for new petroleum USTs. Thus, while new petroleum

USTs can meet leak-detection requirements by selecting one of several specified leak-detection methods,[2] new hazardous substance USTs must be equipped with secondary containment systems and monitoring devices. By December 22, 1998, all *existing* hazardous substance tanks must meet the more stringent leak-detection requirements for new hazardous substance USTs.

New Requirements for Existing Hazardous Substance USTs—EPA regulations require that by December 22, 1998, existing hazardous substance UST systems must have secondary containment systems ('280.42). Secondary containment is created by placing a barrier so that any leaks are contained within the space between the barrier and the tank and piping. The system may consist of double-walled tanks or external liners (including vaults) and must be equipped with monitoring to detect leaks.

Closing USTs

If an existing petroleum or hazardous substance UST system is not upgraded by December 22, 1998, it must be properly closed by that date. After the existing system has been closed, it may be replaced by installing a new UST. When closing or replacing an UST, the regulations require the following:

- Notification of the regulatory authority at least 30 days before the UST is removed from service for closure or replacement;
- Determination of whether releases from the UST have contaminated the surrounding environment. If contamination is found, corrective action will be required; and,
- Emptying the tank of liquids, dangerous vapor levels, and accumulated sludge by trained personnel following standard safety procedures. Once properly emptied, the tank can be removed. It can also be left in the ground if it is filled with a chemically inactive solid; however, some states may require removal of closed USTs.

Importance of Upgrading Now

As December 1998 approaches, increased demand to upgrade existing USTs may lead to higher charges for contractors and supplies. Upgrades can take several months; missing the 1998 deadline can result in citations and fines. Finally, upgrading now will help prevent leaks that could lead to costly mandatory cleanups.

Further details on federal upgrading requirements are found in 40 CFR 280, Subparts A, B, C, and D. Owners/operators should also contact their state regulatory authorities for additional requirements and deadlines. For additional information, contact Gerald C. DiCerbo, RCRA/CERCLA Division, Office of Environmental Policy and Assistance at (202) 586-5047, fax (202) 586-3915 or e-mail *(gerald.dicerbo@eh.doe.gov)*.

References

1. U.S. Code of Federal Regulations, Title 40, Part 280.

2. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Cleaning Up the Nations Waste Sites: Markets and Technology Trends,* EPA 542-R-96-05, April 1997.

3. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Don't Wait Until 1998, Spill, Overfill, and Corrosion Protection for Underground Storage Tanks*, EPA 510-B-94-002, April 1994.

4. U.S. Department of Energy, Office of Environmental Policy and Assistance, "*Regulated Underground Storage Tanks*, DOE/EH-2231/004/0191.

[1] Regulated substances are petroleum and petroleum-based substances derived from crude oil and substances defined in 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act, but do not include substances regulated as hazardous wastes under Subtitle C of RCRA.

[2] These methods include secondary containment and interstitial monitoring, automatic tank gauging systems, vapor monitoring, groundwater monitoring, statistical inventory reconciliation, manual tank gauging, and tank tightness testing and inventory control.

New Hazardous Substance Management Tools

Managing hazardous substances at Department facilities continues to be a complicated and difficult process. Having current, accurate, and detailed information about the selection, use, and fate of hazardous substances has become necessary when preparing environmental reports, administering personnel training, implementing pollution prevention programs, and maintaining compliance. The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), the Resource Conservation and Recovery Act of 1976 (RCRA), and the Hazardous Communication Standard (HazCom) all have reporting requirements and procedures that must be followed.

Managing the activities needed to meet these requirements presents facility managers with new challenges, and a number of automated tools have been developed to support this effort. One such management tool is the Hazardous Substance Management System (HSMS).

HSMS provides centralized tracking and control of hazardous substances from initial procurement to final disposition. Users can record all procurements of hazardous materials in HSMS and then use this information to generate EPCRA Tier I and Tier II (i.e., EPCRA Sections 311 and 312) reports. HSMS will also automatically generate billing reports for internal use. In addition, Material Safety Data Sheets, which are required by HazCom, can be recorded and stored within HSMS. HSMS also provides information regarding users of hazardous materials. Safety and environmental personnel must authorize the use of specific hazardous materials for each employee that uses them. HSMS records this information and alerts managers when unauthorized users request material. Authorized users can request hazardous materials for immediate needs from a central location, where personnel use HSMS to record materials transactions. Based on the identified use of the material, HSMS estimates eventual releases to the environment, which it uses to generate EPCRA Toxic Release Inventory (i.e., EPCRA Section 313) reports. Also, HSMS also tracks sources of all hazardous wastes generated and provides automated generation of hazardous waste manifests and annual RCRA reports.

In the late 1980s, the Department of Defense (DOD) recognized that its facilities were using overlapping, incompatible, and inefficient management systems. To consolidate these systems and provide all facilities with access to suitable and well-supported hazardous substance management systems, the Defense Environmental Security Corporate Information Management (DESCIM) office initiated a survey of existing systems. They identified and reviewed more than 50 automated tools and selected one system, based on its capabilities to support a wide range of hazardous substance management programs. This system was revised, enhanced, and renamed the HSMS. Since then, DOD has designated the HSMS as the only approved hazardous substance management and reporting system for all military departments and DOD components. The use of HSMS is accelerating rapidly among DOD components, and DESCIM has programmed continued improvements and updates into HSMS well into the next century.

Managers can use HSMS to track and evaluate all hazardous material requests, disbursements, uses, and returns. This allows facilities to more effectively control storage, reuse, and disposal of these materials as hazardous waste. Thus, by using HSMS, site managers gain information needed for effective hazardous materials management, pollution prevention programs, hazardous waste management, safety programs, and environmental reporting.

For more information on HSMS, contact Jerry DiCerbo at (202) 586-5047; fax (202) 586-3915; e-mail at *gerald.dicerbo@eh.doe.gov;* or Jane Powers at 586-7301; fax (202) 586-3915, or e-mail at *jane.powers@eh.doe.gov*.

Office of Environmental Management Incorporates Pollution Prevention Techniques Into Planning Activities With Cost-Effective Results

In recent years, the Department has made significant inroads in reducing waste generation by incorporating pollution prevention ("P-square") techniques into many activities, including National Environmental Policy Act (NEPA) implementation, facilities management and design, integrated safety management, contracts, and environmental management systems. The Office of Environmental Management (EM) found that considering pollution prevention as an integral piece of the puzzle early-on—in program reviews, work planning, project scoping, or contracting negotiations—can have widespread, cost-effective paybacks for many years in the future. EM believes that with a comprehensive environmental management systems approach, DOE sites can effectively extend their pollution prevention program to provide the infrastructure necessary to recognize and capitalize on its pollution prevention opportunities.

Using pollution prevention techniques during the design, planning, and review process can result in less waste generation, fewer toxic emissions, and reduced potential for worker or public exposure to toxic, hazardous, or radioactive materials. EM recently directed its sites to incorporate pollution prevention into the NEPA process to allow pollution prevention opportunities to be identified at critical decision points. Sites were provided with a comprehensive pollution prevention checklist NEPA document preparers could use to facilitate the preparation process, thereby reducing the cost of revisions after the initial NEPA review. The EM checklist is based on the one currently used by Environmental Protection Agency (EPA) NEPA reviewers.

Incorporating pollution prevention techniques into NEPA reviews is but one aspect using "up-front" options for pollution prevention. The earlier that pollution prevention methods are considered, the more opportunities there are to effect basic changes that build in options to reduce waste during initial project design. During project design, for example, cost-effective pollution prevention techniques, such as source reduction design, modifications, procedural changes, and recycling should be considered because as much as 70 percent of the life cycle cost is determined in the design phase. The Office of Facilities Management and EM collaborated to develop a systematic methodology to include pollution prevention in the design of new (or modified) facility systems. This "pollution prevention by design" methodology, known as P2DA, includes a number of helpful tools, including those listed below.

- *P2DA Training Course*—familiarizes design engineers with the concepts of pollution prevention and allows hands-on demonstration using the participant's own design project to show how design can affect the generation of waste throughout the life of the facility.

- *P2DA Guidebook*—takes the reader step-by-step through the design assessment process; the guide can be used to help conduct a P2DA on individual design projects.

- *P2-EDGE Software Program*—includes over 250 recommendations for incorporating pollution prevention strategies. Each of the strategies, called an "opportunity," is supplemented with examples, references, photos, and additional data to help the user evaluate applicability and potential benefits to specific design projects. The user can edit, search, and merge pollution prevention opportunities in the database, and the software generates a report on each project to track pollution prevention efforts through all design phases. P2-EDGE is designed to be used with the *Good Practice Guide for Waste Minimization/Pollution Prevention* (GPG-FM-025).

- *P2 by Design Home Page*—widely disseminates pollution prevention information on the Internet and makes all of the *P2 by Design* tools available to individual users. The home page also provides two-way communication through the e-mail-linked comment boxes.

- *P2DTrack Database*—contains over 700 individual pollution prevention contacts that have shown interest in the *P2 by Design* project and tracks dissemination of information and tools. These contacts could be used to identify potential advocates within the Department that can aid in site-level implementation.

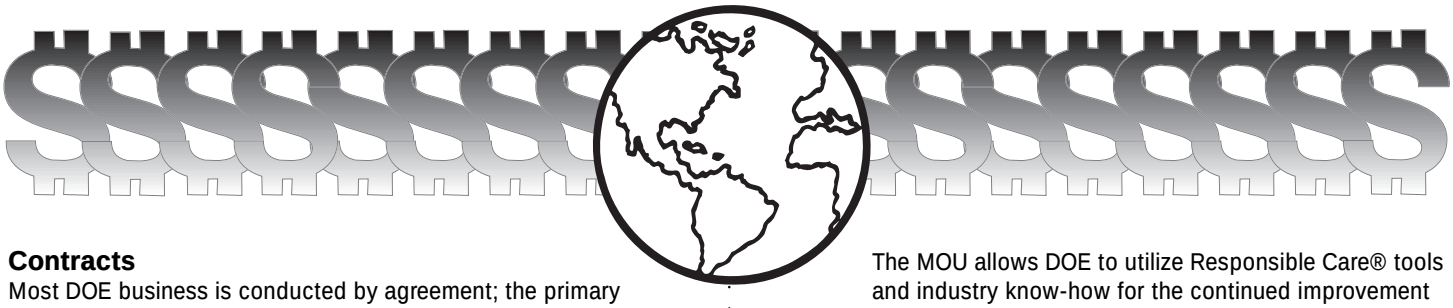
In addition to the P2DA methodology, there are several other environmental management tools available to facilitate "up-front" efforts to reduce waste through a comprehensive systems approach to waste generation throughout the Department. These include integrated safety management (ISM), contract negotiation, enhanced work planning (EWP), Responsible Care®, and environmental management systems (EMS).

Integrated Safety Management

ISM is the process of integrating all environment, safety, and health (ES&H) elements into one ES&H system. ISM fully includes and integrates ES&H into the complete work process—it is an integral part of the whole rather than a standalone program that focuses on ES&H requirements and programs for their own sake.

ISM offers unique opportunities to consider changing activities that would generate waste or necessitate the use of protective measures; thereby, creating opportunities for reducing the overall cost of the program. For example, simply reducing the use of a hazardous material associated with a particular project can remove the need for certain personal protection equipment, training on using the equipment or in handling the hazardous material, and medical exams to document possible exposure, as well the need for hazardous waste management and waste treatment or disposal.

Some sites have incorporated ES&H assessments at each organizational level—from the work defined in the site-wide mission tasks (e.g., Environmental Impact Statement) to the processes at an individual facility (e.g., safety analysis report) to individual operational or maintenance items within a facility (e.g., process hazard analysis; radiological work permit). Hazards analyzed include nuclear and chemical hazards, as well as common industrial hazards. These analyses should be balanced to the complexity of the work as well as the significance of the risk.



Contracts

Most DOE business is conducted by agreement; the primary agents of such agreement being the contracts negotiated between the Department and its contractors. The DOE Acquisition Regulation (970.5204-2) requires all Management and Operating contractors to integrate pollution prevention and waste minimization along with other ES&H concerns into work planning and execution.

Incorporating pollution prevention into the contracting processes will help reduce the generation of waste by emphasizing the accountability of the entire workforce. A variety of approaches can be used to incorporate pollution prevention principles into contracts. Savannah River Operations Office used an award fee incentive for pollution prevention that saved nearly $18 million in reduced waste generation costs for FY 1996. Other sites across the complex are also embracing pollution prevention incentives as they can benefit both DOE's and the contractor's bottom lines.

Enhanced Work Planning

EWP is a process used to evaluate and improve the programs by which work is identified, planned, approved, controlled, and executed. The EWP graded approach to work management, based on risk and complexity, can assist sites in developing criteria for performing routine tasks better, cheaper, faster, and safer than before. EWP combines a diversity of individual skills, expertise, and talents to form multidisciplinary work management teams that institute changes to address program productivity, operations, and potential safety issues. EWP involves line management, workers, and functional experts in the effort to minimize duplication and maximize resource utilization.

Studies by a site-wide EWP waste minimization team at Savannah River, for example, found that reducing the size of contamination and high-contamination areas could avoid the expenditure of $50 million over 7 years, representing a 40 to 1 return on investment. An analysis of 114 of these areas showed a potential $18.3 million annual savings by reducing their size. Rolling back the boundaries of radiologically contaminated areas (1) eliminates a hazard and source of future radioactive, hazardous, and mixed waste that requires treatment, storage, or disposal; (2) decreases worker "donning and doffing" time for protective equipment; and, (3) decreases radiological exposures of workers, consistent with as-low-as-reasonably-achievable (ALARA) principles.

Responsible Care®

DOE and the Chemical Manufacturers Association (CMA) signed a unique Memorandum of Understanding (MOU) to improve ES&H performance, including pollution prevention, on August 1, 1996. The MOU centers on CMA's Responsible Care® program, an ES&H performance improvement initiative that the U.S. chemical industry has used for the past 7 years and is now used internationally by chemical companies in more than three dozen countries. At the heart of Responsible Care® are six "Codes of Management Practices," written by industry experts as performance-oriented goals for achieving best practices in employee health and safety, process safety, pollution prevention, distribution, community awareness and emergency response, and product stewardship.

The MOU allows DOE to utilize Responsible Care® tools and industry know-how for the continued improvement of Department ES&H programs

The chemical industry has made great strides in pollution prevention. CMA member companies have reduced their Toxic Release Inventory (TRI) by 70 percent since 1988, when industry-wide toxic release information was first collected. In 1995, DOE was recognized by *Chemical Engineering* and *Environmental Engineering World* magazines as an "Environmental Champion" for reducing the use of TRI chemicals by 95 percent since 1988. DOE also received one of Vice President Gore's "HAMMER" Awards for its success in TRI reduction

Environmental Management Systems

Many DOE sites use an EMS to ensure compliance, prevent pollution and involve the public in environmental impact issues. Adopting an EMS necessitates the demonstration of top level management commitment to pollution prevention and can help demonstrate that DOE's mission and site-specific business management practices are compatible with environmental stewardship. An effective EMS fosters public confidence by demonstrating that goals and management decisions are based upon a thorough and comprehensive assessment of the adverse environmental impacts associated with the operation of a given DOE site. An EMS also contains elements of community outreach and stakeholder participation by encouraging interactive communication.

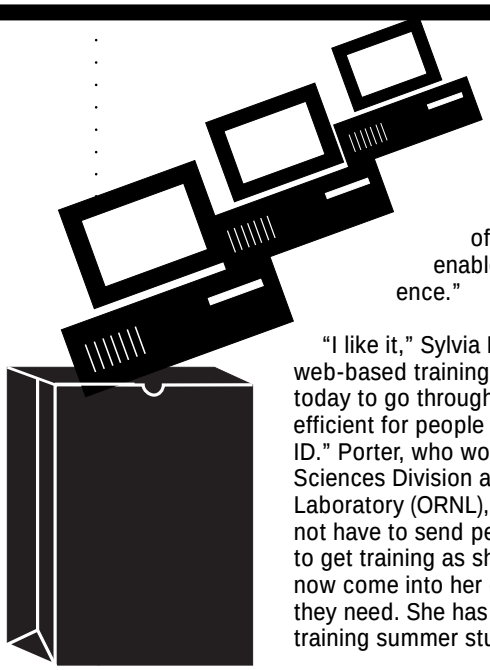
Application of an internationally recognized EMS standard, such as International Standards Organization 14000 (series), can also help DOE sites show that they are willing to adopt the best practices of private industry. ISO 14000 provides an archetype management process that can achieve environmental goals while reducing the costs of operating agency-specific business "lines." Furthermore, by tying pollution prevention into an EMS such as ISO 14000, DOE sites can demonstrate that the agency is meeting its voluntary obligation under the EPA Code of Environmental Management Principles.

By emphasizing pollution prevention as a basic foundation, an EMS can raise the profile of pollution prevention and help ensure that the "pollution prevention ethic" is ingrained throughout the business management system of a given organization. This is a key factor in driving the integration of pollution prevention into the actual management of the business and giving it a priority status on par with management commitment to regulatory compliance and product quality.

For more information on the P2DA methodology or other pollution prevention techniques, contact Jeff Short, Office of Environmental Mangement, Waste Minimization Division, at (301) 903-1387 or e-mail (*jeff.short@em.doe.gov*).

Lockheed-Martin Energy Systems/Energy Research Center for Continuing Education Offers A Virtual Shopping Mall for Web-Based Training Products

Employees at Lockheed Martin Energy Systems and Energy Research (LMES and LMER) are using online, interactive training modules with graphics, electronic study guides, and automated "testouts" for compliance requirements at their desktops. These modules, available on the LMES/LMER internal web server, are available to company employees in Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. The training modules are "designed for self-study, with quick links to study guides or the tests when the learner is ready," says Susan Alexander, the company's Center for Continuing Education (CCE) director. "Learners have control of the training and they can use the web-based products anywhere there is an ethernet connection." It's easy to access and use, too. Employees just go to the CCE Home Page, and follow the prompts. There is also a CCE help line at (423) 241-4CCE that provides employees with one-on-one help if needed.



Steve Giles, leader of the CCE Institute of Compliance Training is responsible for implementing these advances. He calls the CCE Home Page "a virtual shopping mall for training products and services." In addition to training and testing, employees can access their training records and requirements, educational assistance forms and guidelines, the entire CCE course catalog and schedule, and many other products and services.

The CCE group has strong expertise in applying technology to reducing training costs and increasing training effectiveness. This has always been the Center's philosophy and goal. The Performance Technology Services (PTS) department, which works in Giles' CCE Institute, was responsible for offering its first performance support system at Y-12 in 1991. Since that time, over 40 electronic products have been developed for the Oak Ridge complex. The list of current customers has expanded to include not only LMES and LMER, but also a few other DOE sites and Lockheed Martin affiliates.

In addition to the web-based training, solutions to job performance problems using computer-based instruction and help from expert system advisors are also provided. With the web offerings, employees don't even have to go to a learning center or a centrally located work station. They can work through a training module or take tests from their desktops. CCE instructional designer Melissa Portwood points out that "Web-based training is an easy, cost-effective, and fairly fast way to ensure that new concepts or new procedures are well understood."

Recordkeeping is all automated with the web-based system, too. In addition to the information that goes into the Training Management System (TMS), the records stored include the questions the participants received from the test bank, the participants' responses to those questions, and the correct answers to the questions. The questions are randomly generated to ensure that participants do not get the same tests. And, the need for scheduling and registration have been completely eliminated.

Recently a new feature was added to the CCE courses that allows selected division training officers to serve as proctors for individuals who do not have user IDs for the company system. "Although we were very pleased with the initial system, we were unable to service a portion of our employees and badged visitors," says Giles. "The proctored system, which has met the approval of computer security, and the use of selected division training officers as certified proctors enables us to reach the total audience."

"I like it," Sylvia Porter says of the proctored web-based training. "I have a person coming in today to go through it. It is definitely more cost-efficient for people who are not going to get a user ID." Porter, who works in the Environmental Sciences Division at the Oak Ridge National Laboratory (ORNL), also likes the fact that she does not have to send people away to another location to get training as she did in the past. Employees now come into her office to go through the training they need. She has found it particularly helpful for training summer students and visitors.

New courses and testouts are being added all the time. A number of new courses have gone up on the LMES/LMER internal web this year. These include (1) General Employee Training, (2) General Awareness Training for No-Rad Added Program, (3) Hearing Conservation, (4) Hazardous Waste Characterization, (5) Satellite Accumulation Area, and (6) 90-Day Accumulation Area. In addition, seven new testouts have recently gone up on the web: General Employee Training, Nuclear Criticality Safety Fundamentals, Hearing Conservation, Beryllium Safe Handling, General Hazard Communication, Y-12 Reproductive Hazards, and Handling Classified Documents. Study guides for General Employee Training and Worker Training are also available on the Home Page, and the Rad Worker course is currently being prepared for release.

Often the learner can demonstrate mastery of the course material by using only the testout feature, which is also offered on and accessed from the CCE Home Page. In the case of some courses, it is required by law that employees be trained every year. However, Giles believes it is de-motivating to make people sit through a class year after year when they already know the material. Working with CCE's Institute of Compliance Training, he discovered an OSHA interpretation stating that if employees can demonstrate proficiency, the proficiency demonstration (testout) meets the refresher training requirement for many courses. This led to hard copy testouts, and then to testouts on the web. Judy Trimble in Human Resources at ORNL applauds the fact that new employees now have a choice of going through the General Employee Training in the classroom or taking the course and test on the web. She says that it treats them professionally.

Donna Stokes, a key CCE staff member involved in the development of these new web-based products and services, says that their staff now has the instructional designers and programmers with experience and capability to develop courses for any organization in the Department of Energy complex. If you are interested in finding out more about these web-based training programs, contact Susan Alexander at (423) 574-4022 or e-mail (*yeo@ornl.gov*) or Steve Giles at (423) 576-7810; e-mail *shj@ornl.gov*.

Computerized Accident/Incident Reporting System Redesigned

The Computerized Accident/Incident Reporting System (CAIRS) has been redesigned. The initial phase of the new CAIRS is scheduled for release in January 1998. This Office of Environment, Safety and Health (EH) information system is used to collect and analyze DOE and DOE contractor reports of injuries, illnesses, and other accidents that occur during DOE operations.

Over the past year, the development teams have worked to redesign the system to include major improvements in accessing, reporting, and analyzing CAIRS data. This initial release of the new *CAIRS* includes an array of enhancements and new features. Other enhancements are ongoing, and the redesign effort is expected to be completed during fiscal year 1998. Some of the features included in this release improve access to data in the following ways:

- Easier to Use Interface—Those familiar with Macintosh or Microsoft Windows will find the new interface both familiar and user friendly.
- Platform Independent Interface—Any browser that supports features found in Netscape 3.0, such as tables, Secure Socket Layer (SSL-2) protocol, and Active Server Pages (ASP), can be used to access the CAIRS interface.
- Improved Connectivity—Options for accessing CAIRS include modem dial-up, either through an Ethernet connection from the DOE Business Network or through an Internet connection.
- More Flexible Search and Report Capabilities— Options available include a basic level (characterized by the Standard Reports and Logs modules), an intermediate level (characterized by the Reports module) and an advanced level (characterized by the Search and Distribution module).

CAIRS reporting is managed by the Office of Occupational Safety and Health Policy, with hardware and software support from the Office of Information Management. Access to the system is available free of charge to the staff of all DOE and DOE contractor organizations for use in conducting official business. For additional information, or if you are interested in registering to become a CAIRS user, contact the ES&H Helpline at (800) 473-4375.

Environmental Protection Agency Releases Guidance On Hazardous Waste Facility Siting

The Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response (OSW) has released a new guidance document entitled *Sensitive Environments and the Siting of Hazardous Waste Management Facilities* (EPA 530-K-97-003/May 1997), to assist State and regional siting and permitting planners in determining what areas will be best suited for hazardous waste management facilities (HWMF). Current Resource Conservation and Recovery Act (RCRA) regulation prohibits siting of HWMFs within 200 feet of a fault that had displacement in Holocene time, and within a 100-year floodplain without special design considerations [40 CFR 264.18]. In addition, the placement of any non-containerized or bulk liquid hazardous waste in any salt dome and bed formations and underground mines is also prohibited [40 CFR 264.18]. This guidance augments the current regulations by providing a technical discussion of " sensitive types of environments that pose special challenges to the siting, expansion, and operation of RCRA hazardous waste management facilities." Future EPA guidance will address population issues and social concerns about the appropriateness of a hazardous waste facility's location.

EPA recommends that HWMFs not be sited in environmentally sensitive areas. Sensitive environments include floodplains, wetlands, groundwater, earthquake zones, karst terrain, unstable terrain, unfavorable weather conditions, and incompatible land use. These types of environments are considered sensitive locations because "their physical conditions may be disturbed or permanently damaged by hazardous waste contamination" or because these areas are "physically unstable and may change so greatly that they can cause the release of hazardous waste or complicate its clean up." The following table provides a summary of the potential environmental consequences of siting a facility in a sensitive environment as well as EPA recommendations concerning siting in each area.

Summary of Potential Environmental Consequences of Siting a Facility in a Sensitive Environment and EPA Recommendations Concerning Siting in Each Area

Sensitive Environment	Environmental Consequences	EPA's Recommendations
Floodplains	Waste ponds may wash out. Tanks may be moved from foundations.	Avoid building structures in floodplains.
Wetlands	Fish and wildlife are threatened. Spills are spread to groundwater and surface waters faster. Cleanup is difficult, costly, and sometimes more damaging.	No construction on wetlands. For facilities near wetland, there should be an intensive study of how possible releases would affect the wetlands.
Ground Water	Contaminants are transported quickly. Cleanup is costly and difficult.	No construction on areas of high-value ground water or areas of complex hydrogeology. EPA requires hydrological studies for facilities constructed near such areas.
Earthquake Zones	Ground fractures and shaking damage structures, leading to spills.	40 CFR 264.18 bans construction of HWMFs in areas within 200 feet of a Holocene fault. Additional design features recommended for other seismic areas.
Karst Terrain	Sinkholes may develop, leading to structure failure and spills.	Avoid building in active karst areas. If built, there should be site characterization studies to determine ground stability.
Unstable Terrain	Soil movement can shift and damage structures causing waste releases.	Conduct geotechnical analysis, and, where appropriate special design and engineering.
Unfavorable Weather Conditions within 200 feet of a fault	Stagnant air concentrates pollutants. Mountains may block pollutant dispersion.	Avoid locating where unfavorable weather conditions exist. RCRA and the Clean Air Act require special permits to regulate emissions.
Incompatible Land Use	Sensitive populations such as the elderly, children, and the sick are more affected by toxic exposure.	Avoid locations near sensitive populations or densely populated areas.

For further information on this guidance, or issues related to this guidance, contact EPA's RCRA Hotline at 1-800-424-9349, or Jerry Coalgate of the Office of Environmental Policy and Assistance (EH-413) at (202) 586-6075, fax at (202) 586-3915, or e-mail *jerry.coalgate@hq.doe.gov.*

keynote address, *DOE and VPP—An Industry Perspective,* on Tuesday, September 23. Through his previous positions as Assistant Secretary of Labor for the Occupational Safety and Health Administration (OSHA) and Vice President for Johnson & Johnson, Scannell explained that he and a colleague brought the ingredients together to formulate the VPP program. He emphasized that "VPP is near and dear to my heart . . . Safety is everyone's business . . . Consider safety a value, not a priority; because priorities change . . . values stand the test of time."

Gerard F. Scannell, President, National Safety Council, presents the keynote address on Tuesday.

Tara O'Toole, former Assistant Secretary for Environment, Safety and Health and Alvin Alm, Assistant Secretary for Environmental Management, respectively, delivered keynote addresses on Wednesday. "VPP teaches that safety can, and must be, managed," said O'Toole. "Safety as conceived in VPP does not compete with productivity; it drives it," she continued. In her last address before leaving the Department, O'Toole encouraged manager and worker participation and engagement in the pursuit of safety excellence through VPP.

During his presentation, Alm stressed that "VPP provides a common goal to strive for. It is a very important commitment." He maintained that managers have a moral responsibility toward worker safety. "Good safety is good business. Safety is free. It improves productivity. It must be integrated into the work," stated Alm.

The following four plenary panel presentations generated many audience questions:

- *Worker Involvement—Partnering for Success,* discussed by Hanford union representatives.
- *Importance of Safety Management in Transition to External Regulation,* discussed by management representatives from RL, OSHA, Washington Industrial Safety and Health Administration, and DOE Headquarters (HQ).
- *Achieving VPP at Hanford,* discussed by senior managers from FDH, Numatec Hanford Corp., DynCorp Tri-Cities Services, Inc., Lockheed Martin Hanford Corp., Babcock & Wilcox Hanford Corp., Duke Engineering & Services of Hanford, Inc., and Waste Management Federal Services of Hanford, Inc.
- *Importance of Partnership to VPP,* discussed by representatives from a union, industry, OSHA, and a DOE Star site.

Participants were offered 20 diverse, interactive breakout sessions on safety culture; employee involvement and empowerment; the DOE VPP onsite review process; line management issues; and contracts. Presenters and moderators represented the Hanford site, Headquarters, OSHA and DOE Star sites, industry, unions, and field offices. In addition to the informative breakout sessions, VPP exhibits from FDH, DynCorp Tri-Cities Services, Inc., Bechtel Hanford Inc., Lockheed Martin Hanford Corp., HAMMER, Lockheed Martin Idaho Technologies, Savannah River, and DOE HQ were displayed throughout the hotel lobby.

Joe Dear, Chief of Staff to the Governor of Washington, and former Assistant Secretary for Occupational Safety and Health, Department of Labor, was the keynote dinner speaker on Tuesday evening. "VPP is an extraordinary approach to protecting worker health and safety," said Dear in his "Power of Partnership" speech. He concluded with, "All we're really talking about is making sure that when a man or woman leaves home in the morning and goes to work that they will come home at the end of the day with their bodies unharmed, their souls intact, and their dignity uncompromised."

Following Dear's speech, awards were presented to DynCorp Tri-Cities Services, Inc., for railroad crew safety performance and to the Hanford site for

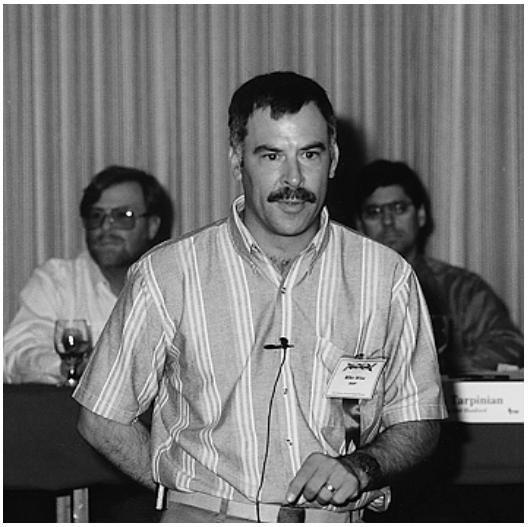
Joseph A. Dear, Chief of Staff to the Governor of Washington, addresses "The Power of Partnership" during his keynote speech at Tueday's dinner.

10 million safe work hours. Several National Performance Review Hammer Awards were also presented to the Hanford site on its Enhanced Work Planning Project.

DOE-VPP "Partnering for Safety" Workshop videos of plenary sessions, the keynote dinner presentation and awards presentations, and four breakout sessions—Integrated Safety Management Systems, Pursuing Safety and Health as a Subcontractor, DOE and Contractor Partnership, and When Management and Labor Agendas Align—are available for viewing.

Hanford area employees may contact Tracey O'Neal, FDH, at (509) 376-8990. Those in other areas may contact Paulette Bosco, EH-51, at (301) 903-4343. Copies of keynote speeches are available on the VPP Web Site at http://tis-nt.eh.doe.gov/vpp/. Copies of breakout handouts may be obtained by calling Tracey O'Neal, FDH, at (509) 376-8990.

Mike Schliebe, Numatec Hanford Company, discusses line management responsibilities and expectations during the "Line Management Issues" breakout session.



Mike Wise, B&W Protec, addresses the audience during the "Total Safety Culture" breakout.

Sharon Chivers, Lockheed Martin Idaho Technologies, shares new approaches to safety improvement in the "Passport to Success" breakout session.

Bill Kavanagh, American Ref-Fuel, addresses employee involvement in safety and health programs during the "Industry and DOE Contractor Employee Involvement" breakout session.

Jayne Davis, Westinghouse Isolation Pilot plant, presents an overview of DOE's Outreach Program with the Voluntary Protection Programs Participants' Association.

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