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**NEW HEALTH AND SAFETY INITIATIVES AT  
THE DEPARTMENT OF ENERGY (DOE)**

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It is a pleasure to participate in NASA's annual Occupational Health Program meeting and to address such a distinguished group of medical and occupational safety and health professionals. I am pleased to have this opportunity to tell you about some of the lessons we have learned in the area of occupational safety and health and about a few of the new initiatives we have recently launched at the Department of Energy.

I think that our new programs will be of interest to you because NASA and the DOE have many features in common. For example, both organizations engage in advanced research and development activities, operate pioneering scientific laboratories, and own contractor-operated production and research facilities. Although the Department of Energy's complex is considerably larger than NASA's -- we have several hundred sites and nearly 170,000 contractor employees in the DOE complex -- many of our occupational safety and health problems are undoubtedly similar. To address these issues, we at DOE have developed new programs and redirected old ones in the areas of occupational medicine, industrial hygiene, epidemiology, and occupational safety. Early indications are that our new programs are achieving a considerable measure of success. For example, DOE-wide injury and illness rates are generally well below those for comparable private-sector operations. If that is the case, why are we taking time and resources to launch new occupational safety and health initiatives?

My answer is simple: If even one DOE worker gets sick or is injured because of conditions on the job, it is one too many. A few months ago, for example, a DOE maintenance worker at Hanford fell to his death through a hole in a rotted-out roof that he was surveying before starting to work on it. Even more recently, a supervisor, unaware of his facility's rule prohibiting persons from entering a crawl space under a building while the conveyor was operating, died when he fell onto the running belt. Many of you also know that DOE's workers have experienced an unacceptably high incidence of chronic beryllium disease as a result of their work at our facilities.

I know that you as health and safety professionals share my belief that every one of these preventable illnesses and injuries is reason enough for us to pursue, and to pursue aggressively, a comprehensive Occupational Safety and Health Program at DOE and throughout the Federal Government. My talk today focuses on the fundamental redirection of DOE's Worker Safety and Health Program that has taken place over the past three years.

In 1989, Admiral Watkins, the then newly appointed Secretary of Energy, promised the President, the Congress, and the American people that he would establish "a new culture of accountability at the Department of Energy." One of the first things Admiral Watkins did was to invite the Department of Labor's Occupational Safety and Health Administration (OSHA) to join with DOE to conduct inspections of several DOE facilities to evaluate DOE's Occupational Safety and Health Programs for its contractors. As you may know, DOE has been exempt from OSHA oversight and has always been responsible for its own safety and health program. Consequently, this was the first time OSHA compliance inspectors had assessed our facilities.

The results of these early "Tiger Team" assessments, as we called them, were very enlightening because they pointed to several key safety and health issues, such as the need for greater management commitment and employee involvement in the Occupational Safety and Health Program. I believe that these same issues face every employer, whether in the private sector or in government. Let me review some of these issues.

### **Occupational Safety and Health Issues Facing DOE (Lessons Learned in Occupational Safety and Health)**

#### **1. Workplace Risk Levels**

Prior to 1990, the injury and illness rates reported by DOE were unreliable because DOE was not applying Bureau of Labor statistics recording and reporting criteria, which meant that comparing DOE's rates with anyone else's was essentially meaningless. Back then, DOE touted statistics that were factors of 4 to 5 below industry averages as evidence that DOE had exemplary occupation safety and health programs. The conversion to Bureau of Labor statistics reporting practices in 1990, however, led

to an immediate factor of 2 increase in DOE's injury/illness rates. Furthermore, we find that the Department's statistics are trending upwards, at least in part because of more and better reporting. Thus, overall, any statistical gap between DOE's rates and those of the private sector has become considerably smaller.

The important thing to note here is the risk inherent in making injury and illness data a surrogate for occupational safety and health performance. As a relative measure of workplace trends, injury and illness data can help to target where problems are occurring and encourage systematic investigation into weaknesses in current occupational safety and health programs. As exclusive indicators, however, these same data can mask broad occupational safety and health program deficiencies.

Simply put, an inadequate program is ripe for a serious accident -- one for which no safety net will exist because good procedures, training, supervision, and hazard abatement have not happened. Skilled and experienced workers can work safely for an amazingly long time, until the lack of built-in safety and health procedures shows and someone makes a very human mistake. All of the accidental fatalities this past year in DOE -- seven deaths in three accidents -- have been the result of inadequate management oversight and program implementation.

## **2. Hazard Abatement**

In its 1990 evaluation of DOE's facilities, OSHA observed that at some sites, hazards had been identified but had remained uncorrected for more than a year because area supervisors did not recognize those items as major priorities. We also learned during these early assessments that some facilities had conducted a baseline occupational safety and health compliance survey of their program that had identified numerous deficiencies but had not subsequently established an abatement process to correct these hazards.

The issue here has two aspects, but only one obvious solution. First, although hazard identification and prevention surveys are important, they are, at best, only half of the answer. For example, although DOE contractors have made noteworthy progress in "baselining" their facilities for occupational safety and health deficiencies, line management has struggled mightily with the other half of the equation; i.e., how to effectively manage the abatement process. Second, the significance of this issue from

the standpoint of risk to workers is not always appreciated. Too often, basic hardware fixes that would reduce or eliminate hazards are consigned to the multi-year Federal budget process, where they can languish for years, instead of being handled as a matter of routine maintenance.

There is also another dimension to abatement action. It relates to the significance attached to what would be classified in the private sector as "imminent danger" and "willful violations" under OSHA enforcement. Willful violations are defined as situations "where the evidence shows either an intentional violation of the (OSH) Act or plain indifference to its requirements." Simply stated, the employer in these cases was aware that a hazardous condition existed and that it violated occupational safety and health requirements and did not make a reasonable effort to eliminate the hazard. I might add that this is the provision under which the owner of a chicken processing firm in North Carolina was recently sentenced to 20 years in prison for negligence in a fatal fire last year.

The message here is not to put the abatement of hazards on your "ten-year" occupational safety and health corrective action plan. It is unconscionable to permit workers to be exposed to serious risks that can be avoided, abated, or compensated for by alternative measures.

### **3. Accountability for OSH Compliance**

The concept of management accountability is the central focus of the DOE Directives, new orders and initiatives that have been taken over the past three years. Such accountability is the "right stuff" that has been incorporated into the nuclear safety program in this country and that has been popularized by the total quality management (TQM) movement. For occupational safety and health this concept means many things, but for DOE and its contractors, accountability can be reduced to a few telling indicators. One is the proactiveness of the Occupational Safety and Health Program. Another is the degree to which management is involved, provides resources, and conducts reality checks on program results.

A number of DOE contractors have established OSHA voluntary protection programs, risk-ranked abatement actions, and are performing aggressive baseline and

follow-up workplace surveys. These companies recognize that accident **prevention** is where the payoff is.

In my opinion, line management accountability is as basic as this: Enforce all worker safety and health requirements and conduct sufficient workplace inspections to give you the confidence that reality matches your expectations. If it takes the threat of regulatory enforcement action for managers to do the right thing, then such a threat will become a self-fulfilling prophecy. Oversight alone will never ensure safety. The essence of a model Occupational Safety and Health Program is for management and workers to work together to build excellence from within.

#### **4. Workplace Surveillance**

This is a precept that governed the nuclear navy under Admiral Rickover and has become one of the core values in DOE's operations over the past several years. It also happens to be one of the tenets of total quality management: The need for measuring the quality of delivered services or products. The old syndrome of the desk-bound manager or occupational safety and health professional is found far too often in governmental organizations. However, although policies and procedures are important, they cannot ensure worker safety and health on the factory floor. It is the proper implementation of these same policies and procedures that makes the difference. If managers do not leave their desks to "walk their spaces," they are flying blind. If you do not find your program's deficiencies, they will most assuredly find you. And often, unfortunately, the form this takes is a worker's life or health.

#### **5. Employee Involvement**

One of the legacies of DOE's isolation from the mainstream of occupational safety and health is a sometimes antiquated approach to employee involvement in Occupational Safety and Health Programs. A top-down, command-and-control philosophy is still employed at many plants. Worker safety and health policies are dictated by and continue to be considered the sole province of management.

Fortunately, this approach is increasingly recognized as a throwback to an era where safety and health was an adversarial issue, one that had to be negotiated over a bargaining table. Employees have intimate insight and knowledge of worksite conditions

and are most at risk of potential exposure to occupational hazards. Experience has demonstrated that workers are valuable problem-solvers and are more likely to support programs if they have had the opportunity to provide input to those programs. These "Lessons Learned," which are summarized in Exhibit 1, are currently being implemented at DOE's facilities. We are not satisfied that they have been fully and consistently implemented throughout the line, but we are confident that we have made a good beginning and are definitely making headway.

### **Exhibit 1. Lessons Learned in Occupational Safety and Health**

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- o **Workplace Risk Levels** -- Injury and illness rates that are lower than those in private industry are not necessarily a badge of success.
  - o **Hazard Abatement** -- Without an effective system you expose your workers to unnecessary risk.
  - o **Accountability for OSH Compliance** -- If you must be compelled to comply, then you do not have the "right stuff."
  - o **Workplace Surveillance** -- If you do not regularly walk your spaces, you cannot measure the quality of your OSH program.
  - o **Employee Involvement** -- The worker is the ultimate stakeholder for safety.
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Now I would like to tell you about some of the new programs and initiatives in occupational safety and health that we have put in place to address some of the issues raised by our lessons learned.

## **New Occupational Health Initiatives**

### **1. Occupational Medicine**

In the last year, the Office of Occupational Medicine at DOE has undergone a major transformation. A new Director, Dr. George Gebus, has been appointed, and the staff has increased to 10 full-time health care professionals, each with a different specialty. The office has adopted a Mission and Function Statement (Exhibit 2) that reflects its new role.

#### **Exhibit 2. Mission and Function Statement Office of Occupational Medicine**

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- o Ensure that contractor employees are provided with high-quality occupational medicine services;
  - o Ensure that the health of employees and the public play a primary role in decisions made at DOE sites;
  - o Ensure that DOE contractor Occupational Medical Programs meet all applicable Federal, State, and local requirements;
  - o Develop policies, standards, and guidelines in the area of occupational medicine; and
  - o Perform oversight of DOE contractor Occupational Medicine Programs.
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These responsibilities include a new and proactive oversight role in relation to contractor medical programs. For example, in the last year, Office of Occupational Medicine personnel have participated in eight Tiger Team assessments and have visited 30 contractor Occupational Medicine Programs to review their status. These assessment teams found several kinds of common contractor medical program deficiencies, some of which are shown in Exhibit 3.

### **Exhibit 3. Frequent Deficiencies in Contractor Occupational Medicine Programs**

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- o Inadequate characterization of worker exposures to hazardous substances.
  - o Poor feedback between the industrial hygiene and medical staffs.
  - o Contractor medical staff are not spending enough time on site.
  - o Medical staffing levels at some facilities are below minimum levels.
  - o Senior medical personnel do not have access to top management.
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The Office of Occupational Medicine is addressing many of these issues in the new DOE Directive (we refer to it as an Order) that will govern the conduct of occupational medicine programs at contractor facilities in the future. The new Contractor Occupational Medical Program Order provides minimum standards for such programs and addresses many different issues, including staffing, monitored care, and coordination among the Occupational Medicine, Industrial Hygiene, and Occupational Safety Programs at each site.

The Office of Occupational Medicine is also developing guidelines to assist contractors in developing employee assistance programs, stress test programs for employees with physically demanding jobs, and blood pressure screening programs. Other modules planned for future development include those for weight management, stress management, smoking cessation, mammography screening, and health risk appraisals for employees.

DOE is also supporting the national drive to obtain permission to use the drug Prussian Blue. Prussian Blue is used in Europe to treat workers who have been contaminated with internally deposited cesium, and DOE believes that it should be available here as well.



## 2. Epidemiology

Another area of health research that has undergone major change at DOE in the last few years is epidemiology. In 1989, Secretary Watkins chartered an independent, outside panel of public health experts to evaluate DOE's Epidemiology Program and to make recommendations for strengthening it. The panel, called the Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA), developed and submitted its report to the Secretary in March 1990. The SPEERA Report recommended that DOE consolidate all of its descriptive epidemiologic activities in a single office. The Department has responded by establishing the Office of Epidemiology and Health Surveillance within the purview of the Assistant Secretary for Environment, Safety and Health. This office has since inaugurated many of the practices and programs recommended by the SPEERA panel, as shown in Exhibit 4.

### **Exhibit 4. SPEERA Panel Recommendations Adopted by DOE**

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- o Allow for greater public participation in epidemiologic research at DOE.
  - o Share DOE information with workers and communities near DOE facilities.
  - o Establish a comprehensive health surveillance system to provide timely and usable information on the health impacts of DOE's activities.
  - o Find ways to translate the findings of epidemiologic research into operational policies and practices.
  - o Develop new epidemiologic methodologies to advance our knowledge of the health effects of DOE's activities.
  - o Promote research and training opportunities for young investigators.
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We have also entered into a Memorandum of Understanding (MOU) with the Department of Health and Human Services that allows DOE to take advantage of that

Department's expertise and experience in the conduct of analytical epidemiologic studies. Under the terms of the MOU, the management functions for all DOE-supported analytical epidemiological research have been delegated to the Centers for Disease Control's National Institute for Occupational Safety and Health (NIOSH).

We are also working closely with NIOSH and others to control chronic beryllium disease. DOE and its predecessor agencies have been concerned about the development of beryllium disease in workers within the complex for close to 50 years, ever since the Atomic Energy Commission first established exposure limits for this indispensable metal. Despite beryllium exposure control strategies targeted at the current OSHA limit, a number of DOE workers have been diagnosed with chronic beryllium disease in recent years.

To respond to this problem, the Department has launched an aggressive, multi-faceted program aimed at understanding the natural history of the disease, developing non-invasive methods for detecting it at its earliest stages, including the detection of signs of a compromised immune system even before the employee experiences symptoms, and establishing industrial hygiene requirements that will protect workers from contracting the disease. The Department has initiated several beryllium-related activities, as can be seen in Exhibit 5.

#### **Exhibit 5. DOE Initiatives Related to Beryllium Disease**

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- o Fund research for streamlining and automating the lymphocyte transformation test (the non-invasive clinical screening test being developed to identify beryllium-sensitized workers).
  - o Make a major effort to identify workers within the complex who have been exposed to beryllium and who should be included in DOE's research studies.
  - o Provide special testing and medical surveillance to workers with known exposure to beryllium.
  - o Conduct dose reconstruction studies to estimate historical exposures of workers within the complex.
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The goal of these efforts and of our beryllium-related work with NIOSH and other agencies and organizations is to control the conditions that cause beryllium disease and to identify current and previous workers who have contracted, or may contract, this disease so that they can obtain counselling and treatment.

### **New Occupational Safety Initiatives**

Workers within the DOE complex are involved in operations that range from weapons production to underground construction, from laboratory research to hazardous waste cleanup. No other group of workers in the world -- with the possible exception of Department of Defense workers -- faces such a broad range of occupational safety and health hazards. Protecting our workers from these hazards has required us to develop a correspondingly broad Occupational Safety and Health Program and to identify ways of delivering this program where it is needed -- at the individual site level. We have done this by implementing the following kinds of programs.

#### **1. Site Representative Program**

To increase the flow of information from the field to Headquarters and to augment DOE's presence at contractor facilities, we have recently expanded and redirected the Site Representative Program. There are currently 11 site representatives in the program, and more are expected to be added in the near future. These representatives are responsible to my office for the timely and ongoing monitoring of Occupational Safety and Health Program activities in the field, and they report to me on a monthly basis. When the site representatives identify problems in Occupational Safety and Health Program implementation that deserve serious attention, they forward their reports to the senior DOE program official for follow-up and resolution. Examples of the Occupational Safety and Health Program areas routinely assessed by these professionals include those shown in Exhibit 6.

**Exhibit 6. Occupational Safety and Health Topics Included in Site Representative Oversight Activities**

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- o Hazard Identification, Analysis, Control, and Abatement
  - o Employee Concerns and Complaints
  - o Hazard Communication
  - o Facility Safety (Fire Safety, Walking/Working Surfaces, Means of Egress)
  - o Equipment Safety (Lockout/Tagout, Machine Guarding)
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In the last 15 months, the site representatives have conducted a total of 51 assessments covering 11 occupational safety and health-related technical areas at 8 DOE facilities. The Site Representative Program has greatly enhanced DOE on-site presence at contractor facilities -- it gives us real-time, first-hand knowledge of the status of contractor Occupational Safety and Health Programs at these high-risk sites. This information, in turn, has allowed us to tailor training programs, assistance visits, and oversight activities to the areas where they are most needed and will make the most difference. The Site Representative Program is part of the way in which we are "walking our spaces," one of the lessons learned referred to earlier.

**2. Construction Safety Program**

Earlier evaluations of DOE's Occupational Safety and Health Program identified several areas in construction safety that needed strengthening. To respond to this need, DOE has launched several initiatives designed to provide the field with the knowledge, skills, and tools necessary to implement effective construction safety management programs. One of the most important of these is the drafting of a new DOE Order on construction safety that is comprehensive in scope and places particular emphasis on the self-assessment of construction safety programs and on-site surveillance at construction sites. The Order requires construction contractors to perform project hazard analyses to identify hazards at the earliest possible stage, and mandates coordination between construction contractors and the host contractor at the site. It also requires an aggressive program of worksite inspections, often on a daily basis.

### **3. Systems for Addressing Employee Concerns**

Two years ago, when OSHA was invited by the Secretary to evaluate DOE's Occupational Safety and Health Program, OSHA concluded that DOE needed a better and more effective system for addressing safety and health complaints made by workers at our facilities. For example, OSHA found that, in some instances, complaints made to DOE personnel were simply turned over to the contractor involved for handling, an approach that sometimes left the safety issue unaddressed and made the employee vulnerable to criticism or reprisal. The Department has taken action to address this problem on two fronts. First, the Secretary established an Employee Concerns Committee, and this group has drafted an order specifying procedures for identifying, reporting, and resolving employee safety and health concerns. These procedures follow the system established and used successfully by OSHA for many years.

Second, DOE has developed and published in the *Federal Register* a final rule entitled "Criteria and Procedures for DOE Contractor Employee Protection Program." This regulation establishes an independent Office of Whistleblower Administration and Investigation that reports directly to the Secretary on these matters.

### **4. Memorandum of Understanding Between DOE and the Department of Labor (OSHA)**

One of the major highlights of the last year was the recent signing of a Memorandum of Understanding (MOU) between DOE and the Department of Labor, whose Occupational Safety and Health Administration (OSHA) is recognized as the country's leading occupational safety and health agency. Under the terms of the MOU, DOE and OSHA have agreed to work together over the next few years to advance the cause of worker safety and health at DOE by strengthening several aspects of our Occupational Safety and Health Program. These include such activities as the exchange of technical information on safety and health; conferences, seminars, and workshops on emerging occupational safety and health topics such as ergonomics; and training in hazard identification and methods of control for DOE and contractor personnel. Professional staff from DOE and OSHA are already meeting to develop plans for an extensive series of joint DOE-OSHA activities that will capture and utilize OSHA's expertise to enhance DOE's Occupational Safety and Health Program.

## **5. Commitment of Resources to Occupational Safety and Health**

We at the Department of Energy believe that one of the best ways to demonstrate our commitment to worker safety and health is to commit a larger share of our resources to this important undertaking. The most important resources behind any program are the men and women with the training and skills to implement that program -- in this case, specialists in occupational safety and health. In the last two years we have nearly tripled the number of occupational safety and health professionals at Headquarters, a major feat in this time of shrinking budgets and diminished resources. A large number of these professionals have come from OSHA itself, and thus bring to DOE years of training and expertise in the implementation of comprehensive worker safety and health programs. This "staffing up" reflects our belief that people, not paper, are what make things happen. The increase in occupational safety and health staff at Headquarters has also occurred on a more modest scale at the field offices and contractor facilities. The overall impact of this commitment throughout the line is that DOE now has in place the professional expertise to implement and invigorate its Occupational Safety and Health Program where it counts: At the many sites operated by our contractors and their employees across the country.

## **6. Voluntary Protection Program**

In the early 1980's, OSHA developed a program called the Voluntary Protection Program, or "VPP," that was designed to encourage and recognize those companies in the private sector that had the best occupational safety and health programs. Under this program, OSHA recognizes excellence in occupational safety and health by awarding unique status to these companies in terms of public recognition and compliance incentives. DOE has launched an initiative to implement a similar program for DOE contractors. To date, DOE has become a charter member of the non-profit, voluntary Prevention Program Association and is developing guidelines for participation in the Department's VPP Program. Our goal is to have one or more facilities enrolled within the year. DOE's Voluntary Protection Program reflects our belief that public recognition and encouragement are one method of providing contractors with the incentive they need to provide their employees with Occupational Safety and Health Programs that go beyond compliance to achieve excellence.

## **7. Training in Occupational Safety**

The fatalities I spoke about earlier also clearly testify to the need for better training of workers throughout the complex. Last January, in response to this need, we published a major DOE Guide entitled, "Occupational Safety and Health Training Requirements and Implementation Guide." The Guide contains a list of occupational safety and health training requirements for personnel at all levels, and is designed to help us develop courses and training materials tailored to the needs of our contractors. In the last two years we have developed a large number of new occupational safety and health training courses targeted to specific categories of personnel such as occupational safety and health managers, first-line supervisors, safety professionals, and industrial hygienists; or to specific occupational hazards such as machine guarding, construction safety problems, and trenching and excavation. To date, we have conducted 55 classes at 30 different locations within the complex, and we expect to enroll as many as 1,300 students in our Occupational Safety and Health Training Program in 1993.

We have also set up a joint program with the Occupational Safety and Health Administration's Training Institute in Des Plaines, Illinois, and this arrangement has allowed us to make several of the Institute's basic occupational safety and health courses available to DOE and contractor personnel. A training resource has also been established at one of our national laboratories, Pacific Northwest Laboratories, and several courses have been developed by this occupational safety and health training group.

## **8. Technical Assistance, Hazard Communication, and Compliance Assistance**

To meet the needs of DOE's field offices and contractors for technical assistance in occupational safety and health, we have established a multi-faceted Technical Information and Assistance Program to ensure that the appropriate "know-how" is available when needed. The program ranges from a quarterly newsletter called "Safety Connection" to a call-in service named the "INFOLINE," which provides safety and health professionals across the complex with instant access to the latest information on the toxicity and other characteristics of hazardous materials.

Another recent initiative that is showing great promise is our Technical Assistance Visit Program. This program resembles OSHA's Consultation Program in that it is a voluntary and non-penalty oriented program designed to help contractors achieve compliance. However, it goes beyond OSHA's Consultation Program in several important respects. First, it is a joint operation that involves personnel from my office, the line organization with responsibility for the site involved, and the contractor in planning and carrying out the visit. Second, each technical assistance visit is tailored specifically to the safety and health needs of the site. Third, each visit consists of an integrated learning experience that involves open-ended discussions, formalized instruction, and hands-on experience. To date we have conducted several multi-day assist visits to contractor facilities, and the initial response has been very favorable. We expect to be expanding this program considerably in the coming year.

Another technical information exchange initiative will provide DOE users with direct on-line access to OSHA's vast Computerized Information System (called "OCIS" for short). OCIS contains all of OSHA's Standards, interpretations of Standards, relevant court decisions, information on the toxicological and other properties of 1,500 widely used industrial chemicals, and operation-specific hazard and engineering control information. We believe that access to this national occupational safety and health resource will greatly enhance the quality of DOE's Occupational Safety and Health Program across the complex.

## **9. Worker Protection Pilot Program**

The Occupational Safety and Health Worker Protection Pilot Program (OSHWPP) is an initiative designed to offer public recognition to contractors within the complex who have outstanding safety and health programs. Under this program, each line organization identifies candidate programs with the potential to serve as models for other contractor programs in the same technical area. For example, if one contractor in the complex has developed a model laser safety program, that program would be made available to other contractors after a careful review and pilot-test of the candidate program. The recognition received by the contractor who developed the model program would act as an incentive to encourage other contractors to develop similar programs. At present, several candidate programs have been identified and are being reviewed for conformance with DOE-developed WPP guidelines. We believe that the Worker Protection Pilot



Program offers a unique opportunity to expand DOE and contractor line program expertise and promote consistency and excellence in Occupational Safety and Health Programs across the complex.

**10. Development of Occupational Safety and Health Standards, Directives, and Programs**

The large number of on-site assessments DOE and others have conducted at our contractor facilities in recent years identified a number of safety and health areas within the complex needing additional attention. These include several areas where there are regulatory gaps; i.e., hazards that have not to date been addressed by OSHA regulations. Examples include non-ionizing radiation, biohazards, reproductive and developmental toxins, confined spaces, and ergonomic hazards. Wherever we have identified a need for worker protection, we are hard at work developing Standards, training courses, model programs, and other approaches to address the problem. Some of the Standards and programs we have initiated to date are shown in Exhibit 7.

**Exhibit 7. New Initiatives in Occupational Safety and Health**

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Industrial Hygiene Standards for:

Beryllium	Occupational Noise
Non-Ionizing Radiation	Hazardous Waste Operations and Emergency Response
Hazard Communication	Reproductive/Developmental Hazards
Management of Asbestos Hazards	Biohazards
Respiratory Protection	Chemical Hazards in Laboratories
Occupational Carcinogens	
Exposure Assessment	

Standard for Hazardous Waste Operations Training at Nuclear Facilities (Section 3131 of DOD Authorization Act)

Programs in:

Ergonomics	Fire Protection
Process Safety Management	Electrical Safety
Confined Spaces	Firearms Safety
Lock-out/Tag-out	Explosives Safety
Trenching and Excavation	Pressure Vessel Safety
Fall Protection	

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## Conclusion

My talk has touched upon some of the more important lessons learned and the more noteworthy initiatives DOE has put into motion in the last three years to protect the health and safety of our contractor employees. What we have learned in the process should come as no surprise to those of you who have been working in this field:

- o That management commitment to safety and health is critical to a successful program;
- o That meaningful employee participation in all aspects of the program enhances its effectiveness at every level; and
- o That the dedication and expertise of medical and occupational safety and health professionals are needed if the challenging problems presented by the complex and technologically advanced environment at DOE facilities are to be overcome.

I believe that we have made a good beginning in the long and arduous task of building an Occupational Safety and Health Program that will serve as a model for others, and I can assure you that we intend to continue our efforts to protect every worker within the complex from occupational injury and disease.