



# Waste Isolation Pilot Plant



## Report from the DOE Voluntary Protection Program Onsite Reevaluation, September 16-18, 2002



**U.S. Department of Energy**  
Office of Environment, Safety and Health  
Office of Safety and Health  
Office of Regulatory Liaison

October 2002





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## Abbreviations and Acronyms

<b>ACL</b>	administrative control levels
<b>ALARA</b>	as low as reasonably achievable
<b>AR</b>	Action Requests
<b>ASP</b>	Associate Safety Professional
<b>BLS</b>	Bureau of Labor Statistics, U.S. Department of Labor
<b>CAS</b>	Condition Assessment Survey
<b>CAS-CHAMPS</b>	Capital Assets Condition Assessment Survey
<b>CDC</b>	Center for Disease Control, Public Health Service, U.S. Department of Health and Human Services
<b>CH</b>	contract-handled
<b>CHP</b>	Certified Health Physicist
<b>CIH</b>	Certified Industrial Hygienist
<b>CITY</b>	Continuous Improvement Through You
<b>CPR</b>	cardio-pulmonary resuscitation
<b>CMR</b>	Central Monitoring Room
<b>CSP</b>	Certified Safety Professional
<b>CTS</b>	Commitment Tracking System
<b>DAC</b>	derived air concentration
<b>DOE</b>	Department of Energy
<b>DOELAP</b>	Department of Energy Laboratory Accreditation Program
<b>EAP</b>	Employee Assistance Policy
<b>EH</b>	Office of Environment, Safety and Health, U.S. Department of Energy

<b>EMT</b>	Emergency Medical Technician
<b>EPADS</b>	Employee Performance Appraisal and Developmental System
<b>ES&amp;H</b>	Environment, safety and health
<b>FR</b>	Facility Representative
<b>FR</b>	First Requests
<b>FSM</b>	Facility Shift Manager
<b>FTE</b>	full-time equivalents
<b>GET</b>	General Employee Training
<b>HASP</b>	health and safety plan
<b>HR</b>	Office of Human Resources
<b>IH</b>	industrial hygiene
<b>INEEL</b>	Idaho National Engineering and Environmental Laboratory
<b>JHA</b>	job hazard analysis (or analyses)
<b>JSA</b>	job safety analysis
<b>LLWG</b>	Lessons Learned Working Group
<b>LOTO</b>	lockout/tagout
<b>MADD</b>	Mothers Against Drunk Drivers
<b>MAST</b>	Management and Supervisor Training
<b>MOIM</b>	Maintenance Operations Instruction Manual
<b>MSDS</b>	material safety data sheet
<b>MSHA</b>	Mine Safety and Health Administration, U.S. Department of Labor
<b>NIOSH</b>	National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services

<b>ORPS</b>	Occurrence Reporting and Processing System
<b>ORR</b>	Operations Readiness Review
<b>OSH</b>	occupational safety and health
<b>OSHA</b>	Occupational Safety and Health Administration, U.S. Department of Labor
<b>PAS</b>	Performance Appraisal System
<b>PDR</b>	Performance Demonstration Reviews
<b>PIP</b>	Program Improvement Process
<b>POD</b>	Plan of the Day
<b>PPE</b>	personal protective equipment
<b>Pre-Ops</b>	Pre-Operational check
<b>RH</b>	Remote Handled
<b>RCA</b>	root cause analysis (analyses)
<b>RCM</b>	Radiological Control Manual
<b>SAR</b>	Safety Analysis Report
<b>SAT</b>	Systematic Approach to Training
<b>S&amp;H</b>	safety and health
<b>SIC</b>	Standard Industrial Classification
<b>STAR</b>	Systematic Tracking and Reporting System
<b>START</b>	Supervisor Training and Accident Reduction Training
<b>TEAM</b>	Team Employee Appraisal Method
<b>TLD</b>	[see pp. 34]
<b>TRU</b>	transuranic
<b>TRUPAC</b>	Transuranic Package
<b>TRUPACT</b>	Transuranic Package Transporters
<b>TWA</b>	time weighted average
<b>VPP</b>	Voluntary Protection Programs
<b>WIPP</b>	Waste Isolation Pilot Plant
<b>WTS</b>	Westinghouse Tru Solutions



## Executive Summary

The Reevaluation Team was led by a safety and health professional from the Office of Regulatory Liaison under the Office of Environment Safety and Health, and consisted of two other individuals; a safety and health professional from Idaho Operations Office, and a professional with mining background from Richland Operations Office. This is the second reevaluation since WIPP got its Star Status. Similar to the previous evaluations, the site was reevaluated to validate its success in continuing to implement the five tenets and sub tenets of DOE-VPP. The reevaluation also focused on the safety and health improvements the site made since the last review, which occurred in August of 1998. Included in the evaluation were approximately 60 interviews of both staff and management, and document reviews. The Reevaluation Team's summary conclusions for each tenet follow:

**Management Commitment** — The reevaluation team verified that WTS Management continues to be committed to safety of employees. The site has a S&H policy, which clearly states that safety is the number one priority, and several interviewed understand that safety is a top priority at the site. All line managers continue to be visibly involved in the safety and health (S&H) program, most notably through regular walkaround visits that are performed as a part of the Landlord Program and through the recently initiated behavior based safety and health program. Management's commitment to safety is also demonstrated by the fact that all managers were required to take a hazard recognition-training course in order to maintain excellent safety and health programs at WIPP site. Performance Appraisal System clearly holds line personnel accountable for their safety achievements. Another example of continued management commitment is the time allocation for individuals to serve on various committees and teams, such as the Safety Awareness Team, Site Safety Committee, Emergency Response Team, and Mine Rescue Team. These teams are given several safety and health responsibilities to address day-to-day safety and health issues. One such example is the responsibility given to Safety Awareness Team to track the safety and health concerns brought to the team's attention through a dedicated website that was developed to assist the communication process between the employees and the safety awareness team, including safety and health concerns. Based on the information gathered during the review, the reevaluation team has the following recommendations:

### Recommendations

- 1) Because of the recent increased operations activity, there is a possible employee perception that management places higher priority on production over safety. The reevaluation team recommends that WTS should conduct an independent survey to understand the possibility of that perception and address it accordingly.

- 2) Another recommendation by the reevaluation team, which the senior management is currently addressing, is top managers' visibility issue, which was diminished over the last six months.
- 3) Resource issue was brought up several times during the interviews by the employees, and should be considered by the WTS management in addressing the aging issue of WIPP facility and the company incentive programs. For example, all the parking space paintings at WIPP were all faded, and the previous motivational/incentive programs (Safety calendar, WIPP Safety Kids, etc) were not being implemented because of the resource issues.

**Employee Involvement** — Employee involvement in safety and health at WIPP continues to be strong. The reevaluation team found employees to have a strong sense of ownership for the S&H program. For example, during the walk around the reevaluation team found one employee who took upon himself to immediately clean up a small oil spill around a piece of equipment that was pointed out to him by another employee accompanying the reevaluation team. Later the accompanying employee stated, "We look out for each other." The employees were candid and cooperated fully with the Reevaluation Team. Employees indicated that they had no fear of reprisal for relaying safety concerns to their management. They gave examples of bringing safety concerns to their management, which they stated were addressed immediately. Employees felt that management was concerned about their well-being. Employees felt empowered to immediately correct a hazardous situation or bring the condition to management's attention. However, it is reevaluation's team's observation that the relationship between management and bargaining unit employees may have deteriorated since the last reevaluation. For example, the bargaining unit employee representatives were not invited to attend the closing conference of this reevaluation. Though the relationships may appear to have diminished since the last review, employees still feel responsible for their safety and that of their peers. When interviewed, the collective bargaining unit employee representatives indicated that they strongly support DOE-VPP participation.

### **Recommendation**

A statement of continued support of participation in DOE-VPP from both WTS management and labor representation at WIPP must be submitted to the DOE's Office of Regulatory Liaison, which administers DOE's Voluntary Protection Program

**Worksite Analysis** — Worksite analysis at WIPP continues to be thorough and comprehensive. Extensive programs continue to be in place to identify hazards in new or modified processes as well as in existing processes. Each building at WIPP has a landlord under the landlord program, and these landlords inspect their respective areas on a quarterly basis. This program has been in place for the last several years. The reevaluation team verified that WTS continues to implement the landlord program. Comprehensive surveys are also performed by the site staff and by expert consultants. Items requiring correction are tracked to completion. All WIPP workspaces are listed and surveyed annually. Westinghouse continues to conduct comprehensive surveys under their Condition Assessment Survey (CAS-CHAMP) program. The personnel who conduct the surveys consist of staff that is dedicated to the CAS program, representatives of the landlord for that space, and S&H professionals. As a part of CAS-CHAMP, photos of identified hazards are

taken using digital camera and are later used for training site personnel. This is an enhancement since the previous reviews. Interviewed employees verified that safety-related work requests are given top priority, and that correction of hazards is always timely, if not immediate. Employees are specifically involved in work-site analysis through their development of both procedures and job hazard analyses (JHA). The Reevaluation Team noted many instances where the employees were also involved in hazard correction.

**Hazard Prevention and Control** — Management, S&H staff, and workers at the WIPP site have aggressively focused on preventing and eliminating hazards. A comprehensive program continues to exist at the site to eliminate the unnecessary use of toxic/hazardous chemicals. The Reevaluation Team gathered considerable amount of evidence that a hierarchy of controls is being utilized throughout the WIPP. WTS places significant amount of emphasis on implementation of engineering controls prior to using other means of controls in mitigating hazards. For example, on a waste hoist, in addition to a cage around its access ladder, WTS management with the help of employees input installed a rail/fall arrest system to prevent an employee from a possible fall while climbing up the fixed ladder. The team noted several such examples.

The WIPP site also places considerable emphasis on professional certification and experience for its S&H staff. A variety of professional expertise continues to be available onsite for consultation on resolution of safety issues. Safety and industrial hygiene staffing consists of three safety professionals, two senior safety specialists, two safety technicians, and two industrial hygienists of which three are Certified Safety Professionals (CSP). In addition, the WTS has access to corporate expertise in several disciplines including risk assessment, safety analysis, industrial hygiene, and others on an “as needed” basis. Based on the review of the emergency preparedness and response program, the Reevaluation Team made the following recommendation to enhance visitor safety.

### **Recommendation**

It is the Reevaluation Team’s recommendation that Westinghouse review the site orientation emergency preparedness procedures covering visitors to ensure that they are aware of the site emergency telephone number.

**Safety and Health Training** — The reevaluation team noted that WTS continues provide exceptional S&H training program at WIPP that has been in place for more than 12 years. Training consists of a combination of classroom and on-the-job training as it applies to the various positions. As an enhancement to the training program, since the last reevaluation, the training department has added web-based training to some courses. Site employees reported that safety training helps them understand the potential hazards of their job and ways to protect themselves. To increase the management awareness of hazards, all managers have undergone hazard recognition training. Senior management is planning to provide the hazard recognition training to all WTS employees at WIPP. Employees’ refresher trainings are tracked through a database. A notice for refresher trainings is automatically generated, and is sent to managers and employees ninety-days in advance to accommodate their schedules. Employees were observed properly using personal protective equipment (PPE), and when questioned were knowledgeable about its limitations and care. The employees also explained in detail what their responsibilities and

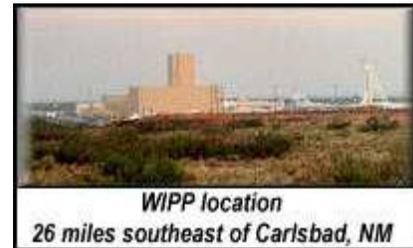
actions would be for different types of emergencies at the site. In addition, interviewed were very aware of the hazards at WIPP and have received Management and Supervisor Training (MAST) Program which also covers industrial safety. Top management fully supports the training program, as evidenced by employee interviews, training funding levels, and their active review and approval of training materials.

## I. Introduction

The Department of Energy Voluntary Protection Program (DOE-VPP) onsite reevaluation was conducted September 16-18, 2002, at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. The Reevaluation Team was composed of 3 members. The names and titles of the Reevaluation Team members can be found in the Appendix to this report. During the course of the review, the Reevaluation Team conducted over 60 formal and informal interviews, reviewed several documents, and conducted walkthroughs of the site.

This site was the first to receive Star designation under the DOE-VPP. The site has undergone a recertification evaluation in August 1998. The primary purpose of this reevaluation visit was to confirm the continued implementation of Star-level quality of the Occupational Safety and Health (OSH) program at WIPP by Westinghouse Tru Solutions Company.

WIPP is a U.S. Department of Energy (DOE) facility, operated under contract by Westinghouse Tru Solutions (WTS). It was previously operated by Westinghouse Waste Isolation Division when the site received its Star status, as well as when the site was recertified in August 1998. It is designed to disposal of transuranic waste in deep salt beds. The deep-bedded salt formation where WIPP is located has been geologically stable for more than 225 million years. Stationed at the site are some 800 employees. Of these, approximately 700 are employed by Westinghouse Tru Solutions and the remaining are DOE, Sandia National Laboratories, and subcontractor employees.



WIPP location  
26 miles southeast of Carlsbad, NM

Under Public Law 96-164, the U.S. Congress mandated the construction and development of WIPP as a research and development project. The facility started disposing transuranic wastes exclusively, not commercial or high-level wastes. Transuranic wastes are those containing or contaminated with radioactive elements heavier than uranium. Most of the waste consists of contaminated laboratory gloves, tools, dried sludges, and other material discarded from laboratory or production facilities.

The Waste Isolation Pilot Plant, or WIPP, is the world's first underground repository licensed to safely and permanently dispose of transuranic radioactive waste left from the research and production of nuclear weapons. After more than 20 years of scientific study, and public input, WIPP began operations on March 26, 1999.



WIPP's first waste shipment  
March 26, 1999

The site is located about 26 miles east of Carlsbad, NM. Construction of the facility began in 1979. The site is comprised of three types of facilities: assorted surface buildings, four vertical shafts, each 2,150 feet (655 m) deep, and a 7.2 mile (11.6 km) underground network of horizontal storage rooms, alcoves, and tunnels.

The surface buildings house the site personnel and equipment needed for WIPP operations and research activities. The vertical shafts connect the surface facilities to the underground; in this way, it will be possible to move transuranic waste to its underground destination.

## II. Injury and Illness Data Assessment

Since the WIPP site's mission is to safely dispose of transuranic waste, the site is classified with a SIC code of 4953, which denotes refuse systems. The following table provides the data and rates for the preceding three calendar years, together with the three-year average. It also provides the Bureau of Labor Statistics (BLS) National Average Rates for the Standard Industrial Classification (SIC) code of 4953. The information from the OSHA injury/illness logs is included in the following formulas to calculate Total Recordable Case Rates and Lostworkday incidence rates.

$$\text{RII rate} = \frac{\text{No. of Recordable incidents [Col.(1) + Col.(2) + Col.(6)] x 200,000}{\text{No. of employee hours worked}}$$

$$\text{and LWDI rate} = \frac{\text{No. of LWD cases [Col.(2)] x 200,000}{\text{No. of employee hours worked}} \text{ of OSHA Logs.}$$

Injury and Illness Data and Rates at WIPP					
Calendar Year	LWD Injury Cases	RII Cases	Employee-Hours Worked	LWDI Rate	RII Rate
1999	9	11	1132616	1.58	1.94
2000	1	6	1153533	0.18	1.04
2001	8	14	1139837	1.4	2.46
3-Year Average Rates	18	31	3425986	1.05	1.81
BLS Average for 4953 SIC Yr - 2000				6.2	10.3

The 3-year average rate for both RII and LWDI is substantially below the industry average published by BLS and far exceeds the DOE-VPP requirements for Star recertification. These rate calculations include both WTS and temporary workers. The Reevaluation Team reviewed the information entered on the OSHA 300 log for this year and OSHA 200 logs for the previous three years. The safety manager who is responsible for maintaining the log has attended training courses on the recordability of occupational injury and illnesses. This individual also has developed a training course addressing the revised OSHA's recordkeeping requirements. This individual was found to be knowledgeable on the OSHA 300 log requirements. The Safety Department generates an injury/illness trending report on a monthly basis, which is distributed to managers as a tool for use in their efforts to reduce injury rates.

## III. Management Commitment

### A. COMMITMENT

WTS management continues to demonstrate strong commitment to occupational safety and health (OSH) at WIPP. WTS management policy MP1.12, *Worker Protection Policy*, which has been revised since the last reevaluation, clearly states that the protection of environment, safety and health (ES&H) is the first priority of the site. Management commitment to safety at WIPP is demonstrated on a continual basis. From the employee interviews, it was determined that all levels of employees understand that safety is the top priority at the site.

WTS management continues to support employee participation in the S&H program. Individuals are continued to serve on various committees and teams such as the Safety Awareness Team, Site Safety Committee, Emergency Response Team, and Mine Rescue Team. Employees are also encouraged to participate in the WIPP safety fair and other DOE-VPP related activities. The Reevaluation Team interviewed managers at various levels and it was clear to the Team that WTS management continues to be committed to safety. Management's goal to maintain Star-quality S&H programs, the individual safety objectives set to reach that goal, and the integration of OSH into all management planning also demonstrate WTS management's commitment to safety. However, because of the recent increased operations activity, there is a possible employee perception that management places higher priority on production over safety. Accordingly, the Reevaluation Team has the following recommendation.

#### **Recommendation.**

The reevaluation team recommends that WTS should conduct an independent survey to understand the possibility of employee perception that management may be placing higher priority on production over safety.

### B. RESPONSIBILITY

Westinghouse WTS management policy MP 1.21 (entitled *Management Responsibility and Accountability*) was revised since the previous reevaluation and was approved on May 20, 2002. The policy ensures that all personnel understand their authority, responsibilities, and accountability with regard to safety at WIPP. All employees are held accountable for their safety performance, and the annual job performance appraisal system includes individual safety objectives. This site's safety philosophy was confirmed through interviews with several personnel representing various levels of management and non-exempt employees. The managers clearly understand safety is their responsibility and are held accountable for the safety of their employees. S&H professionals continue to be used as resources by the line. These individuals are assigned to various managers to lend technical expertise on an as-needed basis while providing guidance, policies, and procedures. As found during the previous reevaluation, every

manager interviewed knew the types of injuries that had occurred in their respective departments this year. For example, the Human Resources Manager took every step necessary to assist an employee who experienced Carpel Tunnel Syndrome injury this year. It was very clear from the management and employee interviews that safety is everyone's responsibility at WIPP. For example, one employee interviewed said under our landlord program "we are all asked to inspect our own areas and we may find screws and nails on the ground and we remove them immediately." He continued in saying that "I have seen people looking out for each other." Other employees gave several such examples to the reevaluation team during the interviews indicating that safety is everyone's responsibility at WIPP.

## **C. AUTHORITY AND RESOURCES**

The reevaluation team verified through employee interviews that jobs were shut down because of safety issues. The authority to shut down operations or equipment, if found to be unsafe, is set forth in WTS policy MP 1.12 Rev.8. The policy has been revised since the last reevaluation. No modifications have been made to the language in the policy, which states that all personnel will "identify unsafe conditions and actual or potential imminent danger situations and stop/refuse work until the condition is corrected." As was evidenced during the previous reevaluation, the Team found that employees are authorized to shut down a piece of equipment, or an operation, that they believe to be unsafe. The Reevaluation Team also found that WTS management has not diminished or changed their position in authorizing employees to shut down operations that are deemed to be unsafe. For example, when they had few safety incidents, the entire site was on stand down mode until it was verified that such incidents would not reoccur.

Several interviewed had invoked their stop work authority since the last reevaluation and none had received negative feedback as a result. During an interview, one employee quoted "stop work is not an issue." Since safety is an integral part of all WTS processes at WIPP, a budget for safety is integrated into their overall processes and operations. The Reevaluation Team observed several instances of management's commitment to provide adequate resources for OSH. For example WTS management has not diminished its resources and commitment to train employees on safety and to provide equipment to fulfill their employee responsibilities. WTA management has also taken an initiative to train all its managers in hazard recognition. The level of safety and health professional staffing also evidences provision of adequate resources provided at the site. For example, WIPP has several onsite industrial safety and hygiene expertise available onsite, and health services. Additionally, contract workers are continue to be allowed to attend safety-related meetings with no deductions in their wages and salaries. Based on the interviews with employees, the Reevaluation Team has the following recommendation with respect to resources.

### **Recommendation**

Resource issue was brought up several times during the interviews by the employees, and should be considered by the WTS management in addressing the aging issue of WIPP facility and the company incentive programs. For example, all the parking space paintings at WIPP were all faded, and the previous motivational/incentive programs (Safety calendar, WIPP Safety Kids, etc) were not being implemented because of the resource issues.

## D. ACCOUNTABILITY

Safety accountability of WTS personnel is accomplished annually through performance measurements of S&H objectives that have been mutually agreed upon by the employee and his or her supervisor or manager. Management policy MP 1.21, *Management Responsibility and Accountability*, states that managers must fully understand their responsibilities and they will be held accountable for the activities conducted and decisions made within their areas of cognizance.

During the last reevaluation employees were evaluated under the Employee Performance Appraisal & Development System (EPADS). At present, WTS personnel are assessed under a performance appraisal system (PAS) process. Under this process:

- Senior managers establish goals and performance expectations relative to the defined scope of work,
- The goals, expectations and safety objective should flow to supporting line management for their guidance, and
- Individual employees and their managers then discuss and establish performance expectations including safety.

In addition to the technical content of their job, manager's appraisals contain ES&H factors that evaluate manager's performance in providing a safe and healthy workplace and protecting the environment. Individual employees' appraisals also contain factors related to safety and health. The employee and manager agree upon three to four measurable objectives one of them would be safety. If the employee and manager decide that safety represents a critical component of the employee's performance, the performance values are assigned accordingly. An average score of each performance attribute is calculated. Making safety an integral part of each element's score is a key part of ensuring accountability at WIPP. The reevaluation team examined several performance appraisals of managers and employees and found to contain measurable objectives pertaining to safety. One example, the review team found was an objective given to an employee in the previous year that was measurable ? to identify/eliminate hazards that would cause injury to hands and/or arms. In response, the employee was found to have met or exceeded the set objectives by attending and setting up safety meetings, and making presentations on that subject. Based on the review of documents and employee and management interviews, the review team found that WTS holds managers and employees accountable for their safety performance.

## E. VISIBLE MANAGEMENT

WTS management strongly believes in open door policy where management encourages open and honest communication, and uses several avenues for communicating this open door policy. The policy serves as an example of senior management's accessibility. During the interviews

employees provided positive feedback with regard to access to top management and expressed no fear in going to the top management with a safety related issue, if needed.

The Reevaluation Team observed a continuation of visible management leadership with respect to S&H at WIPP. The Operations Manager who is responsible for daily operations at the site is highly visible to exempt and non-exempt employees and in demonstrating commitment to and leadership in the S&H program. Operations manager and his staff (senior level managers) continue to participate in quarterly all ? employee meetings. Employees affirmed that management exhibits a strong presence in both surface facilities and underground.

A primary mandate conveyed by all levels of WTS management to employees is that work will stop immediately if any job is unsafe. Senior managers, line managers, and first-line supervisors are visibly involved in S&H, most notably through participation in scheduled landlord inspections. Additionally, their visibility is demonstrated by their participation in the Executive Safety Council. During the evaluation, the Reevaluation Team interviewed upper-level and mid-level managers and observed many programs demonstrating visible involvement and commitment to S&H. One such example is the recently re-instituted management by walkaround program where employees were observed by the management while they were performing their jobs.

Senior managers continue to hold roundtable sessions with their employees, which encourages employee interaction and discussion with management in informal settings. Meetings are composed of a manager and small groups of employees discussing issues raised by employees including safety, and area-specific processes. All employees within their departments are welcome to attend these meetings. The roundtable meetings are one example that demonstrates how S&H communication flows both ways between management and employees. However, based on the Reevaluation Team's recommendation, the senior management is currently addressing General Manager's visibility issue, which was diminished over the last six months

### **Recommendation**

The Reevaluation Team recommends that the General Manager's visibility at WIPP should be made more prominent.

## **F. SITE ORIENTATION**

All persons going into contractor-controlled spaces at the site receive appropriate site orientation. Security procedures ensure that all persons entering the site either receive the orientation training or show evidence of site orientation training within the last year. The Reevaluation Team received the one-half hour site orientation video [General Employee Training (GET)] and received a card, which they had to produce whenever entering the site. Entry and exit from the site is adequately controlled by Security.

The site practices strict personnel accountability to assure that all personnel are accounted for in case of an evacuation. The Reevaluation Team found that visitor safety is well covered by the current evacuation procedures. However, the reevaluation team recommends that the site orientation training be updated to include the emergency telephone number.

## **G. SUBCONTRACTORS**

The reevaluation team noted that subcontractor workers adhere to the same S&H rules that apply to WTS employees. Each contractor is given "General Safety & Security Rules for Contractors," which details the S&H requirements such as electrical, scaffolding, and walking and working surface requirements. As found during the previous reevaluation, a project engineer is assigned for each construction job. The reevaluation team verified through interviews that Project Engineers conduct walkthroughs of the site daily. The project engineers undergo several safety training sessions including 40-hour training in recognizing OSH hazards, electrical safety, first-aid, lockout/tagout, and compressed gas cylinder storage and usage. In addition, the Industrial Safety Department oversees all subcontractor operations. DOE personnel also conduct periodic walkthroughs of the construction projects. The safety office periodically audits the work areas, documenting discrepancies on a standard form. Usually these discrepancies are corrected expeditiously or mitigated by the appropriate subcontractor. Discrepancies that are not corrected immediately are entered onto the site's hazard abatement listing. If the need arises, any employee, including a subcontractor, can stop work. The Industrial Safety Department also requires subcontractors to complete their own self-audits.

At the time of the review, the reevaluation team noted that there are five resident contractors at the site including one for cafeteria and one for site security. Based on an interview with the construction contractor's superintendent and document reviews, the reevaluation team verified that the subcontractors have to submit their health and safety plans (HASPs), job hazard analyses (JHAs), safety training documentation, and OSHA 300 injury and illness logs. Contractors selected to perform work must have these plans approved by the Industrial Safety and Health Section, and must accept WTS's safety requirements. The subcontractors that were interviewed recognized that their S&H performance was important to the selection process and to their continued tenure at WIPP. Additionally, the contractor employees have to attend daily pre-job briefings where hazards are discussed and weekly safety meetings.

## **H. PROGRAM EVALUATION**

WTS conducted a comprehensive and thorough program evaluation that met DOE-VPP requirements. In August 2001, the self-evaluation that addressed DOE-VPP, ISMS and Worker Protection Program, was performed as a trial approach combining requirements. The same approach was utilized for the evaluation conducted in August 2002. The reviews combined elements of DOE-VPP, and the requirements under Integrated Safety Management System and Worker Protection Program. Prior to going to the site, the Reevaluation Team reviewed the program evaluation that was conducted by WTS during July 31, 2001 through August 22, 2001. WTS conducted a similar program evaluation from August 26, 2002 through September 6, 2002. The evaluations for 2001 and 2002 were conducted by a group of individuals including management, exempt and nonexempt employees, Safety Awareness Team members, and bargaining unit personnel.

The program evaluations used a point system. Points were given as following, out of a possible 100 points:

- Monitoring Tools – 30 Points
- Continuous Improvement – 15 Points
- ISM Survey/Criteria Review and Approach Documents – 20 Points
- Committee Effectiveness – 10 Points
- Onsite Inspections – 10 Points
- Interviews – 15 Points

A draft report was available to the Reevaluation Team for the recent (August 2002) program evaluation. A total of 77.5 points were scored during the August 2002 program evaluation, which demonstrates strong safety culture, while providing opportunities for improvements in the areas found to be not very strong. Both reports provided a candid self-evaluation of the requirements and resulted in a number of recommendations that the site responded. WTS management has taken actions to address the most of the recommendations from the previous evaluation to continuously improve the program and is committed to address the recommendations derived from the recent program evaluation.

## IV. Employee Involvement

The Reevaluation Team observed that employees continue to be strongly involved in WIPP's S&H program. During the interviews, the reevaluation team received positive feedback from employees regarding their involvement. The employees feel responsible for their safety and that of their peers. The Reevaluation Team found a healthy sense of ownership in S&H at the WIPP site. For example, during the walk around the team found one employee who took upon himself to immediately clean up a small oil spill around a piece of equipment that was pointed out to him by another employee accompanying the reevaluation team. Later the accompanying employee stated, "We look out for each other." The employees were candid and cooperated fully with the Reevaluation Team. WTS management was very helpful in providing access to employees for formal interviews. In addition, the Reevaluation Team was free to walk anywhere above ground and interview employees informally. Informal interviews below ground were also easy to achieve. The atmosphere for interviewing employees was very positive. All individuals knew of their authority to stop work if they believed that unsafe conditions existed. Several of the interviewed individuals had invoked their stop work authority since the last reevaluation and none had received negative feedback as a result.

Employee involvement also occurs through several other safety committees described below. In addition to those committees, the Executive Safety Council continues to oversee the safety program and ensure its effectiveness. It has a DOE manager who chairs the council, and Westinghouse managers as voting members. There are a number of non-managerial employees, including some non-exempt employees, who meet consistently with this committee to report on various committee activities or other S&H aspects.

**Surface Management Council:** This council coordinates and maintains the Landlord Program and addresses surface facility safety-related issues.

**Membership:** The SMC is chaired by an Operations section manager. Additional positions include:

- Site Security Manager
- IS&H Manager
- Landlord Coordinator
- Mechanical & Civil Engineering Section Manager
- QA Representative
- Nonexempt Representative (Co-chair)
- Landlords

**Electrical Safety Committee:** The committee provides WIPP management and subcontractors with a technical resource for identifying, communicating, and recommending resolution of electrical safety issues.

**Membership:** One member and one alternate from each of the following organizations represent the committee:

- Construction
- Engineering
- Facility Operations
- Hoisting Operations
- Industrial Safety
- Maintenance
- Mining Operations
- QA
- One non-exempt member and an alternate selected on a volunteer basis from operations

**Operations Safety and Communications Committee:** The committee addresses questions or concerns of Operations personnel. Their primary purpose is to discuss safety issues unique to Operations employees. However, all employees are invited and encouraged to attend.

**Membership:** The chairperson is appointed by the WTS Assistant General Manager for Operations. The membership includes:

- A representative from each Operations section
- Industrial Safety
- Human Resources
- Construction subcontractors

**Lessons Learned Working Group:** This group administers the WTS Lessons Learned Program to ensure ongoing improvement of plant safety and reliability. The LLWG promotes the effective generation, dissemination, and use of lessons-learned information.

**Membership includes:**

- ES&H
- Human Resources
- Operations
- QA
- Nonexempt member of the bargaining unit
- Industrial Safety

**Safety Awareness Committee:** The committee is tasked with involving employees in the development of program goals, objectives, and performance measures for the worker protection program, as well as the identification and control of hazards in the workplace. The committee provides support and manpower for activities, which promote and encourage employee safety awareness.

**Membership:** The membership is to be representative of the WIPP worker population with 50 percent exempt and 50 percent nonexempt employees, including bargaining unit members (subject to approved contract.):

- Business Management
- ES&H
- Communications
- Operations, one each from;
  - CH Ramp Up Project
  - Mining Development Project
  - Surface O&M
  - Operations Support
  - RH Project
- Quality Assurance
- Human Resources
- National TRU Program, one each from;
- Central Characterization Project
- Strategic Planning-Research & Development

This committee was reorganized to more accurately reflect WTS objectives in employee involvement and safety. The charter has been expanded to involve employees in accident and

safety investigations, assessment, reviews of trends, resolution of safety issues, and continuous improvement in safety. Previous focus was on safety awareness only.

**Radiological ALARA Committee:** The ALARA (as low as reasonably achievable) Committee has oversight for facility activities and techniques to minimize exposures to ionizing radiation. It provides overview of specified facility activities to ensure that the appropriate measures are taken to maintain radiation exposure ALARA for those construction or maintenance work packages which meet or exceed ALARA related trigger values. It is made up of representatives of the major departments and currently has no non-exempt members, although it does have non-managerial exempt members. The chairperson is appointed by the ES&H department manager.

**Membership includes:**

- Plant & Design Engineering
- CH Ramp Up Project
- RH Ramp Up Project

## V. Worksite Analysis

### A. PRE-USE/PRE-STARTUP ANALYSIS

The reevaluation team noted that workers are involved in pre-startup job planning and hazard assessments, and are aware of and use the Westinghouse Procedure, WP 04-AD3001, which establishes the checklists and instructions for verification of compliance with technical safety requirements (TSRs). Workers also use individual job hazard analysis (JHA) methods, which include a JHA worksheet incorporated into a computer program. The computer program designed specifically for the WIPP site, forces consideration of all potential hazards and requires mitigation in the planning process.

WTS also uses Operational Readiness Reviews (ORR) and Performance Demonstration Reviews (PDR) as mechanisms to ensure operations can be performed safely and equipment will perform as designed. For example, in August 2002, WTS performed a PDR for the Remote Handled (RH) waste process to demonstrate the safe operation of all equipment and processes to be used when the site begins receiving RH transuranic wastes. The results of the PDR indicated that RH waste handling and emplacement operations could be safely performed upon correction of pre-start findings. An ORR will be conducted before receipt of RH waste begins.

The Reevaluation Team verified that changes and modifications of equipment continue to be introduced into the WIPP through the engineering design change process and the routine maintenance of plant systems and equipment. New systems and equipment planned for installation at the WIPP site are designed in accordance with the Engineering Conduct of Operations, WP 09. Input from individuals from the following organizations are incorporated in the design stage:

Safety, Health and Security Department (including fire protection)

Environmental Compliance

Operations Department

Radiological Safety

Industrial Safety and Hygiene, and

Other Engineering Disciplines

Comments are formally received and resolved as appropriate as the final design is being prepared.

When the design is 90 percent complete, a formal final design review is conducted, as specified in the Design Review Plan. All of the applicable reviewers who helped review the conceptual design return to participate. As a part of this review, WTS uses a Design Review Checklist. As its name suggests, the checklist systematically helps ensure that reviewers address all aspects of the design. The checklist includes sections on environmental protection, industrial safety, process safety, and Safety Analysis Report (SAR) impacts. As was done during the conceptual design

review, formal comments are received and formally resolved before the system is constructed or installed.

Once the system is fabricated or built and startup testing is complete, WTS Engineering prepares a system turnover package for operations. The system turnover package is an engineering evaluation confirming that all of the people, parts, and procedures are in place and ready for use by operations. The review includes an individual review of operator training, spare parts, as well as field verification of procedures. Interviews with managers and first line workers, as well as document reviews, validated that this process is understood and routinely used.

Readiness for safe operation, within the specified controls, including personnel readiness is verified prior to work initiation by a number of mechanisms including:

- Operator participation in pre-job briefings, review of shift turnover reports, and implementation of procedures.
- Line manager participation in pre-job briefings, review of the turnover status sheets and verification and approval of the Mode Compliance Check List.
- Validation and implementation of procedures by technical personnel
- Attendance at Plan of the Day (POD) meetings by representatives from all WTS departments
- Craft personnel review of the safety professionals' input prior to starting to work.
- Participation in POD meetings, review of Work Orders, and monitoring of construction work activities by Safety and Health support personnel.

## **B. COMPREHENSIVE SURVEYS**

The Re-certification Team noted that comprehensive surveys continue to be a critical component of an effective S&H program at WTS. The Industrial Hygiene baseline survey and strategy for monitoring program was updated, developed and implemented resulting in an excellent database, identification of needs, and subsequent plan for future monitoring. The scope of hazardous work authorized for WIPP is formally documented in Statements of Work and Work Authorization Directives pertaining to the contract. Westinghouse also maintains an authorization basis (DOE/WIPP 95-2065) as part of its Safety Analysis Report (SAR). The Reevaluation Team verified both documentation and effective utilization of the many comprehensive surveys that are routinely conducted at WIPP which provide a system of checks and balances to ensure safety and regulatory compliance. Included in the comprehensive surveys are:

Condition Assessment Surveys (CAS), which include the Capital Assets Condition Assessment Survey (CAS-CHAMPS) are used; (1) to determine whether buildings, equipment, and facilities have reached or exceeded their design usefulness, and (2) for the identification and reporting of

deficiencies. Photos are now part of the CAS-CHAMPS review and U/G inspections to improve the communication of deficiencies identified.

Executive Safety Council Surveys.

Surface Management Council Surveys, which address surface facility safety-related issues, including periodic field verification of area conditions.

The Landlord Program, which ensures that DOE and OSHA requirements for safety and cleanliness of existing facilities are met; surface facilities are inspected each month by the landlord for adverse material conditions, radiological safety, industrial safety, and housekeeping.

Emergency Management Department inspections for Life Safety Code requirements; these inspections are coordinated with preventive maintenance work packages. The inspection team includes personnel assigned from Industrial Safety, in accordance with WP 10-WC3008, to assist in addressing safety issues identified during the comprehensive surveys.

Unique management assessments that are conducted to focus on safety involve personnel and enhance safety awareness. Examples of these included a hazard recognition assessment that staged hazards throughout the workplace to determine personnel reactions.

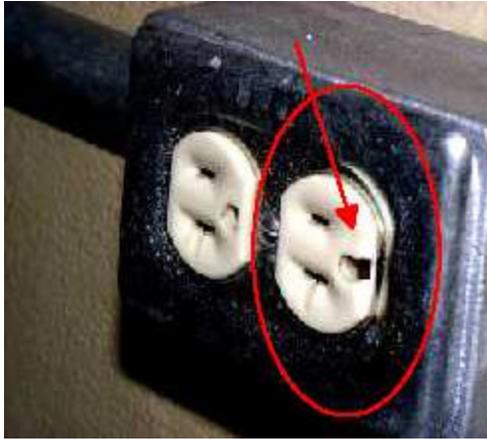
Industrial Hygiene Surveys.

The S&H deficiencies that are identified by various types of aforementioned inspections and surveys, including the day-to-day observations of site personnel, which are referred to as Action Requests (AR) are tracked and managed via the computerized CHAMPS system. A program called First Requests (FR) has been merged into the AR program since the last onsite review. The FR program focused on those deficiencies that could be corrected on the spot. Now, on-the-spot deficiencies do not require any paperwork and are still corrected but not tracked.

The industrial hygiene baseline survey and strategy for the IH monitoring program was updated, developed, and implemented resulting in an excellent database along with the identification of IH needs and a subsequent plan for future monitoring.

### **C. ROUTINE HAZARD ASSESSMENTS (SELF-INSPECTIONS)**

The Reevaluation Team found that WTS continues to successfully conduct self-inspections both aboveground and mining operations. Each of the groups performing the inspections is trained to recognize, note, and report any hazards. The Reevaluation Team's review of inspection reports, particularly those generated by the landlord inspections, confirmed that, once noted, the cognizant landlords track a hazard to correction. Interviewed employees were very aware of the self-inspections; they regarded the self-inspections as thorough, and felt free to express any concerns or point out any hazards to the various organizations performing the self inspections.



The picture on the left shows a broken receptacle that was identified recently by CAS/CHAMP team during their weekly walkaround of WIPP's facilities. Photos are taken for all such identified hazards through a digital camera. These photos are later published in WIPP today, an electronic newsletter that is available on WIPP's intranet. Employees are quizzed to identify hazards contained in such a photo. These photos are published weekly on WIPP Today and the answers are published in the following week.

**Figure 1 – Photos are taken by the WIPP's CAS/CHAMP Inspection Team and are used in training all employees later through WIPP Today Electronic Newspaper.**

Self inspections or Pre-Operational checks (Pre-Ops) are required on equipment before the first use of the day shift or if the integrity of the piece of equipment is in doubt. For instance, a Pre-Op may be performed as a retest after maintenance has been performed and may be required after a casualty has occurred.

Pre-Ops normally include looking in the equipment log book for outstanding deficiencies, inspecting the equipment for foreign materials in or around the equipment, and inspecting the general condition of equipment prior to use. Additional safety checks are also performed to ensure proper functioning of vehicle horns, lights, and other safety features.

Workers clearly understood their responsibilities for safety and their roles in the safe operation of WIPP, and they appeared knowledgeable of work package hazard assessment requirements, the Industrial Safety Program requirements, and the Pre-Op checks, which they used regularly.

Because of the unique hazards posed by WIPP's extensive underground facilities, two varieties of routine hazard assessment are performed: one for surface areas, the other for underground areas.

Westinghouse continues to perform several types of self-conducted routine hazard assessments for WIPP surface facilities. These include:

1. A daily inspection by facility operations, covering the entire facility. These inspections have been conducted since 1987.
2. Monthly inspections by facility engineers, Emergency Services technicians, and landlords. Once a month, the facility engineers cover select areas of the site, while the Emergency Services technicians cover each building. These inspections have been conducted since the inception of the site.
3. The Landlord Program covers the entire surface area of the WIPP site, with one individual assigned as a "Landlord" for each facility on site. The Landlords may choose, based on

potential hazards and work processes in their area, the frequency of inspections, but each submits a quarterly report, deemed more efficient than the monthly reports required previously.

The areas covered include individual buildings, such as the Engineering Building, the Guard and Security Building, and the Support Building; also included as individual areas are general areas such as electrical substations and the sewage lagoon. The landlords are typically managers or professionals who work in the appointed area. Trained in developing checklists and recognizing hazards, they are responsible for developing a checklist in conjunction with the safety department, based on the activities, operations, and hazards in their cognizant area. Each quarter, the landlord completes his checklist and submits it to WTS maintenance management. As the landlords walk around, employees are free to approach them and voice any safety and health concerns. Deficiencies noted in the landlord inspection are handled by cognizant persons in the area or, if required, entered into the work control system to be prioritized and corrected. If an item requires a significant amount of time for correction, actions to mitigate the hazards are taken. Landlords have shutdown authority.

4. Safety organization inspection of all surface areas and equipment uses a risk-based scheme to determine the interval of inspection. The entire site is covered annually; high-risk facilities or areas are covered quarterly.

Underground. Several kinds of routine hazard assessments are conducted underground. Performed at varying intervals, they focus on different areas:

1. Each day, personnel inspect their work areas, the equipment they use, and the ceiling under which they will work.
2. Daily inspections are likewise performed by Industrial Safety, Mining Operations, rovers, and Underground Services personnel. The Underground Services inspections cover the entire underground area each day.
3. The entire underground area is also inspected each week by two groups from Mining Operations.
4. Heavy scaling inspections are performed approximately monthly; these, too, cover the entire underground area.
5. Pre-MSHA inspections are performed monthly. A small team walks through the facility and conducts inspections similar to MSHA inspections, later conducting a close-out meeting with management to ensure any discrepancies are corrected as soon as possible.
6. Finally, an annual comprehensive and intensive inspection of the entire underground is performed by the entire Mining Operations staff.

Most of these inspections generate written reports that must be signed off by cognizant personnel. The Reevaluation team inspected many such reports and verified appropriate sign-off. Based on review of the inspection activities, the Reevaluation Team found that WTS conducts a vigorous program of comprehensive self-inspections.

## **D. ROUTINE HAZARD ANALYSIS**

The WTS JHA system was significantly upgraded since the last reevaluation with the introduction of a computer template program, called Simon. The program is used for new procedures and individual work orders, requiring analysis of potential hazards during the job planning process. Additionally, routine jobs in the underground have been identified for development of Safety Analysis Sheets that follow every aspect of a job hazard analysis to eliminate hazards or require appropriate protection.

Process type JHAs are kept with the work package for which they are developed. Equipment JHAs, often based on a combination of manufacturer Operator and Maintenance Manuals and WIPP site requirements are used to train personnel on the equipment and are incorporated into work packages when needed.

A number of JHAs were reviewed by the team for both underground and surface operations. Recommended practices to control or eliminate potential hazards were listed for each procedure step. The JHAs reviewed were complete and thorough. Tours through the site revealed no areas that had been left unaddressed in JHAs. Staff working on packages and in shops were familiar with the JHAs and the hazards associated with the work activity.

WIPP subcontractors are required by contract to identify and control the hazards associated with their scope of work. There are several permanent subcontractors, performing such services as warehousing, document control, security, and information technology. Permanent contractors must produce their own WTS-approved safety program that incorporates compliance with the WTS safety program, or commit contractually to the WTS safety program.

Temporary task-related subcontracts, several dozen contracted per year, each require a WTS-approved JHA. When necessary, WTS safety professionals and engineers assist subcontractors to develop the appropriate JHA. Subcontractor employees are invited to participate in safety committees and are included in all safety-related communications, activities, stand-downs, etc. Supporting their toolbox safety meetings, subcontractors make extensive use of the WTS videotape library.

## **E. EMPLOYEE REPORTS OF HAZARDS**

During the interview employees indicated that management encourages to express all safety and health concerns freely. Interviewees felt that management followed up on their concerns and corrected deficiencies in a timely manner. Employees also indicated that they are free to write an Action Request (AR). An AR is the first step toward putting an item into the work control process and provides a mechanism to track the item to completion.

Review of policies also revealed an open and tolerant environment for employee reporting of hazards. For example, WP 12-IS.01, Industrial Safety Program, states, "Every employee has the right and responsibility, without fear of reprisal from management or coworkers, to identify unsafe conditions, and if imminent danger exists, to stop work and report the hazard so the condition is

corrected before proceeding.” MP 1.2, Work Suspension and Stop-Work Direction, is the policy, which empowers every employee onsite to cause the stoppage or suspension of activities to prevent imminent danger. The review team noted instances where employees exercised right to stop work when they felt it was needed. An August 2001 event in the CH Bay and a September 2002 event on the roof of the Guard and Security Building provide examples of employees using their “stop work” rights.

In the first event, waste handlers detected an unusual odor escaping from the TRUPACT they had just opened and ceased operations immediately to request determination of the potential hazard. Although the Industrial Hygienist found no hazard in subsequent tests, each affected employee was examined at the site health clinic before being released to return to work. In the second case, a safety professional exercised the “stop work” provision when he found two subcontractor personnel sitting unprotected on the roof ledge. The work was stopped until after those personnel were retrained in appropriate fall protection techniques and requirements.

Management Policy, MP 4.3, Employee Communications, states that managers are responsible for practicing the Open Door policy for resolution of any employee concern. Anonymous concerns may be submitted by using the Safety Hotline or by completing an Employee Concern Form. When an employee concern is reported to Human Resources (HR), WP 4.2, Employee Concerns Policy, requires a response to the employee regarding resolution of the issue within 10 working days. Employees use several means to report hazards. The most common are reports to immediate supervisors; and reports to committee members; and ARs, which go to Maintenance to repair or correct unsafe conditions. In addition, employees may fill out “Employee Concerns” forms, which are reliably located near bulletin boards. These may be filled out anonymously for Human Resources, which receives them and oversees their resolution, and may withhold the name of the employee on request. A recent addition to the list suggestion mechanisms for safety improvements is the Continuous Improvements Through You (C.I.T.Y) procedure. Not specifically designed for safety alone, the C.I.T.Y. program provides a mechanism for employees to offer improvement suggestions in any area of the business operation, from processes to equipment to training and safety. However, more than a dozen safety-related suggestions have been submitted through the C.I.T.Y. program in the year since its inception. Most of the concerns that employees cannot handle themselves are reported to their managers.

## **F. ACCIDENT INVESTIGATIONS.**

The Reevaluation Team reviewed written procedures that describe an excellent accident/incident investigation system. These procedures include guidance on the reporting of incidents or events that occur at WIPP, using a root cause analysis to identify the source of the incident/event, and developing an incident/event lessons learned for dissemination to WIPP management and workers.

Accident investigations are conducted in accordance with 15-MD3102, Event Investigation, and 13-QA3016, Root Cause Analysis. These procedures are initiated immediately following an identified event, i.e., any occurrence or significant deviation from planned or expected behavior that could endanger or adversely affect operations, personnel safety, property, or the environment; is contrary to regulatory requirements; or is otherwise believed to warrant investigation.

In addition to investigation of events which may be considered reportable, an investigation may be conducted regarding any condition which is determined to be a Significant Condition Adverse to Quality; any condition which may not be significant by itself, but which warrants investigation to determine if it is part of a trend; and any condition the cognizant manager determines requires investigation as a matter of good business practice. When an accident occurs at WIPP, the Facility Manager or Facility Manager Designee is held responsible for determining whether immediate corrective action is required prior to restart of continued operations. The investigation team members are chosen based upon their technical expertise in the event under investigation. In addition, they complete root cause analysis (RCA) training and are required to be independent, knowledgeable persons with no bias or vested interest in the results of the investigation.

The Team's evaluation, based on document review and random personal interviews, confirmed that WTS continues to maintain a high quality accident/incident investigation program.

All incidents/events are reported to the Central Monitoring Room by telephone, radio or mine paging phone. The CMR is staffed around the clock. The duty officer logs in every call and relays serious incidents or events to the Facility Manager or his designee. If the incident/event meets the criteria of DOE 232.1A, then an occurrence report is generated in the Occurrence Reporting and Processing System (ORPS) database. Subsequent root cause analysis and tracking are performed and corrective actions taken as specified in the ORPS Order.

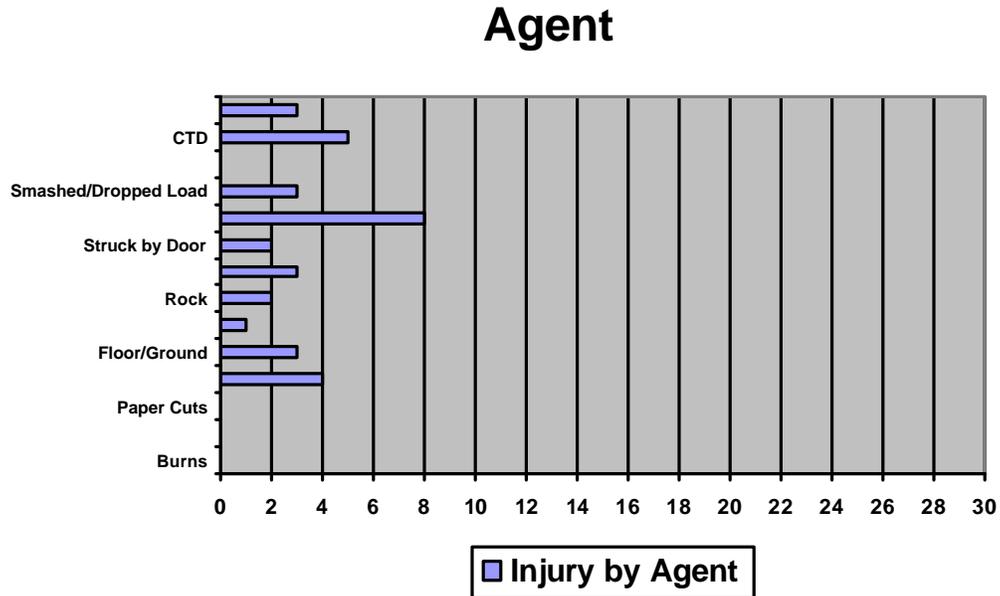
If the incident/event merits attention but falls short of the requirements of the ORPS Order, the incident/event root cause analysis, tracking and corrective action are performed more informally. A root cause analysis team composed of exempt managers and non-exempt workers investigates those incidents/events that fall in either of the two categories mentioned above. Only individuals that are fully trained and qualified as team leaders may serve as the root cause analysis team leader. Non-exempt workers can be qualified as root cause analysis team leaders and routinely perform in this capacity.

The WTS Lessons Learned program draws lessons learned from both WIPP experiences and from around the DOE complex. The lessons learned are sent via hard copy to managers who communicate the lessons to the employees in their group. The Lessons Learned are provided on an intranet home page. Virtually all the employees who were asked by the team about Lessons Learned indicated that they routinely received lessons learned information. All investigative reports involving reportable and non-reportable events are forwarded to the Lessons Learned Working Group (LLWG).

The LLWG reviewed more than 3,600 Lessons Learned materials during 2001. Of these, 320 were determined to be applicable to the WIPP and disseminated to WTS department managers, DOE, and Sandia National Laboratories personnel for their review and use. Feedback from the WIPP department managers indicates that 85% percent of the Lessons Learned Bulletins disseminated by the LLWG were deemed applicable to various departments. Managers indicated that the Lessons Learned Bulletins were placed in their department's Required Reading Programs, used as subjects for safety and staff meetings, or used the information to initiate changes in personnel training or procedures.

## G. TREND ANALYSIS

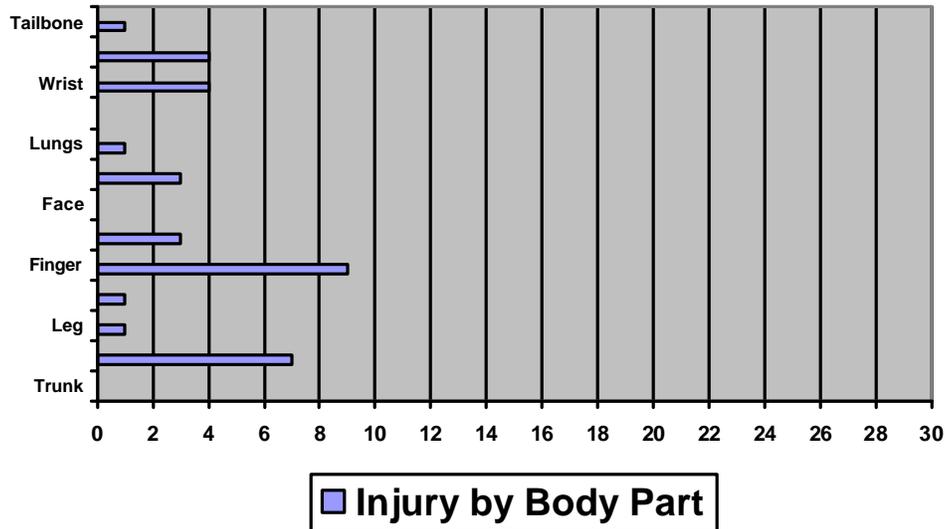
WTS continues to maintain a trending program for industrial safety items. Data on injuries and illnesses, and fire protection impairments are tracked monthly, quarterly, and yearly and communicated to employees. These reports categorize and trend various injuries to keep management informed and provide summary data for safety awareness programs. Example charts that are sent to the management and communicated to employees on a monthly basis are included in this section of the report.



WTS trends variety of information regarding its Recordable Injuries and Illnesses and Lost Workday Incident rates. All injuries (first aid and recordable) occurring at the WIPP are broken down into three categories:

- Nature of injury
- Body part affected, and
- Agent or cause of injury

## BODY PARTS



These categories are then graphed to determine any similarities or trends. Interviews with management personnel showed that they were cognizant of the report and were using the injury/illness data in their day-to-day hazard prevention activities. The Reevaluation Team reviewed records of occupational injuries distributed to management, which highlighted incidents involving repetitive motion injuries. The information also documented the nature of the work that resulted in employee discomfort. The trends are also discussed during committee meetings and further made visible as part of safety awareness efforts.

Facility inspections performed by Industrial Safety and Facility Operations are tabulated for trending. Inspection results are categorized into several areas, such as electrical and housekeeping. Trending of inspection hazard data occurs frequently, with communication of trends to management and employees occurring through electronic media, including safety reminders, safety alerts, and electronic newsletter articles.



## **VI. Hazard Prevention and Control**

### **A. ACCESS TO CERTIFIED PROFESSIONALS**

There are several safety and health professionals including Certified Industrial Hygienists and Certified Safety Professionals available onsite for consultation and resolution of safety issues. In addition, Westinghouse TRU Solutions (WTS) has access to corporate expertise in several disciplines including risk assessment, safety analysis, industrial hygiene, and others as needed.

Safety and industrial hygiene staffing consists of three safety professionals, two senior safety specialists, two safety technicians, and two industrial hygienists. Safety Department has three Certified Safety Professionals (CSP). Three years ago, there were two Associate Safety Professionals (ASP) who have allowed that certification to lapse. Since the last onsite visit some S&H personnel were “matrixed” to the line organizations. The two industrial hygienists are Certified Industrial Hygienists (CIH), and one of them is also a CSP (counted with the safety staff).

The medical staff consists of a Board Certified Occupational Physician who is a consultant and visits at least quarterly, and two registered nurses. One registered nurse is a Certified Occupational Health Nurse Specialist. These nurses are on duty during the normal day shift only. Both of the nurses are Cardio Pulmonary Resuscitation (CPR)-certified. The nurses are supported by a number of Emergency Medical Technicians (EMT), present during all shifts. The present staffing of S&H personnel appears to be sufficient for implementing the programs at the site.

### **B. METHODS OF HAZARD CONTROL**

WTS implements controls to ensure protection of the public, workers, and the environment from the hazards identified at the site. The review team noted that WTS management and employees always try to engineer a problem out in removing hazards. For example, on a waste hoist, in addition to a cage around its access ladder, WTS management with the help of employees input installed a rail/fall arrest system to prevent an employee from a possible fall while climbing up the fixed ladder. A multi-layered administrative process continues to be implemented to help ensure hazards are identified and cautions and warnings are incorporated into operating procedures to mitigate the hazards. As the first step in the process, the procedure writer is directed to consider hazards when preparing a procedure and is to include a precautions and limitations section in each procedure. As the procedure is developed, cognizant individuals are required to complete a procedure checklist designed to ensure that consideration has been given to hazards, which may be associated with work covered by the procedure, and the document is distributed for technical review.

Responsibility for review of work packages and procedures is assigned to experts in the Industrial Safety & Hygiene section of ES&H. As a final step in the procedure preparation process, the Document Review Committee conducts a review of the procedure. They are required to verify that applicable nuclear, radiological, and industrial safety requirements have been considered.

WTS systematically tracks and acts one upon opportunities for improvements including hazard correction. *Corrective Action Program* (WP 13-QA3003) provides instructions for processing, documenting, and controlling nonconforming items, material, or processes. Nonconforming items and processes that affect safety, personnel, or the environment must be corrected immediately or interim actions taken immediately to ensure the safety of personnel and the environment. The Commitment Tracking System (CTS) has replaced the Systematic Tracking and Reporting System (STAR) since the last review. A weekly printout of all outstanding items is provided to management with special emphasis added by management where it is needed.

PPE is used when it is impossible or impractical to eliminate hazards through engineering, substitution, or administrative means, or for handling emergencies. When selecting PPE, the appropriate Material Safety Data Sheet (MSDS) is utilized as a guideline, in conjunction with the Industrial Hygienist's recommendations, to choose the correct PPE for a specific application. Repetitive tasks requiring PPE have been specifically addressed in the appropriate plans, procedures, protocols, and work orders. Supervisors are tasked with ensuring that the required PPE is provided and properly used. Supervisors must also ensure that all personnel required to wear PPE have been adequately trained in its use and limitations.

Visitor escorts must make certain that their guests are properly attired with the required PPE for the area of visitation. The Reevaluation Team observed this first hand when visiting the mine where appropriate PPE was issued to each member. PPE is made available to all employees. Employees expressed confidence in the WTS PPE program. An effective preventive maintenance and inspection program ensures the PPE is maintained in good working condition, properly stored, and kept in a sanitary condition. It is inspected prior to each use and is cleaned and/or replaced when necessary.

Site-specific PPE requirements include but are not limited to face and eye protection, foot protection, head protection, hearing protection, respiratory protection, fall restraints, electrical protective clothing and equipment, emergency response PPE for emergency situations including fire, radiation or hazardous materials contamination, and medical emergencies.

## **C. POSITIVE REINFORCEMENT**

Westinghouse management makes an effort to recognize employees for their positive contribution towards safety. Each year, employees are rewarded cash under the employee profit share program, the amount of which has been reduced over the last two years. In addition, Westinghouse implements other positive reinforcement programs, including the following award programs that recognize the contributions of employees:

- Continuous Improvement Through You (C.I.T.Y.) – previously reported as the Process Improvement Program (PIP) replaced last year with C.I.T.Y.;
- Safety Fair; and,

- Profit Share Program.

There were three other recognition programs noted during the last reevaluation visit, but these programs have been discontinued due to lack of funding. They were:

- Giveaways for correctly answering safety-related questions – ended 2-years ago;
- Safety Calendars – ended 3-years ago; and,
- WIPP Kids Safety Poster Contest – ended 3-years ago.

Interviewed employees felt that the new C.I.T.Y. program is not as good as the previously implemented PIP program. This might account for only 21 “safety related” suggestions being submitted over the past year. These suggestions cover a range of topics such as: installation of a window in a warehouse door, placement of reflectors along entrances to the site, and installation of grab handles on specific exit doors to prevent the wind from catching the door. Several employees interviewed had submitted suggestions through the C.I.T.Y. process and have decided not to use this program in the future. Based on these interviews, the Review Team suggested personal presentations of suggestions to the C.I.T.Y. committee in person. The WTS management has taken this suggestion very positively and a change to the procedure was started while the review team was at the site.

All employees expressed an awareness of the positive reinforcement programs listed above. Every employee interviewed who had stopped a job with a safety concern indicated that both supervisors and managers were pleased that the employee had done so, and in some cases the concern had resulted in a lesson learned that was communicated to other employees

## **D. DISCIPLINARY SYSTEM**

The implementation of Disciplinary System is very rare at WIPP because of the safety culture at the site. During the interviews, the review team gathered that there were occasions where contractor employees had to be removed from the site because of their unsafe safety practices. The most recent example of this was where a subcontractor employee was observed standing on the top rung of a ladder. A WIPP secretary told the employee to get down and that employee did not respond to the secretary. Subsequently, that employee was banned from the site by WTS management.

Though the interviewed were aware of the general outlines of the disciplinary policy and knew that it is described in the Employee Handbook, they never had to be disciplined. This has not changed since the last reevaluation visit. Most knew that the policy included written reprimands; days off without pay, or job termination. Most employees were able to provide an example of disciplinary action for safety violations. Although employees could not give examples of managers being disciplined, they continue to believe that the disciplinary treatment of the manager would be the same as that of the discipline of a worker. All the types of disciplinary methods — reprimands, time off without pay, and termination — can and have been used with managers in the past.

Westinghouse takes safety very seriously. Discipline for safety violations is not often necessary for employees at any level, but is handled fairly when it is necessary. All the employees at the site were well aware of this action.

### **E. Preventive Maintenance**

WTS Maintenance Operations Instruction Manual (MOIM), WP 10-2, provides instruction for maintenance work prior to beginning the work.

A work order can be initiated by anyone at the site if they detect or observe a problem with a structure, system, or component. Based on the MOIM requirements, all work orders require industrial safety hazards review in the form of an attachment. This review is performed to make sure that hazards are discussed with the employees. If hazards are determined to exist, then appropriate mitigating actions are incorporated into work instruction.

If the work involves an activity or piece of equipment that has an existing JHA (such as welding and cutting operations or certain hoisting and rigging activities), the JHA is included in the work package. Packages are planned with input from planners, maintenance, engineering, safety, and crafts. Hazards that will be encountered in the work are identified in the prerequisites section and reiterated in the work instructions as WARNING statements.

Safe work practices are identified. Lockout points are recommended in the work requests and installed by operations. Maintenance personnel are given personal locking devices, which they use to over lock the operations locks. Safety energy checks are used to confirm zero energy. Maintenance, engineering, planning and crafts personnel participate in the development of maintenance procedures. Maintenance procedures are validated the first time a procedure is used.

The Work Control Center attaches a validation form, and the procedure is performed while the planner, engineer, and others, including safety personnel, if appropriate, observe to determine whether the procedure is adequate and practical. If the procedure cannot be performed as written, or needs changes, it is sent back to the Work Control Center, where the planner and the engineer, if necessary, can revise the procedure.

WTS's preventive maintenance program has continued to be highly effective since the last review.

All equipment that the Team reviewed was in good working condition. Several employee and management interviews revealed that WTS places strong emphasis on preventive/predictive maintenance. The Reevaluation Team verified through documentation review that all pieces of equipment under the preventive maintenance program have a thorough preventive maintenance history.

All preventive maintenance work is scheduled in accordance with regulatory requirements and manufacturer's recommendations and tracked through a consistent, computerized, site-wide work control system. Each morning, WTS continues to hold a Plan of the Day (POD) meeting. This highly effective meeting documents all work occurring at WIPP during that day. Employee

interviews revealed that employees frequently inquired about the status of preventive maintenance activities in their work areas.

The work prioritization process was consistently implemented across WIPP and addressed issues affecting worker safety in a highly responsible manner. Interim actions on items requiring the work control process were effective in ensuring employee safety.

## **F. EMERGENCY PREPAREDNESS AND RESPONSE**

The reevaluation team noted that WIPP continues to implement a very effective emergency preparedness and response program. A hazard assessment is utilized as the foundation of the program. This process has been enhanced since the last reevaluation visit. The assessment identifies, analyzes, and makes an assessment of the worker risks, public health and safety risks, and their consequences as a result of postulated accidents. Over the past two years the WIPP site has upgraded the Emergency Management Program from an Operational Emergency Base Program to a Hazardous Materials Operational Emergency Program which included establishing Emergency Planning Zones, Emergency Action Levels, additional training, upgrading programs and procedures, and coordinating with related community education and plans.

WTS provides for the continued safety of contractor personnel, visitors, and members of the general public during emergency conditions, including serious accidents or natural disasters. Preparations to manage emergency conditions include; (1) minimizing the risk of personnel injury, and (2) maintaining exposure of employees, the environment, and the public to radioactive or hazardous substances and ALARA levels. Preparations have also been made to minimize facility or programmatic impacts during an emergency condition. As part of the preparedness program, the WIPP maintains four Semi-Automatic External Defibrillators ? one underground, one in the site clinic, one in the ambulance and one at the Skeen-Whitlock office building in Carlsbad.

The Emergency Response Program at WIPP consists of three manuals: the WIPP Emergency Management Program, the Emergency Response Procedures, and the WIPP Contingency Plan.

The ES&H Emergency Management department has round-the-clock capability for response to medical, radiological, hazardous material, industrial, security, mine rescue, and natural disasters.

Westinghouse is prepared to respond to all anticipated emergencies, including underground, industrial, national security, and continuity-of-government emergencies. At the present time, Westinghouse WIPP emergency plans and procedures are in place to respond to radiological emergencies.

### Emergency reporting and mobilizing

Emergencies of all types are reported to the Central Monitoring Room (CMR) operator via the emergency phone number (8111) or the mine paging system. The CMR uses established procedures to determine the degree of response that the emergency requires and activates the needed response. For very serious incidents, the Emergency Management Team can be mobilized to staff the Emergency Operations Center. For less serious occurrences, the CMR operator can direct the response of fire, medical, hazardous materials, and/or rescue teams.

It was noted that site-specific training for visitors (both escorted and non-escorted) did not contain the site emergency number, 8111. This was brought to the attention of WTS management and a recommendation by the Team of this point is provided at the end of this section.

#### Rescue teams

In response to surface emergencies and most underground emergencies (those not involving a mine evacuation and a subsequent mine rescue team response), the on-duty emergency service technician becomes the incident commander and assumes control of the emergency response. The incident commander directs the response efforts of the responding teams that include fire, medical, hazardous materials, and rescue personnel.

#### Training and equipment

PPE is available for all types of responders. Training is thorough and current. Necessary emergency equipment is staged, ready for use. Annual exercises and more frequent, smaller-scale drills are conducted to maintain training and awareness. Lessons learned from the exercises and drills are used to improve elements of the Site Emergency Plan. All personnel who were asked by the Reevaluation Team about emergency evacuation knew the procedures and the location of the accumulation area designated for the space that they occupied. Westinghouse WTS designated personnel to ensure that the Reevaluation Team members or visitors could get to the appropriate accumulation area in an emergency situation.

#### Mine rescues

Response to serious underground mine emergencies is provided by two highly trained mine rescue teams. These teams meet all requirements and criteria set by the U.S. Department of Labor, Mine Safety and Health Administration (MSHA) and have successfully demonstrated their capabilities and skills in semiannual in-mine drills as well as national competitions. The annual evacuation drill is usually conducted concurrently with one of the semiannual mine rescue team drills.

#### Site Emergency Plan

The WIPP site Emergency Plan was expanded from the MSHA-required elements to its present state in 1991 in order to address all DOE and OSHA requirements as well as MSHA elements.

Based on the review of the emergency preparedness and response program, the Reevaluation Team made the following recommendation to enhance visitor safety. (See Section III.G.)

### **Recommendation**

It is the Reevaluation Team's recommendation that Westinghouse review the site orientation emergency preparedness procedures covering visitors to ensure that they are aware of the site emergency telephone number.

## **G. MEDICAL PROGRAMS**

The reevaluation team noted that Westinghouse WTS continues to implement an effective occupational health program that implements the requirements necessary for worker protection and

the promotion of a healthful work environment. The Team found the medical program to be a quality program with caring personnel ? the nurses established a special high health hazard fitness program to allow an opportunity for some of higher health risk employees to be able to exercise onsite while under the supervision of medical personnel.

WTS has an active medical program that sees an average of 53 patients each day. Two full-time nurses provide the onsite services under the direction of an occupational medical director located in Carlsbad, approximately 34 miles from the site. There are a total of eight (8) emergency medical technicians (EMTs) in a paid status (primary job), another six (6) licensed EMTs (volunteers) and the assistance of another twenty-five (25) First Responders available onsite with a fire engine, rescue truck, and ambulance available 24 hours a day. Offsite agreements have been formalized for additional emergency medical services from the hospitals in Carlsbad and Hobbs, New Mexico.

Westinghouse WTS employs two nurses, one who was recently hired in July, after having a vacancy for over 2-months. Both nurses are Advanced Cardiac Life Support Certified, and are certified for pulmonary function testing by the National Institute for Occupational Safety and Health (NIOSH). Both nurses show great enthusiasm for their work and are apparently well respected by the work force, as indicated through informal interviews. One nurse is a Certified Occupational Health Nurse-Specialist. One nurse has also been certified by NIOSH for performing audiometric testing. These nurses are only on duty during the day shift on weekdays, with every other Friday off.

The Health Services facility is small, but equipped with an audiometric test booth that is calibrated annually, a miniaturized Spiro meter that is easily transported to the field, an examination table, and instrumentation for conducting lipid profiles as part of a growing wellness program. One of the growths in this program established by the nurses is a special high health hazard fitness program to allow an opportunity for some of the higher health risk employees to be able to exercise on site, while under the supervision of medical personnel.

There is a strong rapport and coordination between the industrial hygiene (IH) staff and the nurses. The nurses receive copies of sampling results from the IH staff, and often accompany them during site inspections, such as noise and ergonomic surveys.

The program is contained in WP 12-HS.02, *Occupational Health Program Plan*. The program includes a monitored care program for review of all ill and injured employees to maximize their recovery and safe return to work, and to minimize lost time and associated costs. It also establishes and maintains a contract for an Occupational Medical Director that ensures the physician responsible for the delivery of medical services is a graduate of a school of medicine or osteopathy, and meets the licensing requirements applicable to the State of New Mexico, as well as establishes and maintains a contract for a consultant pharmacist to ensure compliance with all federal and State of New Mexico drug laws.

The Health Services staff integrates with Industrial Safety and Hygiene and Radiological Control for the purpose of identifying work-related, or work site hazards, possible risks to employees, and meeting the requirements of a worker protection team, including assisting with the mitigation of

worksite hazards, as requested. They conduct an average of at least one job function analysis each week in their walk arounds. Health Services conducts formal Job Functions and Requirements analyses to determine if candidate or incumbent workers can safely conduct jobs. The Occupational Health Program is integrated with the overall site emergency plan. Health Services coordinates an advanced cardiac life support program including maintenance of appropriate certifications and coordination with emergency management for integration of duties and medical protocols. The nurses regularly inspect medical emergency equipment, such as the ambulance in the mine.

The Occupational Health Program maintains an immunization program for blood-borne pathogens and a biohazardous waste program, conforming to OSHA regulations and Center for Disease Control (CDC) guidelines, for those employees at risk to these forms of exposure.

Westinghouse WTS has a comprehensive set of excellent medical programs. Examples include:

- Wellness Program,
- Fitness For Duty Program, and
- Hearing Conservation Program.

In addition, Health Services maintains the following programs: pulmonary function testing, hearing conservation program, wellness program, fitness for duty program; and coordinates the following programs: employee medical exams, substance abuse program, employee assistance program, general immunization program, exposure control program, and workers' compensation program. Health Services also maintains the Encounter Log, which captures all worker illness and injury events including non work-related events, and the work-related illness and injury information. Both the Encounter Log and the illness and injury information are routinely reviewed for problems needing correction. A few events that involve the same department or same type of event are considered a sufficient trend to be analyzed since WIPP is relatively small and is committed to prevention. The illness and injury statistics are posted on the Intranet for all WIPP personnel to see. Westinghouse WTS staff believes that approximately 90 percent of employees have access to computer monitors to view these statistics. More information regarding these programs may be found in Exposure Control Plan (WP 15-HS.01), Occupational Health Program Plan (WP 15-HS.02), and in WTS Workplace Substance Abuse Plan (WP 15-HS.04).



## VII. Safety and Health Training

WTS continues to maintain an excellent training program with a dedicated training facility and a highly qualified training staff. Employees are sometimes used as subject matter experts. Since the last reevaluation, WTS Training Department developed few web based training courses including electrical safety.

WTS continues to use Systematic Approach to Training (SAT) where jobs are analyzed by a team of subject matter experts, engineers, employees, other experts as applicable, and training staff; and program curriculum and contents are developed. The systematic approach reasonably assures that the training program addresses tasks essential to safe operation.

New employees are given a 1-day orientation, followed by 2 days of General Employee Training (GET). WTS continues to offer fourteen modules under GET covering various safety-related topics, such as hazard communication, ladder safety, electrical safety, and so forth. In addition, employees who are assigned to operate a piece of equipment are required to undergo qualification card requirements. The qualification card is divided into four areas: equipment knowledge, equipment safety, equipment maintenance, and equipment practical. Employees must demonstrate proficiency in these areas before operating a given piece of equipment. Employees reported that safety training helps them understand the potential hazards of their jobs and ways to protect themselves. Top management continues to fully support the training program, as evidenced by interviews with employees and review of approvals on training documentation.

Training courses are updated continually using feedback furnished by the student's and the managers. All safety related training courses are sent biennially (every two years) to Safety and Health Department for review of content correctness. The Training Department continues to issue and maintain formal certifications, such as hoisting and rigging, lockout/tagout, and permitted confined space. Subcontractors are included in the same elements of the safety training programs as WTS employees and are given courses relevant to the work they are performing. Training is recorded in a computer database and backed up by hard copies. For example, the system provides employees and management a quarterly updated history of their training. For employees to be able to take refresher training a 90-day advance notice is given to both managers and employees to accommodate their time schedules.

Top-level managers are required to take a self-paced training course called MAST. Since the last reevaluation, to increase the safety and health awareness, all managers have undergone Supervisor Training and Accident Reduction Techniques (START) and have taken a hazard recognition-training course. The senior management indicated during the interviews that they are planning to provide a hazard recognition-training course to all WTS employees at the site.

From interviews, the review team noted that employees were aware of the hazards at the site and could cite types of training courses that were given to them. They were also aware of how to protect themselves and others from hazards of the job. Employees were also observed using PPE.

When questioned about their use of PPE, they were knowledgeable about its limitations and care. The employees could also explain in detail what their responsibilities would be for different types of onsite emergencies.

## VIII. General Assessment

### A. SAFETY AND HEALTH CONDITIONS

The DOE-VPP Reevaluation Team made observations during walk-around activities, both as a group and individually, and conducted over sixty interviews of WTS personnel. No conditions or events, which could be qualified as significant in terms of an unabated hazard to workers, were noted or reported. It was readily apparent that hazard prevention and control measures were effectively implemented at the site. Though the site was getting old, the consensus of the Reevaluation Team was that the site was well maintained, and no major safety and health issues were discovered.

### B. SAFETY AND HEALTH PROGRAMS

The Reevaluation Team found the WTS safety and health program to be highly effective. While minor opportunities for improvement were identified, the overall program is comprehensive and well communicated.



## IX. Recommendation

The Re-certification Team was able to reach a consensus opinion that the WTS at WIPP continues to implement highly effective safety and health programs for continued participation in the DOE-VPP as a STAR site. Accordingly, the Reevaluation Team forwards this report as formal documentation of their conclusion to senior management for their consideration in recertifying the site for DOE-VPP recognition, contingent upon completion of the following items within 90 days of the date of the letter transmitting this report.

### Recommendations

- 1) Because of the recent increased operations activity, there is a possible employee perception that management places higher priority on production over safety. The reevaluation team recommends that WTS should conduct an independent survey to understand the possibility of that perception and address it accordingly. WTS should provide the details on how the survey will be conducted and how the survey results will be addressed.
- 2) Another recommendation by the reevaluation team, which the senior management is currently addressing, is top managers' (General Manager's) visibility issue, which was diminished over the last six months. WTS should provide a description on the steps that will be taken or have been taken in addressing this item.
- 3) Resource issue was brought up several times during the interviews by the employees, and should be considered by the WTS management in addressing the aging issue of WIPP facility and the company incentive programs. For example, all the parking space paintings at WIPP were all faded, and the previous motivational/incentive programs (Safety calendar, WIPP Safety Kids, etc) were not being implemented because of the resource issues. WTS should provide details on steps that will be taken or have been taken to address this issue.
- 4) It is the Reevaluation Team's recommendation that Westinghouse review the site orientation emergency preparedness procedures covering visitors to ensure that they are aware of the site emergency telephone number. WTS should provide the necessary steps that will be taken or have been taken to address this item.
- 5) A statement of continued support of participation in DOE-VPP from both WTS management and labor representation at WIPP must be submitted to the DOE's Office of Regulatory Liaison, which administers DOE's Voluntary Protection Program .



## X. Appendix

### WIPP DOE-VPP Re-Certification Team Assignments

Name	Organization	Areas of Responsibility
Sanji Kanth	Team Leader/DOE, EH-51	<b>Management Leadership/Safety and Health Training</b>
		Commitment, Responsibility, Line Accountability, Resources, Planning, Visible Management Involvement, Records Review, IIR, LWDI rates, Contract Workers, Site Orientation, Program Evaluation and Employee Notification, Employee Training, Supervisor Training, Manager Training
Jay Greenberg	DOE/ ID	<b>Hazard Prevention and Control</b>
		Comprehensive Surveys, Access to Certified Professionals (Professional Expertise), Methods of Hazard Control, Medical Programs, Positive Reinforcement (Safety and Health Rules), Personal Protective Equipment, Emergency Preparedness, Disciplinary System (Safety and Health Rules in Hazard Prevention and Control)
		<b>Worksite Analysis/Employee Involvement</b>
John Cavanaugh	DOE/RL	Degree and Manner of Employee Involvement, Safety and Health Committees, Employee Reports of Hazards (Worksite Analysis), Routine Assessments (Self-Inspections), Preventative Maintenance, Pre-use/Pre-startup Analysis, Accident Investigations, Trend Analyses, Routine Hazard Analyses, Hazard Tracking

