Oak Ridge Associated Universities, Oak Ridge Institute for Science and Education

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
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U.S. Department of Energy
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Office of Health and Safety
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Foreword

The Department of Energy (DOE) recognizes that true excellence can be encouraged and guided but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (VPP) to encourage and recognize excellence in occupational safety and health protection. This program closely parallels the Occupational Safety and Health Administration (OSHA) VPP. Since its creation by OSHA in 1982 and DOE in 1994, VPP has demonstrated that cooperative action among Government, industry, and labor can achieve excellence in worker safety and health. The Office of Environment, Health, Safety and Security (EHSS) is responsible for managing DOE-VPP. EHSS intends to expand contractor participation complex-wide and coordinate DOE-VPP efforts with other Department functions and initiatives, especially Integrated Safety Management (ISM).

DOE-VPP focuses on areas where DOE contractors and subcontractors, using ISM, can surpass compliance with DOE orders and OSHA standards. The program encourages a *stretch for excellence* through systematic approaches, which emphasize creative solutions through cooperative efforts by managers, employees, and DOE.

Requirements for DOE-VPP participation are based on comprehensive management systems with employees actively involved in assessing, preventing, and controlling the potential health and safety hazards at their sites. DOE-VPP is designed to apply to all contractors in the DOE complex, including production facilities, laboratories, subcontractors, and support organizations.

DOE contractors are not required to participate in DOE-VPP. In keeping with OSHA and DOE-VPP philosophy, *participation is strictly voluntary*. Additionally, participants may withdraw from the program at any time. DOE-VPP consists of three programs with designations and functions similar to those in OSHA's VPP: Star, Merit, and Demonstration. The Star program is the core of DOE-VPP. This program is aimed at truly outstanding protectors of employee safety and health. The Merit program is a steppingstone for participants that have good safety and health programs, but need time and DOE guidance to achieve true Star status. The Demonstration program, used rarely by the Department, allows DOE to obtain additional information to recognize achievements in unusual situations about which DOE needs to learn more before determining approval requirements for the Merit or Star program.

By approving an applicant to participate in DOE-VPP, DOE recognizes that the applicant exceeds the basic requirements for systematic protection of employees at the site. As the symbols of such recognition, DOE provides certificates of approval and the right to use DOE-VPP flags for the program in which the site is participating. The participants may also choose to use the DOE-VPP logo on its letterheads and/or on award items for employee incentive programs.

This report summarizes the results from the evaluation of Oak Ridge Institute for Science and Education (ORISE) during the period of January 26-30, 2015, and provides the Associate Under Secretary for Environment, Health, Safety and Security with the necessary information to make the final decision regarding ORISE's continued participation in DOE-VPP.

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ABBREVIATIONS AND ACRONYMS

Be-LPT	Beryllium Lymphocyte Proliferation Test
BLS	Bureau of Labor Statistics
CBT	Computer-Based Training
CFR	Code of Federal Regulations
DART	Days Away, Restricted or Transferred
DJP	Developing Job Plan
DJS	Developing Job System
DOE	Department of Energy
EHSS	Office of Environment, Health, Safety and Security
ES&H	Environment, Safety and Health
FMS	Facility Maintenance Section
FTR	Full-Time Regular
GET	General Employee Training
HF	Hydrofluoric Acid
HR	Human Resources
IEAV	Independent Environmental Assessment and Verification
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
MMC	Methodist Medical Center
NAICS	North American Industry Classification System
OLM	Oracle Learning Management
ORAU	Oak Ridge Associated Universities
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
OSO	Oak Ridge National Laboratory Site Office
PPE	Personal Protective Equipment
PRWC	Physical Requirements and Working Conditions
QEA	Qualitative Exposure Assessment
RIMS	Risk and Issues Management System
RPP	Radiation Protection Program
SCATS	Safety Corrective Action Tracking System
SSR	Site Safety Representative
Team	Office of Environment, Health, Safety and Security DOE-VPP Team
TRC	Total Recordable Case
VPP	Voluntary Protection Program
WSHC	Work-Specific Hazard Checklist

EXECUTIVE SUMMARY

The Oak Ridge Institute for Science and Education (ORISE) is a Department of Energy (DOE) institute located in Oak Ridge, Tennessee. ORISE is managed for DOE by the Oak Ridge Associated Universities, a nonprofit research and training organization sponsored by over 100 doctorate granting universities in the United States. The Oak Ridge National Laboratory Site Office manages the ORISE contract for DOE's Office of Science and has oversight responsibility.

Continued recognition in DOE Voluntary Protection Program (VPP) requires an onsite review by the Office of Environment, Health, Safety and Security (EHSS) DOE-VPP team (Team) every 3 years to determine whether the applicant is performing at a level deserving DOE-VPP Star recognition. The DOE-VPP onsite review of ORISE was conducted January 26-30, 2015. The Team evaluated ORISE's safety programs against the provisions of DOE-VPP. During the site visit, the Team observed activities, evaluated relevant safety documents and procedures, and conducted interviews to assess the strength and effectiveness of ORISE's health and safety programs.

As in previous assessments, ORISE continues to consider excellence in safety and health as a competitive advantage. Managers are very open to suggestions, ideas, and recommendations. ORISE managers have a disciplined process to identify, evaluate, and accept corporate risks. They continually reinforce safety as an expectation and a value. They provide the appropriate resources to ensure implementation of integrated safety management.

ORISE continues to demonstrate strong employee ownership across its facilities. Employees believe ORISE managers provide excellent support and leadership. The site safety representative program provides an excellent communication platform for employees and managers to discuss safety issues.

The work at the ORISE campus is predominately low-hazard and is well understood by the workforce. ORISE can strengthen its work planning process by better defining a systematic process based on hazard analysis to determine if work packages are low, moderate, or high risk. The current work planning system permits workers or supervisors to make assumptions about hazards or controls, and could lead to implementation errors. ORISE can also benefit by documenting the hazard analysis in the job hazard analysis (not just the hazard identification and hazard controls), and incorporating the results from the industrial hygiene qualitative exposure assessments.

Hazards at ORISE continue to be well controlled. ORISE follows the hierarchy of controls using engineered controls, administrative controls, and personal protective equipment to minimize its workers' exposure to hazards. ORISE addressed vulnerabilities identified in 2011, and it continues to monitor the effectiveness of those improvements. Workers clearly demonstrate an ability to conduct work safely, have an effective awareness of hazards, and are continually seeking ways to make work safer. The ORISE medical program continues to be an excellent example of how an active occupational medicine program can reduce injury and illness for a participant.

ORISE continues to have a well-established and documented training and qualification program that trains workers appropriately to recognize hazards and protect themselves and coworkers.

The ORISE training program continues to evaluate (through employee feedback surveys) new and improved methods by which they can improve the training experience for employees.

Managers and workers alike focus on continuous improvement and seek ways to eliminate hazards. Most of the work involves everyday hazards encountered in office environments, but several locations present laboratory, field, and maintenance workers with unique hazards. ORISE addresses these hazards effectively. At its current high level of performance, improvements are difficult to identify and measure. ORISE cannot measure further performance improvement using total recordable case rates, and days away, restricted or transferred case rates. ORISE managers and workers will need to draw on their experiences and expertise in a variety of fields to drive further performance improvements. Greater attention to small details in analytical procedures, identifying potential error traps, and ensuring the processes capture and institutionalize the knowledge and experience of the workforce are investments that will pay many dividends in the future as ORISE brings in new staff. ORISE continues to demonstrate the leadership, involvement, and outreach that are hallmarks of a DOE-VPP Star site. The Team recommends that ORISE continue participation in DOE-VPP at the Star level.

TABLE 1
OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
Managers should consider the use of leading indicators to determine that safety is improving.	**6**
ORISE managers should foster and encourage the variety of disciplines represented at ORISE to identify and develop engaging safety promotions and ideas.	**8**
ORISE managers should look for alternative means for employees to share their personal stories.	**8**
ORISE should modify its work planning process to clearly define low, medium, and high-hazard activities, and ensure the hazard analysis provides the basis for the work type decision rather than determining the hazard analysis process based on the work type decision.	**12**
ORISE should modify its JHA process to validate and document how the identified controls prevent the potential effect.	**12**
ORISE should include specific information, such as acid strength, quantity used, quantity available, the radiological hazard, and other hazards of the listed chemicals, in the hazard identification to ensure accurate hazard analysis.	**13**
ORISE should consider improving the QEA so that all the data appears on the printout and integrate the analyses into all relevant safety documents.	**13**
ORISE should ensure controls are specifically identified in all cases to ensure workers do not select the wrong control based on false assumptions or misunderstanding of the hazards.	**16**
ORISE should consider reviewing its control selection, documenting that review in a JHA for future reference, and including precautionary statements in laboratory procedures that remind workers of the controls (and the recommended controls' limitations; i.e., percentage of acid in use).	**16**

I. INTRODUCTION

The Oak Ridge Institute for Science and Education (ORISE) is a Department of Energy (DOE) institute located in Oak Ridge, Tennessee. ORISE is managed for DOE by the Oak Ridge Associated Universities (ORAU), a nonprofit research and training organization sponsored by over 100 doctorate granting universities in the United States. The Oak Ridge National Laboratory Site Office (OSO) manages the ORISE contract for DOE's Office of Science and has oversight responsibility. ORISE has approximately 1,000 full-time employees. Additionally, ORISE appoints research participants to full-time positions at National Laboratories across the country. ORISE's mission is to address national needs in the following areas: (1) assessment and analysis of the environmental and health effects of radiation, beryllium, and other hazardous materials; (2) development and operation of medical and national security radiation emergency management and response capabilities; and (3) management of education programs to help ensure a robust supply of scientists, engineers, and technicians to meet future science and technology needs. ORISE creates opportunities for collaboration through partnerships with other DOE facilities, Federal Agencies, academia, and industry in a manner consistent with DOE objectives and the ORISE mission. In December 2003, ORISE was certified as a DOE Voluntary Protection Program (VPP) Star site. ORISE completed its first recertification in April 2008, and again in October 2011.

Located in Oak Ridge, Tennessee, ORISE has consolidated into two campuses. The main campus consists primarily of office space. The south campus, located off Bethel Valley Road near Oak Ridge National Laboratory (ORNL), has office and laboratory space. ORISE operates and maintains several facilities as part of its contract. Facilities include:

- The Radiation Emergency Assistance Center/Training Site (REAC/TS) that provides radiation incident response, consultation and preparedness training, and participates in simulation exercises to address the medical aspects of human exposure to radiation;
- The Cytogenetic Biodosimetry Laboratory that supports the medical community in the evaluation, triage and management of patients with acute radiation injuries;
- The Beryllium Testing Laboratory, which is one of only four laboratories in the United States that can perform beryllium lymphocyte proliferation testing (Be-LPT) and is one of the top two in terms of number of tests performed and accuracy of results;
- A Radiochemistry Laboratory that performs independent analysis of environmental samples collected at survey sites;
- The ORAU Center for Science Education that helps make K-12 science, technology, engineering, and mathematics education more effective;
- The University Radioactive Ion Beam Consortium, which is a unique user facility located at ORNL's Holifield Radioactive Ion Beam Facility that is dedicated to performing basic nuclear physics research using radioactive ion beams; and
- The Pollard Technology Conference Center, located on ORAU's main campus, which provides a central meeting place for science and technology leaders, as well as community members.

Continued recognition in DOE-VPP requires an onsite review by the Office of Environment, Health, Safety and Security (EHSS) DOE-VPP team (Team) every 3 years to determine whether the applicant is performing at a level deserving DOE-VPP Star recognition. The Team conducted this onsite review of ORISE from January 26-30, 2015. The Team evaluated ORISE safety programs against the provisions of DOE-VPP. During the site visit, the Team observed activities, evaluated relevant safety documents and procedures, and conducted interviews to assess the strength and effectiveness of ORISE's health and safety programs.

During the review, the Team had contact with approximately 100 personnel, including managers; and laboratory, maintenance, and office personnel. Activities included observation of preventive and corrective maintenance activities, safety briefings, walkdowns of shop areas, inspection of teaching laboratories, review of documents (such as procedures and job hazard analyses (JHA)), and both formal and informal interviews with workers and managers. Hazards encountered by workers are generally low, consisting primarily of standard office hazards (e.g., ergonomic hazards, office equipment, parking lots), as well as hazards associated with analytical laboratory work. Additionally, some workers are exposed to other environmental hazards associated with fieldwork, such as insects, poisonous plants, and potential radiological and chemical exposures associated with cleanup sites.

II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Table 2.1 Injury Incidence/Lost Workdays Case Rate (ORISE)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Rate	Days Away, Restricted or Transferred (DART) Cases	DART Case Rate
2012	2,835,113	3	0.21	1	0.07
2013	1,950,383	3	0.31	1	0.10
2014	1,577,820	1	0.13	1	0.13
3-Year Total	6,363,316	7	0.22	3	0.09
Bureau of Labor Statistics (BLS-2013) average for NAICS * Code # 5419 (Professional, scientific, and technical services)			5.9		1.3

Table 2.2 Injury Incidence/Lost Workdays Case Rate (Subcontractor)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART Cases	DART Case Rate
2012	54,323	0	0	0	0
2013	31,074	0	0	0	0
2014	10,445	0	0	0	0
3-Year Total	95,842	0	0	0	0
Bureau of Labor Statistics (BLS 2013) average for NAICS * Code # 5419 (Professional, scientific, and technical services)			5.9		1.3

*North American Industry Classification System

TRC Incidence Rates, including subcontractors: 0.22
DART Rates, including subcontractors: 0.09

Conclusion

The ORISE injury incidence rates are very low and are only a small fraction of its comparison to the industry. Subcontractors have not had any recordable injuries since 2010. In 2014, OSO reviewed the occupational injury and illness recordkeeping program and found one injury needed reclassification to a reportable case. OSO also found several accounting errors, including over reporting the number of days away from work for a DART case, and some minor discrepancies between Computerized Accident/Incident Reporting System (CAIRS) and the Occupational Safety and Health Administration's (OSHA) 300 log. ORISE accepted and corrected the three issues. ORISE recorded eight first-aid cases for 2012; 24 first-aid cases for 2013; and 11 first-aid cases for 2014. The environment, safety and health (ES&H) staff considered the

increased first aid cases in 2013, but could not find contributing factors related to the increase. The Team found no clerical discrepancies in the review of first-aid cases, and did not find any disincentives to reporting injuries. The ORISE injury incidence rates continue to meet the expectations for a DOE-VPP Star participant.

III. MANAGEMENT LEADERSHIP

Management leadership is a key element of obtaining and sustaining an effective safety culture and implementing the guiding principles of Integrated Safety Management System (ISMS). The contractor must demonstrate senior-level management commitment to ISMS and occupational safety and health, in general, and to meeting the expectations of DOE-VPP. Management systems for comprehensive planning must address health and safety requirements and initiatives. As with any other management system, authority and responsibility for employee health and safety must be integrated with the management system of the organization and must involve employees at all levels of the organization. Elements of that management system must include: (1) clearly communicated policies and goals; (2) clear definition and appropriate assignment of responsibility and authority; (3) adequate resources; (4) accountability for both managers and workers; and (5) managers must be visible, accessible, and credible to employees.

In 2011, the Team determined that ORISE managers effectively supported and led the workforce in improving the safety culture. Managers had provided additional resources and recognized safety and health excellence as a strategic advantage. Managers were quick and persistent in addressing safety concerns in a timely manner.

During the current review, it was evident that senior managers strongly support a safe and healthy workplace. Although most employees work in a normal office environment, some workers may face greater hazards in laboratories, facility support spaces, and other hazards associated with environmental sampling and validation projects. In those cases, managers are more involved, and dedicate appropriate resources to assisting workers in implementing Integrated Safety Management (ISM).

Managers enjoy a comfortable working relationship with the workforce. Much of the workforce has worked at ORISE for many years and is very familiar with their managers and other workers. This familiarity leads to a feeling of trust that managers are protecting the workers' best interests. Managers believe workers are willing and able to raise safety issues or concerns and have many examples supporting that belief.

Managers empirically believe that safety is improving at ORISE, but have no objective evidence of those improvements. They primarily rely on very low TRC and DART case rates, but these indicators only demonstrate that ORISE is maintaining a safe work environment. Determining that safety is improving requires that managers identify and use other indicators to evaluate efforts to improve safety. Managers believe workers are extensively involved in safety improvement efforts, such as quarterly safety inspections, health and wellness activities, and safety promotions, but have little data that support that belief. Managers should consider the use of leading indicators to determine that safety is improving. Such indicators might include number of people participating in quarterly inspections, number of people participating in physical fitness improvement programs, and number of people participating in other safety education or promotional activities. By measuring and tracking these indicators, managers can determine trends that may indicate erosion in safety emphases, and can act to reverse those trends before an injury or accident occurs.

Opportunity for Improvement: Managers should consider the use of leading indicators to determine that safety is improving.

ORISE developed and validated a safety culture survey method as part of the DOE requirements to evaluate safety culture. ORISE used that tool to evaluate its own safety culture with very high marks. Initially part of a self-evaluation, ORISE is now providing that tool within DOE to help other DOE contractors evaluate their safety culture more consistently and efficiently.

Since the last assessment, ORISE began using the new Risk and Issues Management System (RIMS) as a means of tracking risks and issues at the corporate level. The system provides a repository for corporate decisions on risk acceptance and management. Risks are not restricted to safety, but also include quality, security, environmental, financial, or any other risk that needs institutional awareness and control. ORISE also maintains a lower level Safety Corrective Action Tracking System (SCATS). SCATS issues are more specific, but the risk management committee can pull issues into RIMS if the issue or concern reveals a broader issue that the institution needs to assess. The ORISE risk management committee evaluates information in RIMS and makes recommendations. The 12 RIMS coordinators throughout ORISE physically enter data into RIMS. Project managers and other managers recommend risks or issues that the risk management committee should evaluate.

The ORISE president developed a unique award mechanism that encourages people to try new ideas or approaches to problems. Known as the "Dare to Try" award, ORISE awards it at each quarterly town hall meeting to someone that tried and failed. Although not specifically targeted at safety, ORISE considers safety improvement initiatives that do not succeed for potential recognition. The ORISE president initiated the program to help embrace the concept that organizations learn as much or more from failures as from successes.

The ORISE president is also working with his senior management team to "flip the org chart." This effort consists primarily of encouraging managers to think of themselves as working for the members of the organization. The ORISE president firmly believes this approach is key to the success of any service-oriented organization. The result of this effort was readily evident in senior managers' attitudes and interactions with employees.

A significant shift that has matured since the last assessment is the replacement of the performance management system with "catalytic coaching." Under this system, employees do not receive annual performance appraisals. Instead, they work with their manager over the course of the year to identify personal goals and improvements, and meet at least quarterly to discuss progress. ORISE does not base awards on the catalytic coaching, but expects managers to give performance awards throughout the year. This system allows managers and employees to discuss development opportunities in a constructive way that benefits employees, and allows managers to appropriately reward employees that achieve excellent results. In turn, ORISE holds managers accountable for the use of their available award pool and expects managers to provide awards.

ORISE actively assists its employees' career growth through established reimbursement policies. For example, ORISE encourages employees to pursue academic studies related to the business of ORISE through the Educational Reimbursement Program outlined in *Policy Document*, HR810.

Programs and departments may provide reimbursement for authorized expenses connected with approved academic courses. Full-time regular (FTR) and full-time temporary employees are eligible to participate from the initial date of employment. Part-time regular employees are eligible to participate upon completion of 12 months of employment. The manager's approval is required for the educational reimbursement, which may be up to 75percent of the costs. ORISE also provides educational leave for its employees to utilize to help attend courses. FTR employees that take educational leave in excess of 8 hours per week must resume work and continue employment for a period of time equivalent to the leave of absence in order to qualify for reimbursement.

ORISE also supports its employees in attaining and maintaining professional certifications and licenses that add to ORISE's marketability through credentialing of employee skills and knowledge. To support employees in this achievement, ORISE pays for certifications and license fees that are determined to be a business necessity.

The developing job system (DJS) is a formal method that ORISE managers and human resources (HR) use to encourage, recognize, and monitor changes and growth in employees' positions. The DJS helps manage the process of identifying employees with strong career advancement potential and to document a progression of developmental experiences (education, training, and expanded duties) that might result in a reclassification to a higher grade (a developmental promotion) with a salary adjustment or reclassification to another job in the same or lower salary grade. This system includes measurable criteria that the manager sets in conjunction with the employee.

The developing job plan (DJP) maps how the candidate will progress to the new job classification. The DJP lists competencies needed for the new job, along with activities and strategies to develop the competencies, methods for demonstrating the activities/strategies, and target dates for these milestones. The manager must be reasonably confident that an available position within the job classification described will exist at the completion of the plan before developing and submitting the plan for approval. Several employees interviewed enthusiastically discussed how they had taken advantage of this program and how beneficial it had been to their careers. Programs, such as the DJP, increase employee morale, encourage employee investment in the company, and strengthen the company's experience by promoting from within.

ORISE has a diverse workforce composed of many different experts and highly educated people in a wide variety of fields. This broad academic and scientific diversity is part of what makes ORISE successful. This diversity also represents an untapped resource that managers could use to achieve the next level of safety excellence. Specifically, ORISE managers could look to the experts in science, engineering, and mathematics to find alternative methods to improve safety performance or analyze potential safety issues. Each discipline represented at ORISE tends to have unique perspectives on problems, and tapping into that unique perspective could lead to revolutionary changes in safety. A recent effort to improve and refresh safety training by using the VPP-TV is a good example of how creative people can identify and implement interesting and engaging material to communicate relevant safety messages. ORISE managers should foster and encourage the variety of disciplines represented at ORISE to identify and develop engaging safety promotions and ideas.

Opportunity for Improvement: ORISE managers should foster and encourage the variety of disciplines represented at ORISE to identify and develop engaging safety promotions and ideas.

Similarly, managers can use the broad range of experience of ORISE personnel to promote safety. ORISE encourages employees to provide personal experiences in meetings, but those experiences get limited distribution. Expanding the VPP-TV concept with updates that are more frequent and contain fresher content and personal experiences will help expand interest in safety topics and provide workers with expanded opportunities to participate. ORISE managers should look for alternative means for employees to share their personal stories.

Opportunity for Improvement: ORISE managers should look for alternative means for employees to share their personal stories.

Out of necessity, ORISE has shifted much of its major facility maintenance to subcontractors. It expects subcontractors to follow appropriate safety rules and regulations, and there is normally a knowledgeable ORISE maintenance technician assigned to help the subcontractor meet ORISE safety requirements. While a good practice, ORISE must ensure it does not burden its dwindling maintenance workforce with duties that might be better suited to a subcontractor technical representative role.

Conclusion

As in previous assessments, ORISE continues to consider excellence in safety and health as a competitive advantage. Managers are very open to suggestions, ideas, and recommendations. ORISE managers have a disciplined process to identify, evaluate, and accept corporate risks. They continually reinforce safety as an expectation and a value. They provide the appropriate resources to ensure implementation of ISM. ORISE continues to meet the expectations for Management Leadership in DOE-VPP.

IV. EMPLOYEE INVOLVEMENT

Employees at all levels must continue to be involved in the structure and operation of the safety and health program and in decisions that affect employee health and safety. Employee involvement is a major pillar of a strong safety culture. Employee participation is in addition to the individual right to notify appropriate managers of hazardous conditions and practices. Managers and employees must work together to establish an environment of trust where employees understand that their participation adds value, is crucial, and welcome. Managers must be proactive in recognizing, encouraging, facilitating, and rewarding workers for their participation and contributions. Both employees and managers must communicate effectively and collaboratively participate in open forums to discuss continuing improvements, recognize and resolve issues, and learn from their experiences.

In the 2011 assessment, the Team determined that employee ownership was strongly rooted across the ORISE organization. ORISE had taken significant steps to encourage its workers to fully participate in VPP. All employees believed that ORISE managers fully supported participation in safety committee activities and safety awareness campaigns. The employees were encouraged to promote safety at work and at home. Managers and employees worked together to develop lines of communication to identify and promote safety and health responsibilities and eliminate hazardous conditions.

As in 2011, ORISE employees continue to be actively engaged in the safety and health programs. Team interviews indicated that employees are actively encouraged to participate in the safety and health programs. Employees continue to believe in the company's position on building a safe work environment and taking safe working habits home. The ORISE occupational health office continues to provide multiple opportunities to participate in wellness activities throughout the year. Examples include brown bag lunches, guest speakers, news line articles and audio clips, blood screenings, and the Annual Safety Fair.

Employees clearly demonstrated their ability to obtain ES&H information from the Safety 1st Web site. The Safety 1st Web site serves as the primary source for employees to access the ORISE safety and health information and relevant policies and plans. ORISE recently reviewed and reorganized the Safety 1stWeb site to eliminate dated information and reformat the site to improve information accessibility.

The safety council is still the main safety committee at ORISE. The safety council consists of managers, site safety representatives (SSR), and the strategic leadership team. Although led by managers, the safety council provides an important forum for SSRs to share ideas and concerns with the managers that have the authority to address the issues. It has a documented charter, which describes the responsibilities of the chair, co-chair, and members. The safety council meets bimonthly to address ES&H issues. A review of the meeting minutes demonstrated that council members regularly attend the meetings, and that ORISE addresses ES&H issues brought to the meeting in a timely manner.

ORISE has approximately 44 primary and alternate SSRs. These personnel represent a specific building, area, or program. In addition to the charter, ORISE developed an SSR handbook and required training for all SSRs. The handbook is an effective tool that describes in detail, the

roles and responsibilities of the SSR position. SSRs serve voluntarily, are responsible for their assigned area, and perform quarterly safety inspections using an ES&H-developed standardized checklist. The ES&H department reviews and retains the completed safety inspection checklists, and enters any identified issues that it cannot close immediately into SCATS for tracking and closure. Managers select SSRs from volunteers within their organization. During the selection process, managers take into consideration potential SSR job requirements (travel) to ensure the primary and/or secondary is available to perform their functions. SSRs attend bimonthly safety council meetings, and SSR meetings in months when the safety council does not meet. Interviews with employees and managers indicated that SSRs continue to serve as a critical interface between the employees and the managers and have the trust of the employees and managers' support. All of the employees and managers interviewed by the Team stated that they rely on SSRs to promote safety and address safety issues.

Employees interviewed knew their SSR and explained that if they observed a safety issue, they would inform the SSR or their manager to get it resolved. SSRs also provide feedback to their organizations from the safety council meetings. SSRs receive additional training and serve as a conduit for addressing employee safety concerns via the safety council.

As observed in 2011, ORISE employees clearly understood their rights under title 10, Code of Federal Regulations, part 851 (10 CFR 851), *Worker Safety and Health Program*, to take time out or stop work if they saw a situation involving an imminent danger to themselves or others. They understood this authority was a responsibility and stated that they would not hesitate to exercise it without fear of reprisal. The employees also stated that they would report all injuries, regardless of how minor, to their supervisors.

Overall, Team interviews strongly indicated significant employee appreciation with ORISE, their managers, and the overall work environment. Interviewed employees described several examples of strong management support through flexible assignments, training, and educational opportunities, all of which helped expand career advancement.

Conclusion

ORISE continues to demonstrate strong employee ownership across its facilities. Employees believe the ORISE managers provide excellent support and leadership. The SSR program provides an excellent communication platform for employees and managers to discuss safety issues. ORISE continues to meet the requirements of the Employee Involvement tenet of DOE-VPP.

V. WORKSITE ANALYSIS

Management of health and safety programs must begin with a thorough understanding of all hazards that might be encountered during the course of work and the ability to recognize and correct new hazards. Implementation of the first two core functions of ISMS, defining the scope of work and identifying and analyzing hazards, form the basis for a systematic approach to identifying and analyzing all hazards encountered during the course of work. The results of the analysis must be used in subsequent work planning efforts. Effective safety programs also integrate feedback from workers regarding additional hazards that are encountered and include a system to ensure that new or newly recognized hazards are properly addressed. Successful worksite analysis also involves implementing preventive and/or mitigating measures during work planning to anticipate and minimize the impact of such hazards.

The Team reviewed the ORISE work planning process, and in particular, how ORISE executes and applies the hazard analysis in its work planning. Currently, ORISE uses established processes, such as laboratory analytical procedures or work requests based on department missions and project plans. Project managers and supervisors evaluate the level of risk associated with these processes and determine the work category. ORISE uses work categories (Type 1-4) as defined in its documentation. Worker planned work (Type 1) is low hazard, low complexity and workers are skilled and knowledgeable to perform the work, and are familiar with the hazards, controls, and facilities. The work is coordinated between the supervisor and worker. Prescribed work (Type 2) is routine work, but has moderate to low hazards and limited complexity. Prescribed work typically uses procedures and hazard analyses previously approved by ES&H to govern the performance of the work. Permit planned work (Type 3) involves high hazards, such as radiological work, critical lifts, elevated work, excavation, and requires a hazardous work authorization and an approved permit for the task. Finally, nonroutine or modified work (Type 4) is complex and requires a thorough and comprehensive hazard analysis by ES&H. The work type then defines the hazard analysis process used for the work.

Although ORISE expects workers, supervisors, and managers to determine the type of work and the subsequent hazard analysis process to use, ORISE has not clearly defined the elements of that decision. ORISE policies and work control processes do not define low, moderate, or high hazard activities. Similarly, the work control process does not define routine versus nonroutine activities or complex versus noncomplex. The absence of a definition for these parameters transforms the hazard analysis process into a people-based versus a “process-based system. People-based systems place the emphasis on the individual analyzing the hazard to have the experience to make the proper determination, whereas a process-based system leads the hazard analysis through its established requirements.

Using the definition of work type to determine the type of hazard analysis performed creates an error trap where a person may incorrectly analyze a hazard based on incorrect assumptions. In at least one case described to the Team during the assessment, a project manager incorrectly assessed the risk associated with a proposed project. The project involved the transportation of a radiation source in a public area for training purposes. ORISE had conducted similar training activities in controlled environments (not public), and the project manager made incorrect assumptions about required approvals for the activity in a public area. When the project manager finally consulted with the Radcon manager, the Radcon manager identified several potential risks

and requirements. ORISE put the project on hold while it addressed the potential issues, but a more systematic process at the work definition stage could have avoided the problem entirely. ORISE should modify its work planning process to clearly define low, medium, and high-hazard activities, and ensure the hazard analysis provides the basis for the work type decision rather than determining the hazard analysis process based on the work type decision.

Opportunity for Improvement: ORISE should modify its work planning process to clearly define low, medium, and high-hazard activities, and ensure the hazard analysis provides the basis for the work type decision rather than determining the hazard analysis process based on the work type decision.

During the 2011 assessment, the Team recommended that ORISE should continue reviewing existing operations with the new hazard analysis process, focusing on hazards associated with the facility or equipment, and ensure the logical alignment between the identified hazards and the selected controls are justified and captured. The objective of the recommendation was to stimulate critical thinking about existing controls, and potentially identify hazards that were not sufficiently controlled. In response to that recommendation, ORISE expanded its JHA form in the *Health and Safety Manual, Section 19, Job Hazard Analysis Procedure, August 2014*, to include a fourth column for potential effect, or information on the health outcome of the hazard if not controlled. Although this is useful information, it does not validate the identified controls to prevent exposure to the hazard. Documenting analysis information will help workers and managers better understand the limits and assumptions of the work, and help them understand when they need to reevaluate work. This analysis, such as ventilation calculations or anticipated system responses, provides the analysis information that links hazards and associated controls. ORISE should modify its JHA process to validate and document how the identified controls prevent the potential effect.

Opportunity for Improvement: ORISE should modify its JHA process to validate and document how the identified controls prevent the potential effect.

The Team reviewed several completed JHAs, paying particular attention to the specifics cited in the form. For instance, *JHA Independent Environmental Assessment and Verification (IEAV) Lab-40023, Radium 228 in Water, AP8 Rev 6*, lists 10 chemicals for the preparation of various reagents under the hazards column. Several of the chemicals are acids, including hydrofluoric acid (HF), a very strong acid. Another chemical is radium (Ra-228), a radioactive element. Grouping all these chemicals in a single hazard category may cause the evaluator to ignore unique hazards particular to a given chemical. In another example, the procedure, *JHA IEAV Lab-40004, Gross Alpha and Beta for Various Substances, Rev 18*, lists using nitric or hydrochloric acids to lower the pH in the sample. The hazard section also lists the chemicals, but does not state the actual hazard, such as the ability of the acid to cause damage to the eyes and skin and mucous membranes (as used in this activity). ORISE should include specific information, such as acid strength, quantity used, quantity available, the radiological hazard and other hazards of the listed chemicals, in the hazard identification to ensure accurate hazard analysis.

Opportunity for Improvement: ORISE should include specific information, such as acid strength, quantity used, quantity available, the radiological hazard, and other hazards of the listed chemicals, in the hazard identification to ensure accurate hazard analysis.

Another source of analysis for inclusion into the JHA is the industrial hygiene qualitative exposure assessment (QEA) field form. *ORAU/ORISE Employee Exposure Assessment Plan, May 2008*, requires ES&H to provide initial or baseline exposure surveys of all work areas with potential workplace hazards or health risks. The procedure instructs the industrial hygienist to complete the QEA by identifying the health hazards, assessing those hazards, and then recommending controls. The Team reviewed the QEA for HF and its dilute solutions in the IEAV laboratories. The QEA recommended Silver Shield gloves, laboratory coat, and safety glasses while working in a laboratory hood. The recommended glove, however, did not appear in the *AP8* JHA mentioned above. Based on conversations with the industrial hygienist, the QEA does not integrate into the JHA. The ES&H department maintains the QEA in the office as an electronic file and provides copies upon request, but there are several limitations with this practice. Information entered into the data fields can exceed the visible area onscreen and does not appear on the printed copy. Further, the electronic information in the form can be revised without changing the JHA. ORISE should consider improving the QEA so that all the data appears on the printout and integrate the analyses into all relevant safety documents.

Opportunity for Improvement: ORISE should consider improving the QEA so that all the data appears on the printout and integrate the analyses into all relevant safety documents.

To facilitate the hazard assessment of nonroutine or modified work, ORISE developed the work-specific hazard checklist (WSHC). The WSHC requires a defined scope of work and contains an extensive list of potential hazards involved in the project that the project manager, ES&H department, and the medical staff review. During the review, the ORISE reviewers may decide that applicable ORISE procedures, JHAs, or permits can apply to the work. In December 2014, ORISE used WSHC to determine the scope of work and hazards involved in the replacement of a heating, ventilation, and air-conditioning unit on a rooftop. The WSHC successfully identified the work hazards of the project and correctly identified ORISE safety requirements for the subcontractor.

Conclusion

The work completed at the ORISE campus is predominately low-hazard and well understood by the workforce. ORISE can strengthen its work planning process by better defining a systematic process based on hazard analysis to determine if work packages are low, moderate, or high risk. The current work planning system permits workers or supervisors to make assumptions about hazards or controls and could lead to implementation errors. ORISE can also benefit by documenting the hazard analysis in the JHAs (not just the hazard identification and hazard controls), and incorporating the results from the industrial hygiene QEAs. ORISE continues to meet the DOE-VPP expectations for Worksite Analysis.

VI. HAZARD PREVENTION AND CONTROL

The second and third core functions of ISMS, identify and implement controls, and perform work in accordance with controls, ensure that once hazards have been identified and analyzed, they are eliminated (by substitution or changing work methods) or addressed by the implementation of effective controls (engineered controls, administrative controls, or personal protective equipment (PPE)). Equipment maintenance processes to ensure compliance with requirements and emergency preparedness must also be implemented where necessary. Safety rules and work procedures must be developed, communicated, and understood by supervisors and employees. These rules and procedures must also be followed by everyone in the workplace to prevent, control the frequency of, and reduce the severity of mishaps.

The 2011 Team determined that the hazards at ORISE were well controlled. They observed implementation of an appropriate range of engineered and administrative controls, and PPE to minimize its workers' exposure to hazards. The 2011 review identified vulnerabilities in the Radiation Protection Program (see the Safety and Health Training Section for further discussion). ORISE addressed those issues prior to this assessment. Workers clearly demonstrated an ability to conduct work safely and demonstrated an effective awareness of hazards. The ORISE medical program demonstrated an excellent example of how an active occupational medicine program can reduce injury and illness rates for a participant.

ORISE continues to employ engineered controls within facilities, in particular, fume and chemical hoods, as the primary method to limit employee exposure to laboratory hazards. During discussions with workers in the Be-LPT laboratory, they identified improvements to the laboratory areas since the last assessment. For example, an automated pipetting system is on order that will reduce exposures to biological hazards. ORISE installed a touchless faucet to reduce the potential for employees to transfer contamination while washing their hands. ORISE upgraded analytical equipment and installed new computer monitors that workers can see without moving around or changing positions, increasing their efficiency and minimizing ergonomic stresses associated with data input at the laboratory bench.

The 2011 review identified that ORISE installed new fume hoods with digital flowrate meters on the outside of the hoods to monitor airflow. These new hoods and airflow meters enabled laboratory personnel to verify proper airflow prior to raising the hood sash. In an effort to build on continuous improvements, ORISE laboratory workers now use smaller quantities of perchloric acid and HF in their analytical processes to reduce the potential exposure to these hazardous chemicals. ORISE added laboratory space to the IEAV portion of the laboratory that now provides a dedicated office area for workers separate from laboratory space.

Laboratory administrative controls observed by the Team were appropriate. ORISE separates the office space in the IEAV area from the laboratory by closed doors. Once past the doors, traversing through the hallway does not require PPE. Signs on the laboratory doors indicate the PPE required for entry. Separating the laboratory and hallway is an appropriate and effective way to reduce worker exposure and eliminate the overuse of PPE.

ORISE determines PPE requirements based on exposure assessments, JHAs, and requisite regulatory requirements to protect workers from hazardous chemicals, small quantities of

radioactive material, heated surfaces, noise, energized circuits, sharp implements, cryogenic materials, and pinch points. The Team observed personnel effectively using gloves, face shields, laboratory coats, booties, substantial footwear, hearing protection, or other PPE while performing their daily tasks.

The Facility Maintenance Section (FMS) in the Facilities and Transportation Department continues to provide the preventive maintenance program at ORISE. ORISE requires the use of maintenance procedures to assure consistent preventative maintenance. Several maintenance procedures reviewed by the Team contained appropriate details, precautions, warnings for potential hazards.

Qualified subcontractors perform work determined to be beyond the FMS worker's skill set. All subcontractors must comply with ORISE safety programs. For subcontracted work expected to require more than 100 hours, the subcontractor must provide a work safety plan. ORISE is proactive with subcontractors, providing them with guidance and clarification on the expectations in the subcontractor safety plan. Preselected subcontractors and those that have previously performed work at the site and demonstrated an exemplary safety record and an understanding of ORISE expectations for performing work safely perform much of the subcontracted work. ORISE's ES&H department evaluates and approves the subcontractor's work safety plan prior to the performance of work.

ORISE also requires a permit for planned high hazard work, such as lockout/tagout electrical work, burn permits, etc. ES&H completes the type of permit with applicable controls prior to authorizing the work. ORISE workers and subcontractors must obtain a permit prior to the start of high-hazard work.

As in 2011, ORISE maintains a database for preventive maintenance requirements. The database is a simple design that does require additional work steps by FMS personnel to finalize the work plan, but based on the level of activity in the preventive maintenance program, the system appears to be adequate for current needs. Discussions with the FMS manager and workers indicate they are effectively meeting the preventive maintenance needs of ORISE facilities. ORISE does not perform predictive maintenance, and its preventive maintenance record indicates that for the past 19 years they have not exceeded the preventive maintenance required date by more than 30 days. They self-perform all repairs, unless their skill set cannot support the needed repair, at which time they subcontract repairs to a supplier or vendor. The FMS manager indicated that there is a $60,000 backlog for maintenance which, according to the manager, is cosmetic work consisting of painting, landscaping, and minor repairs.

ORISE continues to employ on staff safety professionals that provide expertise in industrial safety, industrial hygiene, and radiation protection. These safety professionals help employees develop work documents and improve work processes. Interviewed employees indicate that the safety professionals are available and very supportive.

The Team identified some examples where ORISE did not clearly document controls. In one document, the control states to use acid-resistant gloves. Another document stated a control to wear impervious gloves and appropriate protective clothing. Neither document identified specific gloves that would provide sufficient protection for the worker. Instead, the user made

the final glove selection, which may allow the user to select the wrong glove. Several other controls identified by the Team left other control selection to the user and only included words like "appropriate" or "proper." ORISE should ensure controls are specifically identified in all cases to ensure workers do not select the wrong control based on false assumptions or misunderstanding of the hazards.

Opportunity for Improvement: ORISE should ensure controls are specifically identified in all cases to ensure workers do not select the wrong control based on false assumptions or misunderstanding of the hazards.

In another case, ORISE had performed specific analysis and identified a specific glove workers should wear when working with HF. ORISE trains workers on the hazards and controls for HF identified in that analysis, but does not reiterate those controls in precaution or warning statements in laboratory procedures. The analysis required Silver Shield gloves when working with HF. Laboratory workers complained that the identified glove made some laboratory tasks difficult and did not want to specify the Silver Shield gloves in the procedure. Further, they identified manufacturer data that demonstrated another glove would provide adequate protection for the dilute HF solution they were using. In this case, ORISE should consider reviewing its control selection, documenting that review in a JHA for future reference, and including precautionary statements in laboratory procedures that remind workers of the controls (and the recommended controls limitations; i.e., percentage of acid in use).

Opportunity for Improvement: ORISE should consider reviewing its control selection, documenting that review in a JHA for future reference, and including precautionary statements in laboratory procedures that remind workers of the controls (and the recommended controls limitations; i.e., percentage of acid in use).

Since the last review, the OSO conducted a review of the ORISE site emergency preparedness activities. OSO found several areas where improvements are needed, but concluded that: "overall, the ORISE Emergency Management Program was found to be adequately defined, documented, and effectively implemented. With a few exceptions, ORAU continues to maintain and implement a fully adequate Emergency Management Program." As a result of that review, ORISE drafted a new emergency management plan that addresses the improvements identified by the OSO team. ORISE worked with OSO to develop a revised plan to ensure ORISE met OSO's expectations.

The City of Oak Ridge still provides ORISE fire and police protection. ORISE conducts drills in accordance with DOE requirements. ORISE continues to use a real-time weather monitoring system alert for all employees and has WeatherBug® notifications forwarded immediately to all SSRs who then assist in implementing emergency responses in their assigned areas. ORISE has almost completed a new notification system to inform all workers of pending extreme weather on a real-time basis.

As found in 2011, ORISE has a radiation protection program (RPP) based on the requirements of 10 CFR 835, *Occupational Radiation Protection*. The Team observed well-understood, low-level radiological hazards and sufficient controls for activities. The dosimetry program

monitors personnel who potentially encounter or access radiological areas or materials. The ORISE RPP identifies three areas for radiological control: IEAV; Beryllium/Tritium in the Be-LPT laboratory; and the professional training programs. Radiological controls associated with IEAV work continue to be effective. Based upon the suggestions from the 2011 review, ORISE now communicates and documents interdisciplinary conversations, such as between industrial hygiene and radiation control.

The Be-LPT test uses small quantities of tritiated thymidine as a tracer. PPE for tritium work included laboratory coats and gloves. Laboratory personnel continue to monitor contamination levels daily on selected areas at the end of the shift and survey the floor area monthly. ORISE radiological control personnel also monitor the Be-LPT laboratory floor on a monthly basis. This approach is consistent with the *ORISE Radiological Control Manual (RCM), Section 9.5.2,* to ensure that workspaces are free of contamination. The 2011 Team found that the training received by laboratory personnel for the surveys was informal and not documented. In response, ORISE developed and implemented a training class for laboratory personnel to perform surveys.

The 2011 Team observed several weaknesses associated with the ORISE RPP. One of those weaknesses included radiological postings. In a few cases, the Team observed postings and labeling that was either not visible (behind an open door or underneath material, which had been left on top of the labeling), or was not readily apparent (above doorways out of the normal line of sight). ORISE continues to address this issue through posting reviews, SSR walkdowns, and assessments. The Team did observe a radiological posting on a classroom door when a radiological hazard did not exist. In the 2013 annual assessment submitted to DOE-VPP, ORISE documented completed corrective actions for the opportunities for improvement from the 2011 recertification report. As with the other 2011 opportunities for improvement, ORISE is continuing to monitor the effectiveness of those changes.

The ORISE RPP uses sealed sources to evaluate portable radiation detection equipment response. For dose rate meters, the instrument is positioned a specific distance from the source and the response is compared to the calculated expectation. Employees procured a work platform, upon which they mounted a shielded source. By shielding the source on the sides, top, and bottom, they effectively produced a consistent reproducible dose field to check instrument response. They mounted a video camera above the dose rate instrument, allowing them to use a video monitor to observe instrument response and remotely vary the instrument's distance from the source. Using this approach, employees were no longer required to physically observe the instrument response or to move the instrument closer to the source or move it further away. These efforts reduce the potential for exposure to ionizing radiation during instrument calibration.

The IEAV organization constructed a cover to mitigate the potential for generating respirable particulates when drilling into concrete. Verification technicians core drill into concrete flooring to evaluate residual contamination from radiological or chemical spills. By covering the core drilling, adding an inlet for outside air, and attaching a high efficiency particulate air filter to the extracted air, ORISE reduced potential exposure and thus the need for respiratory protection.

Methodist Medical Center (MMC) HealthWorks continues to provide all medical services for ORISE, including acting as the medical director, providing medical surveillance, maintaining

medical records, and providing medical evaluation and other medical-related activities. The medical director is physically located at MMC in Oak Ridge, but two registered nurses are located onsite, one on the main campus and the other on the south campus, and are routinely available for staff assistance or consultation.

The ORISE occupational medicine program continues to be very active providing fitness-for-duty evaluations, return-to-work authorizations, blood pressure monitoring, blood sugar monitoring, ergonomic evaluations, and cardiopulmonary resuscitation and first-aid classes. Occupational medicine initiatives are well received and supported by managers. Initiatives, such as the "Spring into Wellness" program, is an annual Safety and Health Fair, which sponsors a variety of health-related issues for employee education. Vendors and sponsors provide information on alternative medicine such as acupuncture, new medical technologies, and medical screenings, such as carotid artery screening. In 2012, an employee had a carotid artery screening performed at the Safety Fair and was advised by the technician to seek medical attention since an artery was 85 percent blocked. The employee contacted her doctor, who confirmed the technician's assessment; she scheduled surgery and was back to work within 3 weeks. According to ORISE, Safety Fair attendance by employees, their families, and former employees averages 300 to 350 each year.

Occupational medical personnel also promote "brown bag lunches" in which they present a variety of safety topics to attending employees during their lunch hour. Topics vary widely from indoor air quality; hearing protection; working outdoors; ergonomics; eye protection; slips, trips, and falls; laboratory safety; and heat stress to name a few.

Occupational medicine provides the mechanism to evaluate physical requirements and working conditions (PRWC). Workers, their supervisors, and the nurses prepare PRWC forms for all employees. ORISE updates these forms annually or when an employee's assignment changes. Additional input may occur because of industrial hygiene monitoring of workspaces. The PRWC addresses potential hazards a worker may experience during his/her work, including those that may require an employee to participate in a medical-monitoring program. Occupational medical personnel continue to provide mandatory physicals for those employees involved in any work requiring medical monitoring, such as work involving lead, asbestos, or formaldehyde exposure.

As identified in 2011, onsite nurses evaluate first aids and perform initial evaluations of injuries. If further evaluation is required, MMC HealthWorks in Oak Ridge performs those evaluations. MMC HealthWorks also performs the preemployment and return-to-work physicals.

ORISE is self-insured for its health insurance. It continues to leverage its medical resources by supporting the occupational medicine group's initiatives and encouraging the occupational medical staff's availability for nonwork-related concerns, producing tangible improvements in its health insurance costs. This has translated into reduced health insurance premiums for workers participating in the ORISE health insurance plan and increased worker satisfaction with the health insurance program. Workers interviewed during this assessment echoed the 2011 observations that the occupational medicine program at ORISE is outstanding and that the company really cares about its employees.

Conclusion

Hazards at ORISE continue to be well controlled. ORISE follows the hierarchy of controls using engineered controls, administrative controls, and PPE to minimize its workers' exposure to hazards. ORISE addressed vulnerabilities identified in 2011, and it continues to monitor the effectiveness of those improvements. Workers clearly demonstrated an ability to conduct work safely, have an effective awareness of hazards, and are continually seeking ways to make work safer. The ORISE medical program continues to be an excellent example of how an active occupational medicine program can reduce injury and illness for a participant. ORISE meets DOE-VPP expectations for Hazard Prevention and Control.

VII. SAFETY AND HEALTH TRAINING

Managers, supervisors, and employees must know and understand the policies, rules, and procedures established to prevent exposure to hazards. Training for health and safety must ensure that responsibilities are understood, personnel recognize hazards they may encounter, and they are capable of acting in accordance with managers' expectations and approved procedures.

The 2011 Team determined that ORISE had a well-established training and qualification program that ensured workers recognize hazards and protect themselves and coworkers. The ORISE training program helped managers, supervisors, and employees understand the established safety and health policies, rules, and procedures to promote safe work practices and minimize exposure to hazards.

ORISE has processes in place that formally define the required training and ensure employees, supervisors, and managers/directors complete training commensurate with their job descriptions, responsibilities, and authorities. The ORISE systematic training process provides requisite knowledge, skills, and abilities to help workers perform tasks competently and safely. It applies to all employees and all aspects of ORISE operations, design, procurement, construction, and support activities. ORISE/ORAU developed several policies to assist its employee's career growth through established reimbursement policies, such as the educational reimbursement program and DJS (as described in the Management Leadership section). Several employees interviewed enthusiastically discussed how they had taken advantage of this program and how beneficial it had been to their careers. Programs, such as the DJP, increase employee morale, encourage employee investment in the company, and strengthen the company's experience by promoting from within.

In 2011, ORISE maintained training completion records using an Oracle database. While the records were accessible by the training coordinators and employees, training coordinators had to prepare special queries to identify employees whose training was expiring in the next 30 or 60 days. Since 2011, ORISE upgraded to the Oracle Learning Management (OLM) system so that the training records system notifies employees directly via an e-mail notification when their training is due and provides qualification and training lists to supervisors and managers. The system became operational in January 2012. However, the ORISE training group recognized the employee's nonstandardized schedule (travel) required additional considerations to ensure the training process met the employee's needs and the work-related schedule they faced. As a result, the HR training group developed an exemption process that allows the employee's manager to exempt an employee temporarily from a training schedule deadline based on that employee's work/travel schedule if the exempted training did not relate directly to the travel-related work. The HR department reviews all exemptions to ensure they are justified. The exempted worker must complete the required training upon his/her return. The ORISE employees appreciate the exemption process because it recognizes the priority of their work-related schedule over the randomly implemented, routine, required training schedule.

Computer-based training (CBT) makes up 90 percent of the training at ORISE. ORISE utilizes CBT extensively because many of its workers have a nonroutine schedule that CBT supports more effectively. The ORISE training group proactively evaluates its CBT training modules using volunteers to "beta-test" new modules to ensure they are effective and understood. In

addition, the ORISE training group employs a multi-media approach in many of its CBT training to ensure employees' increased attention and comprehension. Interviews with the employees indicated that they find CBT to be user-friendly, comprehensive, effective, and contains modules that are both informative and easy to understand.

The training process ensures that employees receive necessary training before beginning their assignments. All new employees are required to take the initial general employee training (GET), and the current employees must take the GET refresher biennially. The 2011 Team complimented the ORISE employee mentoring program. Under the previous program, ORISE assigned mentors to a new employee; mentors were responsible to ensure the employee's transition to the work environment. However, since the 2011 review, ORISE received feedback from mentors and mentees that identified that some mentors (and mentees) did not benefit from the mentor program. ORISE has reduced the scope of the mentor program to focus more on an established new employee information packet. ORISE used feedback from previous mentees' experience to develop the information packet. ORISE still assigns mentors to new employees that are available to instruct new employees upon request; however, the process allows the new employee to determine the mentor's involvement. HR continues to perform scheduled feedback surveys of the mentees. HR solicits the new employees' work experience on a scheduled basis to ensure employee indoctrination is successful. HR will continue to evaluate the new mentor process and will make adjustments if new employee feedback indicates the process is not effective.

Most hazard recognition training for employees focuses on the office environment and the work task PRWC analysis. The majority of ORISE employees are office workers. Laboratory staff, maintenance workers, and students (based on their work environment and duties) receive additional hazard recognition training. Mandatory training for each employee is determined based on the new employee's job tasks. The HR hiring process determines the specific training required for an employee's position before it releases the job for hiring. Per the HR hiring process, an ORISE manager must identify and specify the job position's task-specific hazards based on the demands of the position. HR describes these requirements to the applicant, and enters the requirements into that employee's OLM training records once they are hired.

Managers prepare the training plans for new and reassigned employees using the OLM selection tool. They also prepare PRWC forms (as described in the Employee Involvement section) in consultation with the employee, industrial hygienist, and industrial safety staff using standard templates available for each job task category. The policy requires managers to update PRWC and employee training plans annually. Each department has a training point-of-contact who schedules the training identified in the training plans, and medical evaluations required by PRWC. All employees have online access to their training records via the OLM training system and can review their upcoming training.

The 2011 VPP report identified that radiation safety training records for some workers were incomplete, out-of-date, or nonexistent. The Team's investigation revealed that ORISE had not updated some individual training records to reflect the employee's actual training. ORISE reviewed this issue and determined that ORISE did not control or provide many of those training courses through the newly rolled out OLM training system. In those specific instances, the employee was required to provide proof of course completion to the training organization for

manual inclusion to the employees' OLM training record. ORISE determined that the employees did not understand they needed to send proof of course completion to the training department to ensure proper credit in the OLM system. That lack of understanding, combined with input errors by the training staff, caused those lapses. The ORISE training department has more effectively communicated requirements to employees to resolve the issue. For example, HR policy now requires that an employee submit proof of course completion and/or certification before that employee may submit a travel expense for reimbursement.

Conclusion

ORISE continues to have a well-established and documented training and qualification program that trains workers appropriately to recognize hazards and protect themselves and coworkers. The ORISE training program continues to evaluate (through employee feedback surveys) new and improved methods by which it can improve the training experience for employees. ORISE continues to meet DOE-VPP expectations for Safety and Health Training.

VIII. CONCLUSIONS

ORISE continues to demonstrate its organizational commitment to safety as a fundamental value. Managers and workers alike focus on continuous improvement and seek ways to eliminate hazards. Most of the work involves everyday hazards encountered in office environments, but several locations present laboratory, field, and maintenance workers with unique hazards that ORISE addresses. At its current high level of performance, improvements are difficult to identify and measure. ORISE cannot measure further performance improvement using TRC and DART case rates. ORISE managers and workers will need to draw on their experience and expertise in a variety of fields to drive further performance improvements. Greater attention to small details in analytical procedures, identifying potential error traps, and ensuring the processes capture and institutionalize the knowledge and experience of the workforce are investments that will pay many dividends in the future as ORISE brings in new staff. ORISE continues to demonstrate the leadership, involvement, and outreach that are hallmarks of a DOE-VPP Star site. The Team recommends that ORISE continue participation in DOE-VPP at the Star level.

APPENDIX A

Onsite VPP Assessment Team Roster

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