ornl reporter

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ORNL gets a million

Safety awareness helps chart one million hours without a lost-workday-away case

On June 6, ORNL logged a million work hours without a lost-time injury. The Lab celebrated the next day with ice cream served by Lab managers.

That magic number is a significant achievement for the Laboratory. Lab Director Bill Madia credits the staff with bearing down on working safely after he asked groups in February to think about safety.

"It is important to recognize this accomplishment and use the celebration as a reminder that attention to safety needs to be a routine part of everyday activities," Bill said, congratulating staff members.

ORNL's Leadership Team is determined to reduce the Lab's accident and injury rates, which management deems too high. Lost workday cases and work restrictions, along with recordable injury incidents, mean a number of bad things—not the least of which is that someone has been hurt. They also mean that people may not be on the job where they are needed and that the Lab's cost of doing business has gone up.

Ed Mee, Vice President of the Atomic Trades and Labor Council, says the Lab's collective bargaining unit members have put extra emphasis into safety on the job.

"The jobs that our ATLC members do are often the hands-on tasks that put them most at risk for injuries," Ed says. "We've worked hard to build a culture that says safety is a necessary and crucial element in planning and performing the work. We're paying attention to safety all of the time. I think these results show that."

ORNL Reporter has devoted most of this issue to safety. Within the articles we've included brief accounts of injuries and accidents that have recently occurred at the Lab.

Reporter usually features a mix of articles about science and technology, operations and people. You won't miss a thing, because safety encompasses all of that. ornl

ORNL's Safety 1st program is designed to promote a continuous awareness of safety. See it on the Web at ***safety1st.ornl.gov****.*

Lab's must-do: Reduce, prevent accidents and injuries

Safety issues at an institution like ORNL run the gamut. With a large population of researchers in numerous facilities full of sophisticated equipment and an even larger support staff to keep it all going, the potential for accidents ranges from scratches, strains and bugbites to more serious situations involving falls, electrical shocks and even radiation exposures.

The Laboratory's management team wants to keep accidents at a very minimum, for good reason. Assuring the health and well being of the work force is a major motivator. Moreover, the safety record of a company or institution is a reflection on how it is operated and its general well being. If a firm's safety performance goes off track, its general performance is probably faltering as well.

ORNL has mounted a campaign to reverse a troubling trend, succinctly summed up by Operational Safety Services Division Director Carol Scott: "*Too many* injuries," Carol says. "And too many of those injuries are resulting in lost workday cases."

> *Too many injuries. And too many of those injuries are resulting in lost workday cases.*

Following a spate of serious accidents and procedural lapses that occurred during the past year, Lab Director Bill Madia made a videotape in which he recounted several mishaps at the Lab, admitted to a couple of gaffs of his own and issued an eye-to-eye challenge to keep safety foremost in the performance of any job at the Lab. Bill played the video to Lab managers and directed them to go to their groups to find out what their biggest safety concerns were.

The OSSD maintains and watches a raft of metrics (many can be accessed from OSSD's internal gateway Web page, safety1st.ornl.gov). One of them compares the safety statistics of DOE's eight largest labs—for total recordable incidents, lost workday cases, lost workdays and the cost to the labs. It's called the "pink sheet," a reference to the color of ORNL's block on the chart, and ranks the labs from least cases to most. For calendar year 2001, ORNL's pink blocks have settled to the bottom of each of the four charts. ORNL led—in a negative sense—the other seven labs in all four of the pink sheet's safety metric categories last year.

Some point out that it's hard to compare one national lab with another, that statistics aren't

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Safety

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kept in the same way and that the playing field is generally sloped. ORNL, it seems, always comes out on the short end of these comparisons, and comparing safety stats in some cases is comparing apples to oranges.

"These are benchmarks," Carol says. "It may be in some cases comparing granny smiths to winesaps, but it's apples-to-apples."

Two workers were cutting down a tree when a limb from another tree fell and struck one employee on the shoulder and arm. He was diagnosed with fractures. The employee is scheduled for surgery. Lessons learned: Improve work planning and control to identify high hazard work with danger trees and provide direct field supervision for high hazard work.

It can also be pointed out that ORNL is not in a "wheels are off" mode when it comes to safety. Over the past few years, some statistics have actually improved. The number of injury incidents is actually dropping.

"In 1999 we had 172 RIIs. In 2000 there were 148 and last year there were 140, but that's not the point," Carol says. " On a chart, ORNL is a flat line, and that's not where we want to be. While the wheels aren't coming off, we're not improving either."

The flat line—the lack of improvement—is also a sticking point with Kelly Beierschmitt, who came to ORNL with UT-Battelle in 2000 to lead the Environment, Safety, Health and Quality directorate.

"We have data for the past 10 years. You can't take the data over one year and call it a trend, but we're not seeing any substantial improvements or that things are substantially worse. But that flat line makes us *expensive*. There are costs associated with those injuries," Kelly says.

Those costs can include medical costs and time away from work. Employees are at ORNL because they are needed, and when they are injured, someone else has to take up the slack.

One of the pink sheets, in fact, is an index of costs related to injuries at the eight labs compared. In 2001, ORNL racked up the highest cost rating on the index, 25.7. The runner-up highest was 15.4. The lab with the best figure charted a 3.9.

"It's really a matter of personal awareness," says Kelly, who emphasized the personal role in safety in the December 2001 *Reporter*. "When you look at the bulk of the accidents and injuries, they are not necessarily violations of procedures. Often, it's just that personal awareness slips."

Kelly compares on-the-job awareness with a familiar domestic scenario. "At home, the first time you climb up that ladder to paint a ceiling, you paint right over your head. The second time, you reach out a little bit. The third time, a little further. Then a little further … and you're on the floor."

A material clerk was unloading two skids of ceiling tile using a manual pallet jack. After he finished the job, he felt pain in the right side of his back. He was diagnosed with a lumbar strain, given prescription medication and sent off work. Trucks have been modified and smaller loads are being delivered.

Kelly and Carol stress that the numbers have a human element—they represent co-workers who have been injured—making it doubly important to prevent them.

The injury statistics have a human element...

When looking at ORNL's recent emphasis on safety on the job, the incidents take two tracks—the nagging injuries in the support services and more infrequent, and possibly more serious, lapses in the research sector. Last Christmas several researchers were potentially exposed to radiation while operating an ion source that produced X-rays. Mistakenly believing their prox cards were being affected by magnetic fields, they left their badges and dosimeters behind as they worked with the machine.

Radiation event reconstructions eventually showed that the doses to the staff members weren't as high as first feared, but the incident was a cause for concern in that procedures weren't followed, creating a scenario that could have been very serious. The incident was reported in the media, so it also had the potential for blemishing the Lab's image as a safe science facility.

That and two incidents where staff members were burned by chemical reactions stirred Lab Director Bill Madia to call a meeting of managers in February, where a chilling video detailing a number of those incidents was shown. Bill assigned the managers to meet with their groups, discuss the safety issues that disturbed them the most and emphasize the importance of devoting attention to working safely.

A prioritized list of concerns and literally hundreds of actions to improve safety in the workplace resulted from those meetings. The number one concern discussed involved commuting on Bethel Valley Road. Numerous staff members complained about fast and sometimes risk-taking drivers mixing it up with heavy traffic and construction projects in the area. Lab management immediately negotiated with local law enforcement agencies to monitor the two-lane road.

Two government vehicles were involved in an accident at the Y-12 Plant. The driver of one of the vehicles slowed to wave at a person. The driver of the second vehicle did not see the first vehicle slow down and struck the first vehicle in the right rear.

Just as motorists tend to slow down and drive cautiously when there is a car from a law enforcement agency nearby, employees should keep the consequences of a painful injury in their mental rear-view mirrors when they go about their jobs.

"It's all about awareness," Kelly says. "Ask questions. Pay attention. If you're not sure about a task's hazards, take a little extra time and find out."

June is safety month. A "safety month" is probably not the best idea in itself—implying that safety is worth thinking about only one month out of the year. At ORNL, safety will be part of the culture.—*B.C.*

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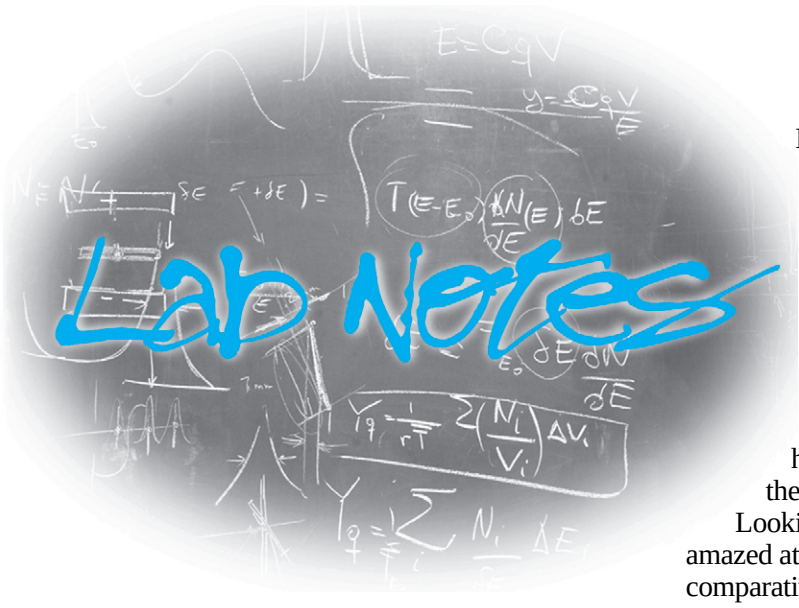
Curtis Boles

Reader Gwen Sims poses with an arrangment of spring flowers. She works with the Industrial Technologies Program in the High Temperature Materials Laboratory.



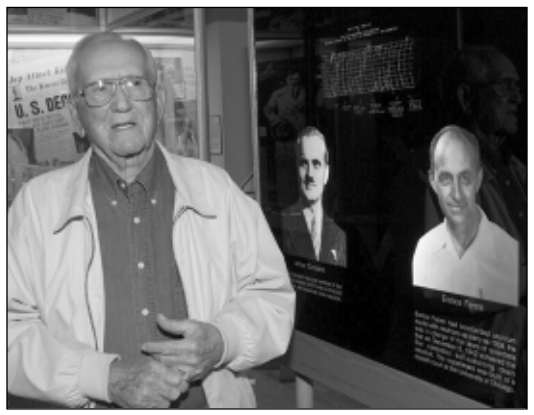
Just happened to be there at the time

Delbert Ball visited the American Museum of Science and Energy recently. You've probably never heard of Delbert, but you've heard of some of his friends.

Delbert, 89 and looking seventyish, worked on "CP-1," the first atomic pile at the University of Chicago's Stagg Field, and was present when Enrico Fermi and others achieved the world's first sustained nuclear chain reaction. Delbert helped handle the cadmium rods to control the reaction, moving them "three and four inches at a time."

His real job was in procurement, but "everybody pitched in" in those days, he says. He got acquainted with another nuclear pioneer, Arthur Compton, at UC while washing windows shortly after arriving and received a job offer on a tentative, mysterious project. Among the items he helped obtain were the 400 tons of graphite and six tons of uranium required for the pile. Later, he cornered the market on lab mice and even bought a canning machine in an attempt to can uranium oxide.

Jim Richmond



Delbert Ball (left) recalls CP-1's giants, including Arthur Compton (center) andEnrico Fermi (right).

In the famous painting of the first reaction, he identifies the heavy curtain in the background as a rubberized membrane made by Goodyear to conserve neutrons. He was on a first-name basis with Compton, who he calls his mentor, and Fermi, Glenn Seaborg, Eugene Wigner and "Bob" Oppenheimer, who he recalls as "different, but a good fellow." All, he says, were "great gentlemen."

"I was in awe," he says. "There were seven Nobel laureates there, and I just happened to be there at the time."

For two years he and his colleagues barely slept or ate, driven by the belief they were in a race with Hitler to develop an atom bomb. "We had to beat the Nazis," he says.

Secrecy ruled: He says the scientists commandeered a university machine shop at night to machine graphite, then cleaned up so thoroughly that the day users never knew any night work was going on.

Mr. Ball's visit coincided with a dry run for this year's public tour season, and he got a VIP seat. He saw for the first time the Graphite Reactor, which followed CP-1.

Looking back, the Madisonville, Ky., resident is amazed at what his bosses achieved with so little, comparatively speaking, to work with.

"Scientists with nothing but slide rules pulled off the biggest discovery of the century," says Delbert. "My memory is very clear—I have a mental picture of Fermi manipulating a slide rule. He worked a slide rule all the time."

Water for the world's hot spots

Former ORNL manager Phil Hammond returned to the Lab in May. Hammond once led the Lab efforts at nuclear-powered desalination, which, during the 1960s was expected to "make the deserts bloom" with distilled fresh water. Hammond, an early proponent of the "bigger is cheaper" view of nuclear power, still believes that nuclear desalination could be a key to calming unrest in dry but populated parts of the world.

Hammond recalled two researchers, Egyptian and Israeli, who "worked very well together" in the '60s, on desalination research at ORNL, which had around 100 scientists and engineers working in various disciplines on the project's agro-industrial complexes. "There was great excitement with the concept, all over the world, and the research was phenomenally successful."

But the fresh-water technology, particularly with its large scale, was expensive, and Hammond says the financial drain of the Vietnam War crippled funding, and subsequent high interest rates and the shift away from nuclear-anything finished it off. But maybe not forever.

"Now a sleeping giant has been rudely awakened," Hammond says, referring to September 11. Energy and water are two keys to eliminating the poverty that drives the terrorism that hit home last year.

Remarked Director *Emeritus* Alvin Weinberg, who first lured Hammond to ORNL, "By golly, after 40 years his ideas are becoming very appropriate and very practical."

Entrances that you really want to enter

The orange barrels and Jersey bouncers have been taken away: ORNL's new vehicle entrances are open. Now, when you approach ORNL from either direction on Bethel Valley Road, you know you've arrived someplace special.

The entrances are a direct result of September 11, after which the road was closed to the public for, essentially, the first time, reflecting an updated security emphasis on time and distance. Closing the road and erecting entrances wasn't part of the original open-campus strategy, but Lab and DOE officials adapted and produced a good solution.

With their stonework and green covers, the entrances look more like a national park's. And that's on purpose. While upgrading security to meet current threats, the Lab wanted to avoid an ominous initial "checkpoint charlie" impression of ORNL.

At a brief ceremony for the project folks, Deputy Director for Operations Jeff Smith commended the speed of the project and quality of the finished product. And he joined others in emphasizing that the new entrances, and the security force professionals who staff them, will make an all-important first impression on many visitors and new employees the first time they drive down Bethel Valley Road to ORNL. "It sets the tone for the day," he said.

Bright kids: Maybe they do know everything

It started out as a tip and sort of mushroomed. We learned that a couple of this year's high school valedictorians were the children of ORNL staff members. After a mention on *ORNL Today*, the internal employee news, other parents of senior superlatives starting reporting in.

Five of the area's Class of 2002 valedictorians—top students determined by grade-point average and other criteria—are children of ORNL employees. They are: Mary Jewel Waddell, daughter of Frank (Quality Services Division) and Betty (Solid State Division), Anderson County High School; Matthew Whitfield, son of Life Sciences Division's Brad Whitfield and Beth Mullin, Karns High; Jenna Tonn, daughter of Environmental Sciences Division's Bruce Tonn and mom Diana, Bearden High; Charlotte Hayes, daughter of Willie Hayes in the Operational Safety Services Division, Sevier County; Kristy Bolden, daughter of Facility and Operations' Steve Bolden in the F&O Directorate; Harriman High.

There are more: Kristy's mom, Mona Bolden, works for Duratek Federal Services located at ORNL. Philip Kirkham Jr., son of Philip Kirkham Sr. of Duratek (and mom Lucy), is this year's valedictorian at Rockwood High School. Richard Smith, son of Mark Smith of Duratek (and mom Donna) is this year's salutatorian at Roane County High School.

Oak Ridge High School does not name valedictorians and salutatorians, but three of the top four students from ORHS have ORNL ties: Ellen Withrow, daughter of Steve Withrow, Solid State Division; Yasmine Baktash, daughter of Cyrus Baktash, Physics Division; and Trey Akers, son of Frank Akers, associate Lab director for National Security. Clinton High School names a number of "valedictorians." Two of them were Russell Stanfield, son of Randy Stanfield of the Laboratory Protection Division and Aaron Porter, son of Wally (Metals and Ceramics Division) and Kay Porter.

Reported by Bill Cabage

Whither ISM? It's SBMS

Safety is a key, integrated component of the Standards Based Management System

Whatever happened to Integrated Safety Management? It's seemed to drop out of sight in the last year or so. Maybe that's by design.

ISM has been here all the time and is here to stay, says the Operational Safety Services Division's Carol Scott. ISM never was intended to be a substitute for safety awareness. It's becoming part of the way ORNL goes about its normal work. You know ISM as "working safely."

Our objective isn't to have a safety program, but to make it how we do business.

"Our objective isn't to have a separate safety program, but to make it how we do business," says Carol. "There are lots of ways to do things, and there is always a safe way."

The word "integrated" is key to ISM's furtive existence. ISM has become a facet—a key element—of the Standards Based Management System, which by design contains all or most of what makes ORNL tick.

"ORNL carries out the requirements of ISM by way of an integrated set of management systems that apply controls tailored to all the work being performed," says Fay Frederick, who leads ORNL's SBMS program. "All work processes incorporate ESH&Q considerations into each work element as a natural part of conducting it. SBMS is the framework that translates laws, orders and regulatory requirements into Laboratory-wide procedures and guidelines that are relevant to the work being performed by the staff."

Source Control noticed elevated background during annual survey of radiation-generating device. Completed comprehensive survey. Upon talking with RGD custodian was informed that machine had been used seven times since it was modified. Major violation was using the RGD before Source Control had performed the Radiological Survey. Lesson learned—contact radiation protection personnel when any modifications are made to radiation-generating devices.

Guidelines for executing the Laboratory's R&D mission are established through the Work/Project Planning and Control (WPPC) Management System. The processes and requirements within the WPPC system apply to R&D activities, as well as support activities for facilities or systems. The WPPC management system establishes the requirements to effectively plan and coordinate work to meet the customer's needs, analyze the ESH&Q issues and efficiently complete the job.

The WPPC Management System includes a process that establishes procedures for implementing ISM in research. A companion procedure for implementing ISM in maintenance and operations work is due for release this month.

"Both of these procedures outline processes and provide tools—tailored to the type of work—for principal investigators or task leaders to identify hazards or operational issues, analyze the hazards and issues, develop controls and provide feedback into the process. The product of these processes is a 'game plan' for the worker to do work safely and securely," says Fay.

For R&D activities, the product is called a Research Safety Summary. For M&O activities, the product is called a Work Package. ISM, it turns out, is an important standard in the Standards Based Management System.—*B.C., with Fay Frederick* ornl

Case reviews aim at keeping you safe instead of patching you up

If you are an ORNL employee and become injured, you'll likely end up the capable hands of the ORNL Health Division. Chances are, if the injury is less serious, you'll go to the medical clinic in Building 4500-North to be examined and patched up. For more serious injuries, the Health Division can count on the resources of ORNL's emergency responders plus close coordination with local health-service providers.

Most of us only go to medical for the routine checkups. Dr. Jim Phillips, the Health Division's director, prefers those kinds of visits to visits resulting from on-the-job injuries. In fact, Dr. Phillips participates in an informal case review group that reviews recordable injuries to see if measures can be instituted to keep them from happening again. The group will often visit the scene of an accident or injury, review the workplace requirements and even the ergonomic aspects of a task.

"Every time we have an incident, we look at that problem and try to determine if there is an underlying cause," says Dr. Phillips. "It's not a formal analysis; we're simply trying to find ways to keep it from happening again."

An electrician … was crushing automobile light bulbs on a bulb-crushing machine. He reached into the drum to pick out a piece of metal bulb base from the grid and cut his right middle finger on an attached piece of glass.

"Some accidents are straightforward, and some can be complex," says Dr. Phillips. "An injury may be minor, but the way it happened is of interest to us in that we may find something which, if not corrected, may result in a more serious injury. With the cut-finger injury while crushing the light bulbs, we looked at the process and the potential for injury. We made suggestions, but it turned out to be a pretty safe procedure."

Jeff Hill, who with David Barncord and Jim Blankenship are the Atomic Trades and Labor Council ES&H representatives for ORNL, also participates on the case reviews and field investigations. "It's one of the most valuable committees I've been on," Jeff says. "It has the potential to look at injuries and be proactive. While we're in the field looking at one injury, we also look at how it applies to other jobs and tasks at ORNL. We've also had opportunites at intervention and prevention, especially when you get Dr. Phillips and Chuck Hochanadel from Physical Therapy involved."

The drum slid off the dolly and fell to the floor. He lifted the drum to a standing position and felt immediate pain in his low back and a pop in his right knee.

At the refrigeration area, the barrels the mechanics must move changed from steel to plastic. The dolly they used, however, was made for steel drums and the plastic barrels tended to slip and tip over. "We strongly suggested that a new dolly be purchased. It was, and it has worked," says Dr. Phillips.

The group has visited one area that has been relatively free of injuries, and the reasons why there aren't many injuries are revealing. "We went to the ORNL laundry, which you would think would have a risk for repetition-type injuries," Dr. Phillips says. "The people who work there have been there from eight to 26 years. Yet there are few of those types of injuries where one might expect to see a lot. They have very little turnover and they appear to enjoy their work. That group has learned over the years how to perform their tasks safety and reduce injuries."

The case reviews bring the importance of feedback and follow-up to the forefront. Communication of lessons learned and potential hazards is an important aspect of preventing future injuries.

"The case reviews have resulted in good face-to-face communication," says Operational Safety Services Division Director Carol Scott. "They include the facilities supervisors in the process, resulting in a good mechanism for feedback."—*B.C.* ornl

‘Accountability at every level’

Lab managers give their views on keeping safety at the forefront in their organizations

ORNL managers have a significant stake in improving ORNL’s safety performance. It is up to them to ensure that a consciousness of safety on the job occurs at every level of their organization. Several ORNL managers have volunteered their comments on measures they have taken to ensure that attention to safety in constant and ongoing in their divisions.

Michelle Buchanan, Chemical Sciences Division director: “CSD has used ‘peer’ review in quarterly walk-throughs of our laboratories for many years. Staff members are assigned to teams that review both safety and housekeeping in our division’s labs. Doing this gives people better awareness of what others are doing to maintain safe workplaces and also provides a fresh perspective to the occupant of a particular lab about things they could be doing to improve their workplace.

“In preparing our work control documents this year, each research group held meetings to have all group members, including students and other guests, contribute to the process. This encouraged all people to evaluate hazards and improved communication of safety issues within the group. This approach was very well received by our staff, and we will be making this a part of our annual updates of our work control documents.

Herb Debban, Facilities and Operations director: “Since January, we have had a significant increase in emphasis on safety in F&O. This has involved

- partnering with ATLC and increasing employee involvement,
- significant management involvement in planning and field presence,
- establishing a goal to reduce injuries by 90 percent as compared with FY 2000,
- critiquing every injury,
- management involvement in case management,
- every injury reported at directorate level within two hours,
- lots of communication and
- tracking trends.”

Dave Poker, Solid State Division safety officer: “In the Solid State Division, we’ve made use of the new research safety summaries to update our hazard evaluations of all the division’s research work. Also, in addition to our normal periodic laboratory walk-throughs, we performed an exhaustive audit of safety concerns, including inspections that lasted at least an hour per room. John Cooke, our division director, was present for nearly every inspection, emphasizing the enhanced degree of emphasis on safe work planning and practice within the division.”

Ted Fox, Engineering S&T Division acting director: “The problem our organization faces with safety is that everyone thinks they act safely and thus safety is not their issue. We have worked hard to bring out the idea of accountability at every level. Each of our group leaders encourages our staff to think about safety on a daily basis.”

Joe Herndon, Nuclear S&T Division acting director: “Leadership on safety is a critical role of line management in NSTD, starting with the division director and all group leaders. Over the last six months, NSTD has placed significant effort in providing improved abnormal event response, reporting, and followup. This has included critique training for all NSTD line managers.

“While the responsibility for safety is placed on NSTD line management, the division maintains an active ES&H team to assist the line with interpretation of requirements, implementation of requirements, and assessment of compliance. The NSTD ES&H Team conducts routine walk-through inspections within all our spaces—offices, labs, storage. They identify existing or potential problems, discuss the issues with affected staff and work with them to make immediate improvements. The benefits are two-fold: Staff become more aware of safety issues and potential hazards are eliminated.

Frank Harris, Biological and Environmental Sciences associate Laboratory director: “In the BES directorate, my approach to building an enhanced safety culture is straightforward. I encourage divisions to set high expectations for both scientific excellence and safety excellence. Our staff are encouraged to use self assessment to improve all aspects of our work. I believe the most effective mechanism one can use to ensure a culture change is to talk to people in their workplace, get their impressions of what is going well and what is not.

Talk to people in their workplace. Get their impressions.

“I and my division directors make regular visits, called science visits, to individual researchers and teams to discuss their research progress in their lab or office. A central feature of these visits is a discussion of safety issues. My divisions have rigorously approached the research safety summary process with management involvement and “walk downs” of the RSS’s to ensure they are effective and understood. Given the level of staff participation and commitment in this process, I am convinced the process has enhanced our safety culture.”—*B.C.* ornl

Safety at SNS: ‘We work hard on it’

These days, the Spallation Neutron Source construction site is a beehive. Scores of hard-hatted construction workers toil among heavy equipment that lumbers through graveled, dusty lanes. Some workers are in lofty perches, others in tight places.

Safety has been an SNS priority from day one, and the project has the record to show for it.

“The SNS project has logged more than 700,000 hours without a lost workday injury,” says Frank Kornegay, who runs the project’s environment, safety and health operation. “Five recordable injuries have occurred since the start of the project. That’s a rate of a little over one per 200,000 hours worked. The construction industry average is 7.8.”

Curtis Boles

In one corner of the project site, construction workers build the SNS facility’s accumulation ring.

The good record is for good reason. The SNS has an ES&H-based incentive program for the construction manager, Jacobs Engineering, plus a site-wide ES&H plan that all contractors and subcontractors must sign on to. Half of the construction manager’s profits from the job are based on ES&H performance.

“The incentive goal is less than half of the DOE average for lost workdays away. If the SNS construction safety record is the DOE average for lost workdays away, the construction manager receives zero for that portion of their profit,” Frank says. “That helps maintain their focus on safety.”

All on-site meetings start with a safety issue discussion. Jacobs Engineering employs two safety experts, and one is on site any time work is in progress. Any subcontractor with 40 or more employees must also have a safety professional on site.

Frank describes Jacobs Engineering’s lead at SNS, Dick Davis, as a firm believer in safety culture. “Dick has written the most powerful letter I’ve ever read, and it goes out in every bid package. It says ‘we will never compromise on safety.’

“Safety is tremendous priority for everybody on this job, from Bill Madia and Thom Mason at the top on down. We work very hard on it,” says Frank.—*B.C.* ornl

Ounce of prevention

Good work habits can help reduce the need, down the road, for physical therapy

A laborer was loading wooden pallets onto the back of a truck. She bent down to pick up a pallet and experienced severe pain in her back. She reported to Medical, where she was diagnosed with a lumbar strain. Following treatment, the employee was given prescription medication and sent home.

A look at the list of on-the-job injuries at ORNL reveals few that are major. Most are the more mundane strains and abrasions. But they still hurt, and they often result in time away from work.

Curtis Boles

The Physical Therapy Clinic's Chuck Hochanadel demonstrates "neutral spine."

ORNL's Physical Therapy Center sees the aftermath of these injuries—sore backs, strained knees and aching shoulders. The center is a pretty busy place, and highly praised by its clientele. But the fact of the matter is, Chuck Hochanadel and his staff would just as soon not see us in the clinic so often, and they are happy and willing to point out preventative measures to keep you out of it.

"Some injuries you truly can't prevent, but you can engineer out the obvious hazards," Chuck says. "Jobs can be designed so that they are safer through engineering controls, such as work space and tool designs, and through administrative controls, such as the pace of work and scheduled breaks."

He pushed the skids to the lift gate, unloaded the skids one at a time and took the material into a building. After he finished the job, he felt pain in the right side of his back. He was diagnosed with a lumbar strain, given prescription medication and sent off work.

Back injuries are a particularly troublesome factor in ORNL's injury numbers. Years of repeated bad habits can unexpectedly culminate in a painful day of reckoning. It's a familiar story: "He just bent over to pick up a paper clip and strained his back."

Chuck has done research that shows that, of people with back injuries, one-third didn't know how they hurt their back, another third simply bent over and only a tenth of them hurt their back through heavy lifting.

"You're just as susceptible injuring your back lifting a light object as a heavy object," says Chuck. "For one thing, you always carry your upper body weight on your lower back. Secondly, you're probably going to be more aware, and lift more carefully and properly, if it's a heavy object."

An engineer has been experiencing numbness in her arms and wrist up to her shoulder. Recently, the employee has been working on a big project requiring a lot of keyboard-mouse extensive work. Diagnosed with a neck strain and mild carpal tunnel syndrome in the right wrist.

Chuck and his clinic co-workers Kay Traughber and Sydney Van Hook-Hurst have conducted "back schools" with different work groups, demonstrating techniques such as "neutral spine" to help prevent injuries and strains. Chuck sees trends in injuries. Men tend to be strong but lose flexibility in their legs and shoulders, which leads to strain injuries. For women's often more desk-bound tasks, posture plays an important role. The teacher's admonition to "sit up straight and put both feet on the floor" was well advised because poor posture, standing or sitting, can lead to trouble.

The PT staff can demonstrate proper ways to lift and discuss office setups so that they can be made more ergonomically correct. While it may be logical that the laborers outdoors have more opportunity for injury, Chuck says the office has its own hazards.

"We have equal percentages of injuries to monthly salaried employees, weekly salaried employees and hourly employees," he says. "Just because you don't routinely perform heavy work doesn't mean you are immune to a back or neck problem."

A static posture, such as sitting at a PC, doesn't necessarily mean the body is undergoing less stress. "And the worst thing you can do with a bad back is sit in a chair all day," Chuck says.

The Physical Therapy Clinic (home.ornl.gov/divisions/health/pt.html) offers a variety of clinical evaluations, individual exercise programs and therapies to its patrons. Ideally, the best alternative is to practice good techniques and form good habits so that there is never a need for the doctor's referral to Physical Therapy.

"An injury is a combination of work design, pacing and the human characteristic that the individual brings to the table," Chuck says. "As one becomes tired, stressed or a little preoccupied, they become more susceptible to an injury. We can do hazard analyses, work safety analyses or all sorts of studies, but everyone needs to take ownership of their own health and safety."—*B.C.* ornl

Exercise, activity can help reduce the injuries, too

Facilities and Operations' Jim Poston has struggled with a number of health problems over the years. He is diabetic, has suffered kidney problems and is a veteran of open-heart bypass surgery.

After a recent medical checkup, his doctor expressed amazement at his overall improvement.

"He accused me of trying to put him out of business," Jim says.

Actually, to look at him, you'd never know Jim had been sick a day in his life. He's tanned, stout and broad-shouldered. But Jim attributes his good doctor visit to his recent job assignment—he looks after the needs of ORNL's Fitness Center. And he's not only a caretaker but also a regular user.

An afternoon Fitness Center crowd

Lab employees rated a fitness center high on their list in last year's Quality of Work Life survey. Lab management responded by renovating space in Building 4500-South and equipping it with one of the finest arrays of machines you'll see anywhere.

Patent attorney Joe Marasco, who noticed he'd lost a lot of strength through dieting, began working out and "lost more fat and gained more muscle." "It's hard the first few weeks, and then it becomes part of your life," he says. Joe also suffers from arthritis, and he says working out has helped that too.

Chuck Hochanadel, of ORNL's Physical Therapy Clinic just across the hall, says being fit does indeed play a role in staying healthy and injury-free.

"Fitness is a component of preventing injuries," Chuck says. "Your overall fitness provides a look at how your maintain your general health."

Lab staff members have responded in kind to the center. More than 1200 users have signed up and done the required training to use the center (it has more than 20 different types of machines). Users average about 225 per day, usually in the early mornings or afternoon after work hours. There is also a lunch crowd, and visitors keep the center busy even on the weekends.

The fitness center has converted some who were skeptical of company initiatives. Said one longtime ORNL employee: "When they first said they were going to put a fitness center in there, I thought it was a crock." After watching the parade of users day after day, he's changed his mind. "I told (Facilities and Operations Director) Herb Debban that it's the best thing they've ever done around here."—*B.C.* ornl

Know the difference: POS emergency and urgent care

Summer is the prime season for accidents, injuries and illnesses that often require trips to the emergency room. There are differences in emergency care and urgent care under point-of-service health plans, and your out-of-pocket costs are determined by which type of care you use. Following are some guidelines on the difference between emergency and urgent care. For more information, contact the OneCall Center at 574-1500.

Emergency

Go immediately to the nearest emergency room.

An emergency medical condition is any condition that, if not treated immediately, might cause loss of life or limb or lead to severe or permanent disability. Examples include an accident or illness resulting in uncontrolled bleeding, loss of consciousness, seizure, poisoning, severe chest pain, shortness of breath, acute abdominal pain, serious burns or cuts or broken bones.

In an emergency, call an ambulance, the paramedics, or go to the nearest emergency room immediately. Notify your primary care provider (PCP) as soon as reasonably possible. If you are admitted to the hospital as a result of the emergency, you must notify your PCP or CIGNA HealthCare Member Services within 48 hours. This will precertify your hospital stay and assure you of the full, in-network level of benefits. The toll-free Member Services phone number is on your ID card.

Urgent medical conditions

Call your PCP immediately.

An urgent medical condition is not an immediate threat of life or limb, but delaying medical treatment could lead to serious medical problems. Examples include ear infections, sprains, and urinary tract infections. Your PCP will recommend the appropriate treatment and arrange any necessary referrals to specialists, hospitals or lab and X-ray facilities.

If you are traveling

Emergency. For an emergency medical situation, go immediately to the nearest emergency room. Be sure to call your PCP or Member Services to report your situation within 48 hours or as soon as reasonably possible.

Urgent Care. Go to a local doctor, medical facility or emergency room, or call Member Services at the number on your ID card and we'll direct you to the nearest CIGNA HealthCare participating doctor or hospital.

You may have to pay the provider at the time you receive treatment. Be sure to get paid receipts for all out-of-pocket expenses. You can send your claims to the address on your ID card to be reimbursed at the in-network level of benefits.

Any follow-up treatment relating to your urgent care needs must be coordinated through your CIGNA HealthCare PCP in order to receive the full, in-network level of benefits. ornl

Kids Day videos on our Web

As we promised the kids who came to April's Take Your Child To Work Day, video clips of the day's fun are on our public Website: www.ornl.gov/cfw/tyc2002/movie.htm. Maybe you're on it.

Study Center celebrating 15th educational year

The Ecological and Physical Sciences Study Center, coordinated by ORNL, is celebrating its 15th year of providing hands-on experiences for students in a variety of science disciplines. The center has worked with more than 130,000 students from kindergarten through grade 12 in one-and two-hour sessions.

"The basic program is to get kids excited about science," said Kris Light, one of the instructors of the program who has been with it since the first year. "We bring the equipment in and let the students do hands-on science."

Among the topics the instruction staff has for the program are microscopes, machines, space, plants, the environment, robots, chemistry, fossils and astronomy.

Study Center instructor Kris Light hosts a group at Freels Bend Cabin.

Classes can be held at the nearly 200-year-old Freels Bend cabin on DOE's Oak Ridge Reservation or the instructors can take their classes to the students. Public and private school groups, as well as home schoolers, have participated in the program during weekdays and Saturdays.

Between 6,000 and 7,000 students per year are involved with the program, or between 250 to 300 per month. While most of the classes have been from Tennessee, other states have been represented. A class from Puerto Rico recently took a course through the program.

Kris, who has a degree in microbiology and works in the science discovery center at Oak Ridge's Willow Brook Elementary School, notes the curriculum has expanded over the years, but the hands-on theme has remained.

"Our first classes 15 years ago were primarily plants and other environmental sciences," Kris said. "As we've expanded the program, we've always kept it fun. For instance, when we talk about the behavior of atoms, we use hoola hoops with the kids to show how the atoms react."

"The goal with the school groups is to get the students interested in science," said Amy Birdwell, a member of the study center's staff who operates the Kumon Learning Center in West Knoxville. "The program must be working right because I get a lot of hugs from the kids when the classes are over."

Paul Lewis, director of teacher resource distribution for NASA's Tennessee Space Grant Consortium and who conducts public astronomy seminars at the University of Tennessee, said the study center brings out the best in students.

"I've been amazed at the number of good questions the students–especially the young ones–ask about science," says Paul, who conducts classes on spectroscopy and rockets. "Sometimes we don't give students enough credit for what they already know."—*Fred Strohl* ornl

Service Anniversaries

June

45 years: Robert W. Swindeman, Metals & Ceramics; Robert T. Santoro, Nuclear Science & Technology

35 years: Hugh G. Hackler, Craft Resources; William O. Fisher and James L. Lively, Logistical Services; Carol W. Kendrick, Operational Safety Services; Vicki E. Barnes, Solid State; Joe G. Tuggle Jr., Computational Sciences & Engineering; L.J. Turner and Man H. Yoo, Metals & Ceramics; Peter Angelini, Energy & Engineering Sciences Dir.; William H. Hopwood Jr., Nuclear Science & Technology

30 years: Gwendolyn T. Banks, Business & Information Services Dir.; John K. Munro Jr. and Mary A. Russell, Engineering Science & Technology; Stanley L. Milora, Fusion Energy; Jan S. Thomas, Laboratory Protection; Chia Y. Fu and Leslie R. Dole, Nuclear Science & Technology

25 years: Jamesena Saffell, Laboratory Protection; William H. Hermes, Eric C. Bradley, Robert C. DeVault, Hal L. Jennings, William R. Nelson, and Steve A. Richardson, Nuclear Science & Technology; Arthur S. Hovis, Networking & Computing Technologies; John V. Laforge, Facilities Management; John E. Long and Wallace D. Porter, Metals & Ceramics; William H. Andrews Jr., and G.R. Wetherington Jr., Engineering Science & Technology; Marti I. DeVall, Operational Safety Services; Glenn F. Cada and Robert M. Reed, Environmental Sciences; Park T. Owen and Annetta P. Watson, Life Sciences; Elias Greenbaum, Chemical Sciences

20 years: Samuel J. Freels and Larry E. Gray, Craft Resources; David E. Williamson, Fusion Energy; Patricia S. Hu, Engineering Science & Technology; David R. Cole, Chemical Sciences; Gerald R. Sullivan and Diana L. Tucker, Nuclear Science & Technology

Total safety culture

It's automatic, and we watch out for each other as well as ourselves

Safety is team sport. Over the long run, establishing a total culture of safety requires an interdependence across all levels of organization that reinforces safe behavior. It's a process that builds, over time, through communication.

That's the message Dr. Sherry Perdue gave to the initial Safety First Monday presentation, "The Power of Safety Communication."

Safety management has realized two major shifts in recent years, she says. It used to be up to the organization to provide safety—a strategy that produced some good results. Workplaces now are much safer than they were a few decades ago, but accidents still happened. Safety strategies then emphasized the individual. Each worker was responsible for safety. That strategy also enjoyed a good level of success, as workers paid more attention to procedures and safe practices on the job.

"But we still see those nagging injuries," says Perdue. She describes a further progression of safety in the workplace, a third shift from dependence on the organization, to the indepence of the worker, to interdependence—looking out for one another. Perdue calls it a total safety culture.

An instrument tech was moving a ladder when the ladder bumped against a light fixture, and a cordless screwdriver left on top of the light fixture fell and struck employee on the forehead and nose. An X-ray later revealed a fracture to the nose.

"Safety is a *value*," says Perdue, who works for Safety Performance Solutions, a Blacksburg, Va.-based consulting firm. "It's not a priority. A priority is a priority until something more important comes along. Priorities get shuffled around."

Instead, safety as a value means that safety is a way of life. Individuals feel responsible for coworkers as well as themselves—to go beyond the call of duty on behalf of a co-worker. It's not as easy as it sounds. Most people, Perdue says, agree that they should caution co-workers if they see them doing something risky, and an equal number say they are willing to do it. Fewer say they actually do it. It can be awkward and requires a certain degree of tact. It's uncomfortable. It takes some guts to essentially criticize someone's behavior, particularly if it's how they are going about their job.

We still see those nagging injuries.

But that interpersonal communication is necessary to achieve the total safety culture. "Safety is a continuous fight against human nature, such as the temptation to cut corners, and those temptations are often reinforced by culture," Perdue says. For instance: Did the group that cut corners to get the job done fastest receive the award?

"And accidents are still the exception, not the norm," she says.

In other words, most risky behaviors don't result in accidents—the majority of dashes through caution lights don't result in collisions, for instance. Experience—getting away with it—reinforces lapses. In the face of that, if safe behavior is not positively reinforced, it will wane. The dark side of carelessness takes over. Perdue advocates praising and rewarding those who practice safe behavior. "After all," she says, "who's sick of getting compliments?"

Perdue describes the progression of an employee to a total safety culture.

- An *unconsciously incompetent* worker has had little training or doesn't consider the safety aspects of the job, knows few procedures or is misapplying what he or she does know.
- The *consciously incompetent* worker knows the behavior is risky, whether it's not bothering to don the safety glasses, driving without a shoulder belt or using a chair for a ladder.
- We see real progress with the *consciously competent* worker, who knows safe practices are important and goes to the trouble to consider safety and work safely. That's great.
- The ideal, however, is the *unconsciously competent* worker, who goes about safety as automatically and routinely as one might get dressed and eat breakfast in the morning. Safety for that worker is part of his or her culture.

Reinforcing safety behavior through interpersonal, co-worker-to-co-worker communication—pointing out risky behavior and praising safe behavior—is a powerful way to change behavior and achieve that ideal, Perdue says.

Dr. Perdue's presentation and viewgraphs are available on the Safety 1st Website, safety1st.ornl.gov.—*B.C.* ornl

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