

Center for
Research on
Occupational and
Environmental
Toxicology



NEWSLETTER

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OR-FACE: Working to Prevent Workplace Fatalities

A farmer is killed when his combine runs over him. A roofing contractor's assistant dies after he falls through a skylight. These are recent examples of workplace fatalities that have been the subject of investigation by the Oregon Fatality Assessment and Control Evaluation, or OR-FACE, program. Each day, on average, 16 workers die in the United States as a result of a traumatic injury on the job. The OR-FACE program, sponsored by the National Institute for Occupational Safety and Health (NIOSH), is designed to identify and study fatal occupational injuries and to develop prevention strategies for minimizing dangerous workplace situations in the future. OR-FACE, one of 15 NIOSH state-based programs, has produced 11 investigative reports and 1 alert with recommendations to prevent a repeat of these fatal accidents. In Oregon, the research is based at OHSU and is directed by Gary Rischitelli, MD, JD, MPH, and Joan Rothlein, PhD.

The FACE program operates by performing on-site investigations where fatalities have occurred and gathers facts and data from company officials, witnesses, and coworkers. Investigators collect information about the circumstances surrounding the fatality, including the type of industry involved, the working environment, and the tasks the victim was performing at the time of the accident. These investigations help identify the factors that contribute to



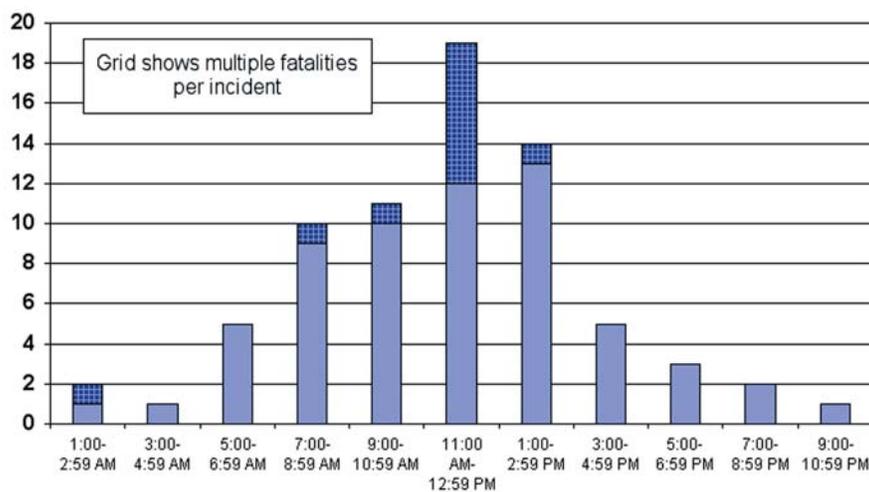
fatal occupational injuries, which are then used to develop comprehensive recommendations for preventing similar deaths in the future. FACE will provide guidance for revision of rule changes that improve worker safety such as the recent change by the Oregon Bureau of Labor and Industry to restrict minors from using explosives on the job.

The figures in this newsletter present 2003 fatality data aggregated by time, date, event, industry and occupation. OR-FACE recorded 63 fatal occupational incidents in 2003, with 76 fatalities. The number of deaths corresponds to an occupational rate of 4.4 deaths per 100,000 workers, which is similar to the national average. Transportation-related businesses and the logging industry had the highest number of work-related fatalities in the state. Logging is the most dangerous occupation in the state even though the number of loggers is far less than the number of workers in other occupations. Five of the 12 logging fatalities involved fallers and four logging fatalities involved truck and tractor operators. Fatalities also occurred in other forest related occupations, including eight firefighters in a deadly transportation incident, and a government forester in an aviation incident.

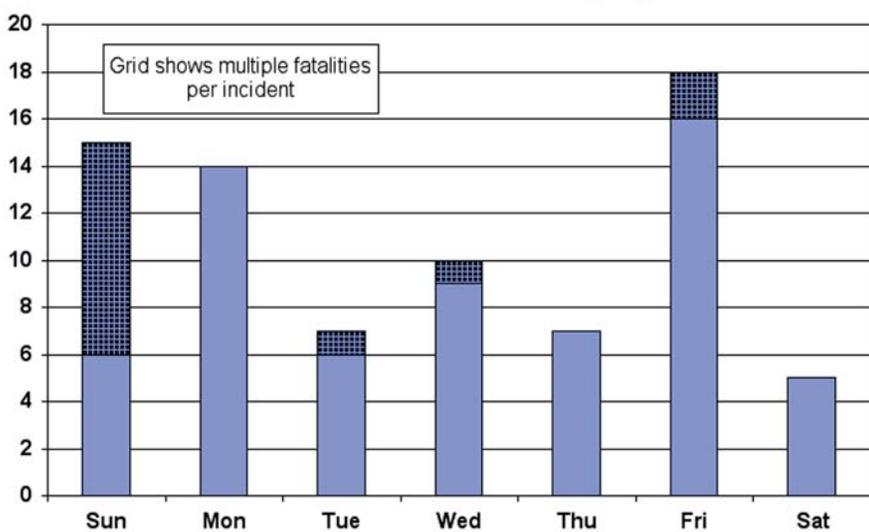
Transportation accounted for over 40% of all occupational fatalities, including 21 incidents (some with multiple victims) with a total of 33 fatalities. Almost one-third of the transportation-related fatalities occurred in transportation industries involving truck drivers, taxi drivers, and pilots of planes or boats. The remaining transportation incidents involved workers employed in other businesses. Transportation incidents included automobiles, light trucks and vans, trailers and semi- and heavy trucks, planes and helicopters. Half of the incidents with heavy trucks involved non-highway work and almost half of the transportation incidents involved a single vehicle running off the road or losing control.

As shown in the charts, the time of day when an incident occurs appears to peak around the noon hour. Almost half of all incidents occurred on Monday or Friday (47%), and the months with the greatest number of incidents were October, November and December. The high number of total fatalities recorded for the summer was due

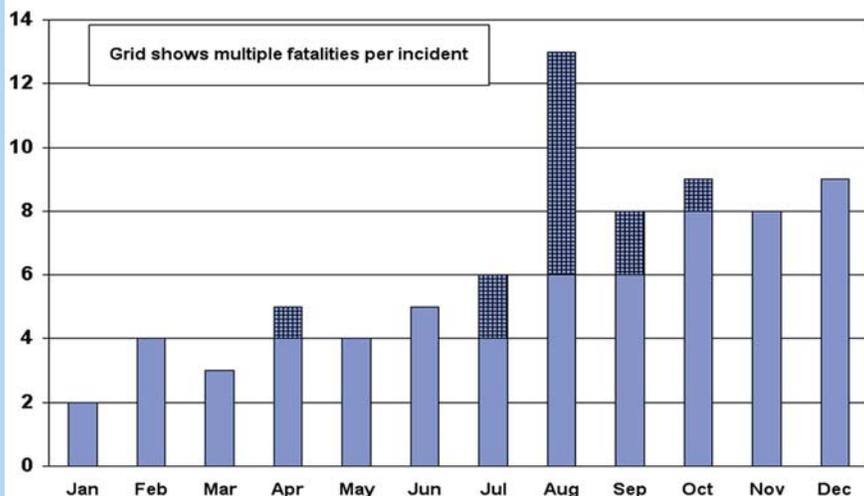
Worker fatal incidents and total fatalities in Oregon by time of incident, 2003



Worker fatal incidents and total fatalities by day, 2003



Worker fatal incidents and total fatalities in Oregon by month, 2003



to the fatal transportation accident involving eight young firefighters.

The following are all FACE recommendations for safer work practices that, if followed, could help prevent the next workplace fatality. For the full reports that provided these recommendations, see the following web address:

<http://www.ohsu.edu/croet/face/reports.html>

Drivers should not engage in activities that distract them from driving. This includes use of electronic devices such as cell phones and GPS units.

Prior to performing machine maintenance operations, block machine parts against motion.

Employers should design and use comprehensive fall-protection programs to reduce the risk of serious or fatal injuries.

Never operate equipment in which safety systems or features have been modified or are not working properly.

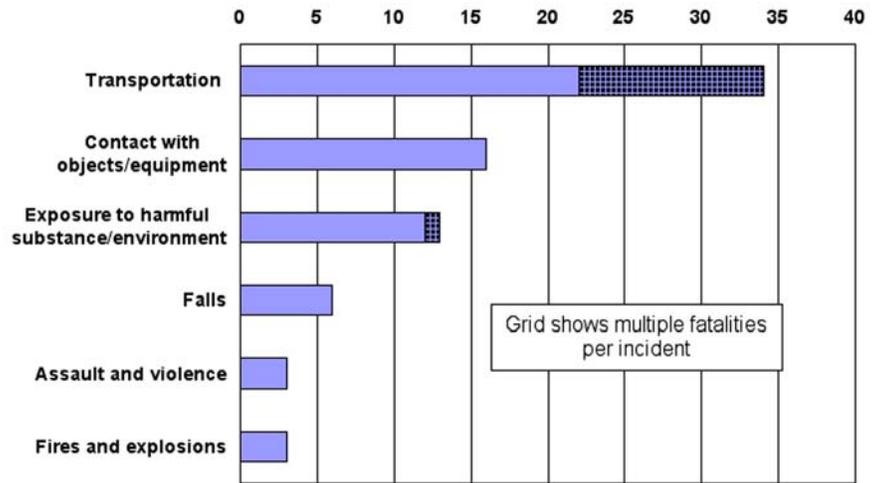
Youth should not be employed in positions that include the use or handling of explosive materials.

In remote or obscure locations, make sure that workers know their location and can provide direction to emergency responders, if needed. Develop an emergency plan that reflects the response time from local emergency services. Rural emergency medical systems must have the ability to rapidly locate trauma victims and transport them to the appropriate level of care.

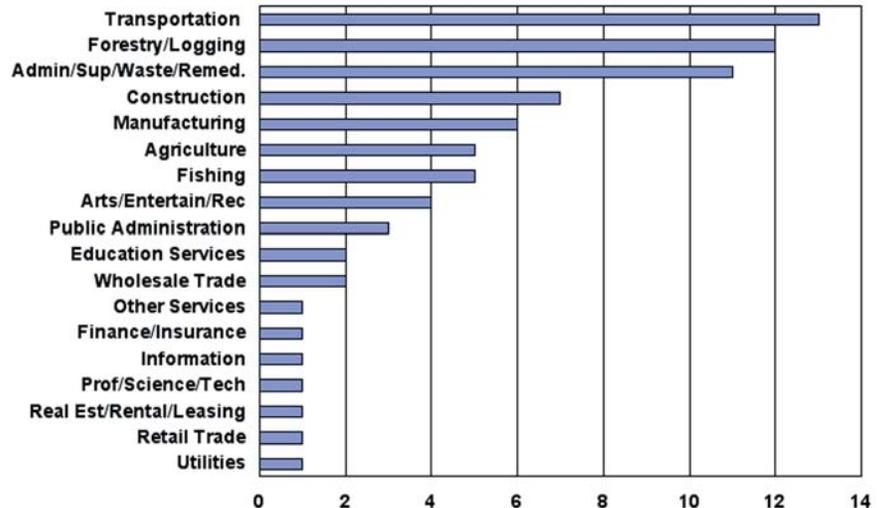
Equipment should have appropriate and approved personal protection or restraint systems; older equipment lacking such systems should be retrofitted to current standards.

Daily checks of all hydraulic equipment should include inspection of hydraulic hoses and connections.

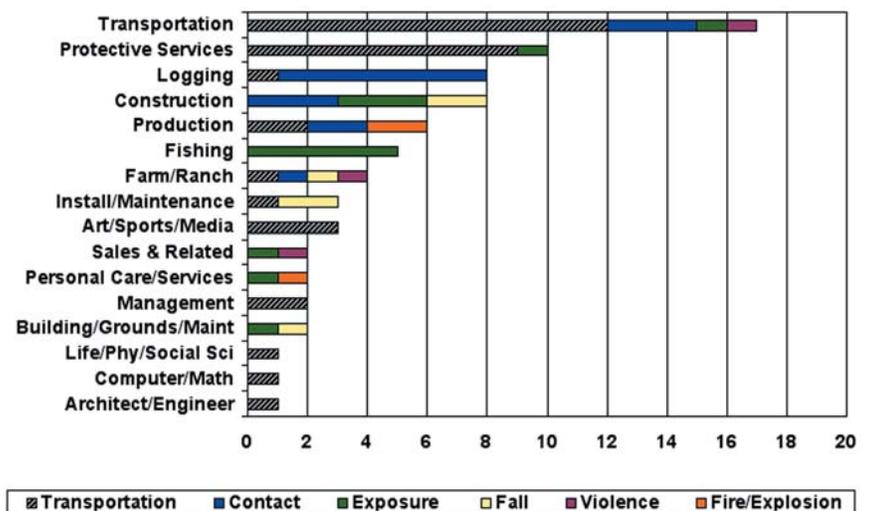
Worker fatal incidents and total fatalities by type of event, 2003



Worker fatalities in Oregon by industry, 2003



Worker fatalities in Oregon by occupation and event, 2003



CROETweb Information Resources

CROETweb contains links to literally thousands of valuable occupational health and safety information websites. One of these is Haz-Map (<http://hazmap.nlm.nih.gov>), an occupational health database designed for health and safety professionals and for consumers seeking information about the health effects of exposure to chemicals at work. Haz-Map is made available through the National Library of Medicine's (NLM) Toxicology and Environmental Health Information Program.

Haz-Map is unique in that it links jobs and hazardous tasks that are associated with occupational diseases and their symptoms. The information is cross-referenced, so that chemicals and biological agents can be linked to industrial processes and other activities such as hobbies. Conversely, risk for occupational diseases and their symptoms can be linked to any corresponding hazardous job tasks or exposure to hazardous agents. Some of Haz-Map's features include: text search capability, browsing by jobs, diseases, or agents, searching hazardous agents by adverse effects, searching diseases by jobs and findings, and automated searches of TOXNET. Definitions of technical terms are available by selecting hyperlinks to the glossary.

To locate Haz-Map from CROETweb.com., look under the "Additional Resources" listing and select Databases and Fact Sheets. Next, select Haz-Map: Information on Hazardous Chemicals and Occupational Diseases.

The image shows two screenshots of the CROETweb.com website. The top screenshot is the homepage, featuring a navigation menu with categories like 'Occupations & Industries', 'Chemical Hazards', and 'Workplace Safety Issues'. A red arrow points from the 'Additional Resources' section to the 'Databases and Fact Sheets' link. The bottom screenshot shows the 'Databases and Fact Sheets' page, with a red arrow pointing to the 'Haz-Map: Information on Hazardous Chemicals and Occupational Diseases' entry. Below this, a screenshot of the Haz-Map interface is shown, including a search bar and a list of categories: 'Hazardous Agents', 'Occupational Diseases', and 'High Risk Jobs'. A red arrow points from the 'Additional Resources' section to the 'Haz-Map' entry in the bottom screenshot.

Additional Resources

- Databases and Fact Sheets
- MSDS Resources
- Occupational Safety & Health Statistics
- Safety Resources, Organizations, Agencies

DATABASES AND FACT SHEETS

Occupation-specific

- Haz-Map: Information on Hazardous Chemicals and Occupational Diseases.**
[http://hazmap.nlm.nih.gov/ \(NLM\)](http://hazmap.nlm.nih.gov/)
> An occupational toxicology database designed to link jobs to hazardous job tasks which are linked to occupational diseases and their symptoms. It is a relational database of chemicals, jobs and diseases.
- International Hazard Datasheets on Occupation**
[http://www.ilo.org/public/english/protecton/safework/cis/products/hdo/html/index.htm \(ILO\)](http://www.ilo.org/public/english/protecton/safework/cis/products/hdo/html/index.htm)
- Occupational Outlook Handbook (2000-2001)**

Haz-Map
Occupational Exposure to Hazardous Agents

Search [] as Agent Disease Job Text Search

Browse Haz-Map

- Hazardous Agents**
 - By Types of Agents
 - By Adverse Effects
 - Alphabetically
- Occupational Diseases**
 - By Types of Diseases
 - By Jobs and Symptoms
 - Alphabetically
- High Risk Jobs**
 - By Types of Jobs
 - Alphabetically

Haz-Map: Information on Hazardous Chemicals and Occupational Diseases
by Jay A. Brown, M.D., M.P.H.

[Haz-Map Fact Sheet](#) | [Download Haz-Map Brochure](#) | [List of All Topics](#)

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CROET Establishes International Partnerships

Did you know CROET has connections to other prestigious research institutions worldwide? As part of its Superfund Basic Research Center grant, CROET developed a partnership with the Chulabhorn Research Institute (CRI) in Bangkok, Thailand. This project also involves a collaboration with the Toxicogenomics Research Center (TRC) at OHSU, which, like the SBRC, is housed in CROET. The goal of this project is to promote productive scientific interactions among the three research centers and to introduce toxicogenomics techniques to CRI. (What is toxicogenomics? See CROET newsletter vol. 9, #3 at <http://www.ohsu.edu/croet/about/pubs.cfm>)

All three centers share research interests in toxicology and child health. The CRI is designated as a UNEP Center of Excellence for Environmental and Industrial Toxicology and a World Health Organization Child Environmental Health Center. At OHSU, the SBRC and TRC concentrate on development and child health — the SBRC focuses on organic solvents that cause neurotoxicity, while the TRC is focused on neuro-toxicogenomics and child health. This partnership will transfer CROET's specialization in neurotoxicology and toxicogenomics to CRI.

The CRI-CROET project focuses on benzene, an important component of air pollution in Bangkok. Like many other megacities, air pollution in Thailand's largest city is associated with the use of transportation fuel. Although air quality has improved considerably since 1989 — a consequence of

several rounds of fuel reformulation — serious problems remain. Leaded gasoline was removed from the market in January 1996. With the removal of lead, aromatic solvents in gasoline, including benzene, have become leading hazardous components of vehicular emissions. Benzene is found in transportation exhaust gases not only because it is in gasoline, but also because it is formed from toluene and xylene during the combustion process.

Although the aromatic solvent content of gasoline was reduced from <50% to <35% by volume in January 2000, public exposure to benzene and other aromatic hydrocarbons remains a significant source of public health concern because of the cancer-causing and neurotoxic potential of these chemicals.

In this project, the mouse toxicogenomic (gene expression) profile associated with benzene will be determined using cutting edge toxicogenomic technology currently used at CROET. Mice will be exposed to benzene at CRI, while processing and analysis of data will occur simultaneously at both CRI and CROET to determine whether comparable results were obtained. This collaboration establishes a mutually beneficial scientific relationship between the US and Thailand. In addition, the project provides a mechanism to transfer toxicogenomic technology from OHSU to CRI and institutes a research program that is of great public health importance to Thailand and other countries concerned about the health impact of exposure to vehicle emissions.



Dr. Sabri Recognized for Saturday Academy Mentorship

CROET's Dr. Mohammad Sabri has been recognized for 15 years of continuous mentorship to high school students at the 15th annual Apprenticeships in Science and Engineering Symposium, held August 21, 2004 at Portland State University. Saturday Academy, an 18-year-old organization, provides students in grades 4 through 12 with an array of hands-on classes, workshops and internships that place special emphasis on the sciences, math and technology. The Symposium was the culmination of 8-weeks of

student apprenticeship under scientists and engineers from business, industry, academia and government agencies. Each student presented his/her work through a poster session and 12-minute oral presentation to other apprentices, mentors, parents, teachers and guests. Dr. Sabri was also the recipient of a prize for best poster at the December 2004 symposium of the nationwide Toxicogenomics Research Consortium held at Duke University.

CROET Co-sponsors 21st Annual Pacific Northwest Association of Toxicologists (PANWAT) Meeting

CROET and the Third World Medical Research Foundation (TWMRF) were co-sponsors of the 21st annual PANWAT meeting, held Sept. 17-19 at Mt. Bachelor Village Resort Conference Center. The theme for the 2004 meeting, titled "Toxicology in Third World Settings", highlighted the challenges of toxicological research, education and practice in third world settings, including sub-Saharan Africa. PANWAT president and CROET Director, Dr. Peter Spencer, opened the first day's sessions with the question: "Are there professional opportunities for research, discovery and contribution in these diverse third world settings?" Biomedical scientists with a variety of expertise and hands-on experience in developing countries then proceeded to inform PANWAT members of those opportunities and the considerable challenges that exist for those working in developing nations. Keynoters were Terri Damstra from the World Health Organization and TWMRF's Valerie Palmer, who coordinates CROET's toxicogenomics laboratory.

OSU graduate students Sue Tilton and Fred Tilton, were presented first and second place awards, respectively, for poster presentations on tumor promotion and developmental toxicology. OSU's Stephanie Smith-Roe, and UW's Lisa Smith, received first and second place awards for platform presentations on DNA mutation repair and pulmonary responses to particulate matter.

CROET Webmaster Accepts Position in Maine

Holly Sherburne, CROET Webmaster, has taken the position of Webmaster at Bowdoin College in Brunswick, Maine. Though with CROET only three years, Holly completely transformed our website by creating two separate sites that more effectively accomplish CROET's mission to promote health and prevent disease and disability among working Oregonians. One site, www.ohsu.edu/croet/, provides information about the people of CROET, our research, education and outreach programs. The other site, CROETweb.com (www.croetweb.com), is our internet resource guide, which contains links to thousands of pages of web-based occupational safety and health information.

Another major, but hidden change instituted by Holly, was the complete reformatting of the CROET websites as database-driven sites, which are much easier to develop and maintain. Her redesign and organization of the sites made CROETweb.com the gold standard among Websites at OHSU. Holly was also a pioneer and role model among Web managers at OHSU by successfully using a program called Cold Fusion to produce our website. The knowledge and trouble-shooting experience she gained in the process was an invaluable resource to OHSU's Web Strategies Department and paved the way for other Web managers to use Cold Fusion on their sites. Holly will be missed by everyone who had the pleasure of working with her.

Holly's replacement as Web manager is Dan Olson. Dan, who received his Bachelors degree in Computer Science from the University of Washington, has been a programmer and developer for twenty years. Dan's most recent work includes developing web sites for clinical use and research at OHSU. Dan's responsibilities will include maintaining and upgrading the CROET web site and CROETweb.com, with a focus on usability and presentation.

CROET Welcomes Occupational Safety and Health Specialist

CROET welcomes Dede Montgomery in a new position as Occupational Safety and Health Specialist. In addition to selecting technical content for CROETweb.com, Dede will promote CROETweb.com and CROET within Oregon's occupational health and safety community and increase its usefulness as a technical resource for workers and health and safety professionals. Dede is a Certified Industrial Hygienist with a master's degree in Public Health. She has over 18 years of experience in occupational safety and health including work as occupational safety and health manager for USEPA Region 10, and more recently as a consultant providing health and safety program support and training.

Center for Research on Occupational and Environmental Toxicology

CROET, the Center for Research on Occupational and Environmental Toxicology at Oregon Health & Science University, conducts research, provides consultations and offers information on hazardous chemicals and their health effects. CROET's 100+ scientists and research staff explore a range of questions relating to health and the prevention of injury and disease in the workforce of Oregon and beyond. CROET's Toxicology Information Center is open to the public and is staffed to answer Oregonians' questions about hazardous substances in the workplace and elsewhere. CROET's Web site also provides answers to questions about industries found in Oregon through links on a series of pages devoted to industry-specific topics.

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OUTREACH

CROET will provide exhibits at the following conferences.

Oregon Governor's Occupational Safety & Health Conference

Oregon Convention Center, Portland, OR

February 28-March 3, 2005

Join our monthly E-mail list

Join CROET's e-mail list for monthly updates about what's new on the CROET web site, news and upcoming events. To subscribe or read past updates, go to <http://www.croetweb.com/newslet.cfm>.

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Oregon Health & Science University includes the Schools of Dentistry, Medicine, Nursing and Science and Engineering; OHSU Hospital; numerous primary care and specialty clinics; multiple research institutes and several outreach and public service units. OHSU is an equal opportunity, affirmative action institution.

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