

FATAL INJURIES AT WORK



MASSACHUSETTS FATALITY UPDATE, 2007–2008

Every year, men and women in a wide variety of jobs and industries throughout Massachusetts are fatally injured at work. These deaths are all the more tragic because they are largely preventable. Information about where and how they occur is essential in order to develop effective prevention programs. In Massachusetts, the Occupational Health Surveillance Program (OHSP) in the Massachusetts Department of Public Health (MDPH) collects information on fatal occupational injuries as part of the national Census of Fatal Occupational Injuries (CFOI), conducted in cooperation with the Bureau of Labor Statistics (BLS), U.S. Department of Labor.

OHSP also conducts in-depth investigations of fatal occupational injuries as part of the national Fatality Assessment and Control Evaluation (FACE) project, sponsored by the National Institute for Occupational Safety and Health (NIOSH). The purpose of the FACE project is to develop a detailed understanding of how fatal injuries occur and to identify effective countermeasures to prevent similar incidents in the future. Excerpts from selected FACE investigations are highlighted in this report.

This update provides an overview of fatal injuries at work that occurred in Massachusetts during 2007 and 2008. These include fatalities traditionally linked to the work environment such as falls, electrocutions, and exposure to toxic chemicals. They also include workplace homicides and suicides as well as motor vehicle-related fatalities that occurred during travel on the job. Deaths resulting from occupational illnesses and heart attacks at work are excluded from this fatality update.

OVERVIEW OF FATAL INJURIES AT WORK IN 2007–2008

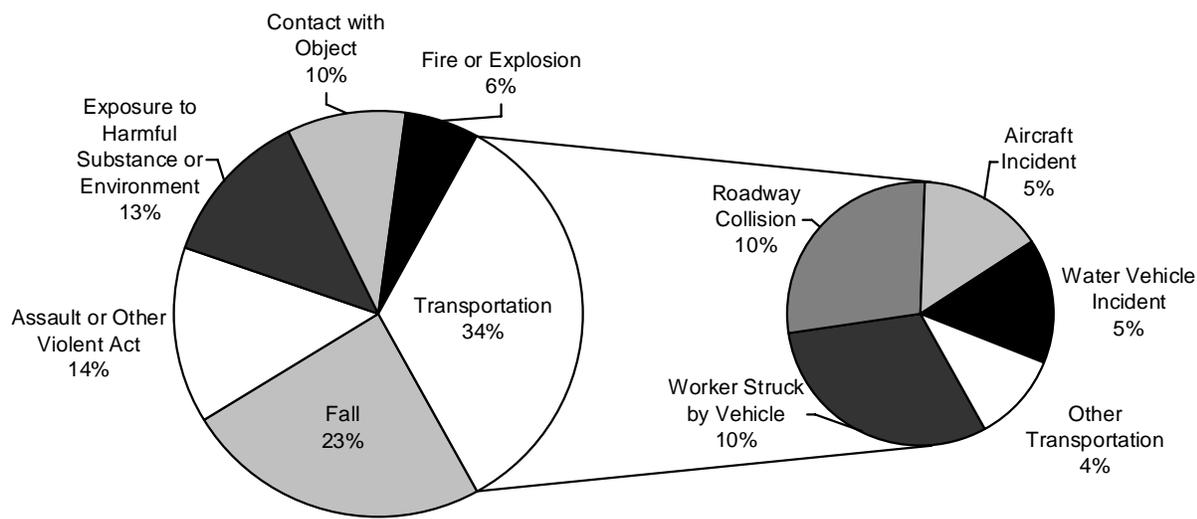
- In Massachusetts, 136 individuals were fatally injured at work during 2007 and 2008; 125 were men and 11 were women.¹ The annual rate of fatal occupational injury in Massachusetts for 2007–2008 was 2.1 deaths per 100,000 workers. This rate is consistent with fatal occupational injury rates for Massachusetts reported for the previous few years.
- The victims ranged in age from 17 to 88 years, with an average age of 45 years. The 136 fatalities resulted in a total of 4,116 potential life years lost, an average of 30 potential life years lost per death. Potential life lost is the difference between the victim's age and 75 years.
- One-hundred and six victims (78%) were White non-Hispanic, five were Black non-Hispanic, and three were Asian non-Hispanic. Twenty-one victims (15%) were Hispanic, seven of whom were foreign born. Hispanic workers had the highest rate of fatal occupational injury (5.6 deaths per 100,000 workers), significantly higher than the rate among White non-Hispanics (2.0 deaths per 100,000 workers).
- Thirty-three victims (24%) were born outside of the U.S. Eight of these workers were from Central or South America, including four from Brazil. Foreign-born victims worked in a range of industries. The rate of fatal injury among foreign-born workers was 2.8 per 100,000 workers, higher than the rate among U.S.-born workers (1.9 per 100,000 workers).
- Seventeen were self-employed.² Nine of the self-employed victims died while working in construction. The fatal injury rate among self-employed workers was 3.9 deaths per 100,000 workers while the rate among wage/salary earners was 2.0 deaths per 100,000 workers.
- Fifty-one victims (38%) worked in small employer establishments (with 10 or fewer employees). Twenty-three of those victims worked in construction, ten of whom were fatally injured at residential construction sites.

¹ Work-related deaths in 2008 were identified as of 1/1/2010.

² Self-employed workers include persons who work in unincorporated family businesses.

EVENTS RESULTING IN FATAL INJURIES

**Figure 1. Fatal Injuries at Work by Event/Exposure
Massachusetts 2007-2008, N = 136**



Source: Massachusetts Census of Fatal Occupational Injuries

Transportation-related incidents accounted for 46 deaths (34%). Fourteen victims were workers struck by vehicles in roadways, parking lots, or off-road areas. Fourteen workers were vehicle occupants who were fatally injured in roadway collisions. Two victims fell from ships or industrial vehicles, and two victims died when the industrial vehicles they were operating overturned.³ Five victims drowned when their ship sank or capsized. Four of these were on the same vessel. Transportation-related incidents involved workers in a wide variety of industries including transportation & material moving, warehousing, retail trade, fishing, protective service, construction/extraction, and health care.

Falls resulted in 33 workers' deaths (24%). **A fall to a lower level** accounted for the majority of these fatal falls, claiming 29 workers' lives and resulting in more fatalities than any other single event in 2007–2008. These included six falls from nonmoving vehicles, five from roofs, five from ladders, and five from scaffolds/girders. Two-thirds (20/29) of fatal falls to lower levels were from heights of 25 feet or less (Range: 4 to 60 feet).⁴

Exposure to harmful substances or environments resulted in the deaths of 17 workers (13%). Seven workers died from electrocutions and other injuries resulting from contact with electric current, two of whom were electricians.³ Five of these electrocutions involved contact with overhead power lines, including three from inadvertent contact between a ladder or scaffold component and the overhead line. **Four** workers died as a result of drowning.^{3,5}

Contact with objects or equipment claimed the lives of 13 workers (10%). Three victims were pinned by material moving machinery or man lifts; three were crushed while dismantling or repairing vehicles or machinery; and two were crushed or engulfed by material they were moving.³

Assaults and other violent acts accounted for 19 deaths (14%); ten were workplace homicides and nine were suicides at work. Seven of the ten homicide victims worked in food, accommodation or hospitality services, healthcare, or retail trade. Five of the homicides were robberies. Five of the homicides resulted from gunshots and three involved the use of knives. Four of the ten homicide victims were foreign-born workers. Workplace homicides accounted for 2.4 percent of all homicides among working age residents of Massachusetts in 2007–2008.⁶

An additional eight workers (6%) perished in **fires or explosions**, including three who were fatally injured in the same pressure vessel failure at a power plant.³

³ Data provided by the Fatality Assessment and Control Evaluation (FACE) Project, Massachusetts Department of Public Health.

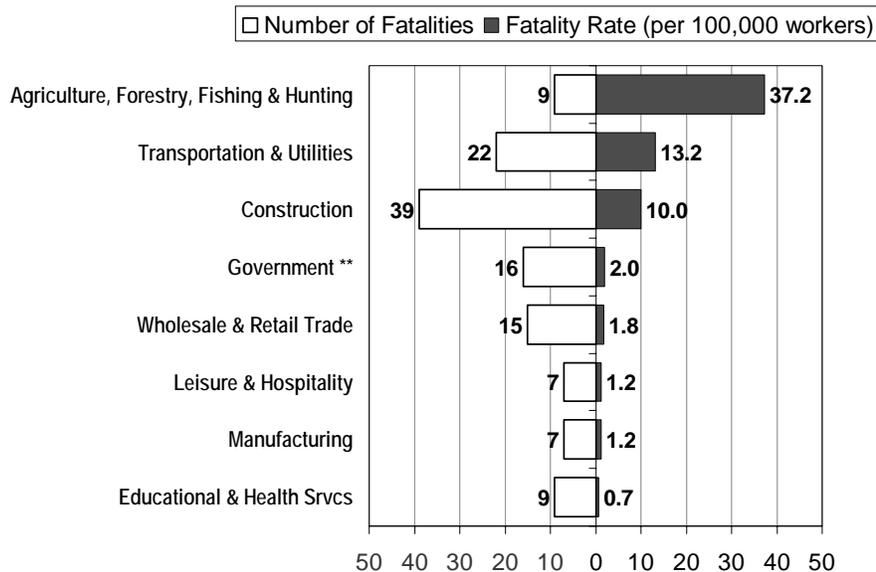
⁴ Height information was not available for three fatal falls to a lower level.

⁵ This excludes falls from vessels under way, which are considered transportation incidents.

⁶ Massachusetts Violent Death Reporting System (MAVDRS), Final 2007 File7_09, Preliminary 2008 File3_10, Injury Surveillance Program, Massachusetts Department of Public Health.

FINDINGS BY INDUSTRY

**Figure 2. Number and Rate⁷ of Fatal Injuries at Work by Industry Division⁸
Massachusetts 2007–2008, N=136**



Note: Data not presented for five industry divisions with six or fewer fatalities (N = 19 deaths).

**The Government category includes fatalities sustained by public sector workers regardless of industry.

Source: Massachusetts Census of Fatal Occupational Injuries

The **Agriculture, Forestry, Fishing & Hunting** industry had nine fatalities (7%) and the highest occupational fatality rate (37.2 deaths per 100,000 workers) during 2007–2008. Eight of these victims worked in fishing, the other in logging.³

The **Transportation and Utilities** industry had 22 fatalities (16%) and the second highest fatality rate (13.2 deaths per 100,000 workers). Fourteen of these were vehicle incidents, including four victims who were fatally injured in three different plane crashes. Four were truck drivers killed in motor vehicle accidents.

The **Construction** industry had the highest fatality count with 39 deaths (29%) and the third highest occupational fatality rate (10.0 deaths per 100,000 workers). One-third of victims employed in construction (13 of 39) were born outside of the U.S. Twenty-three victims (59%) were employed by small contractors with 10 or fewer employees. The leading cause of death among construction workers was a fall from height (N=22). Seven construction workers fell from scaffolds or ladders, and five fell from roofs.

Sixteen local, state, and federal **Government** workers sustained fatal injuries in 2007–2008 (12% of all deaths; a rate of 2.0 deaths per 100,000 workers). Seven of these workers died in transportation incidents. Three were struck by vehicles. Two of these were police officers directing traffic at pedestrian crossings (see FACE report excerpt below). The third victim sustained fatal injuries when struck by a car while working on a roadside cleanup crew.³

The **Wholesale & Retail Trade** industry had 15 deaths (11%) with a fatality rate of 1.8 deaths per 100,000 workers. Of the victims, eight were employed in retail and seven worked in wholesale trade. Four of the 15 workers in this industry were fatally injured in falls. Three were victims of homicide.³

Workers in the **Leisure & Hospitality** industry accounted for seven of the deaths in 2007–2008 (5% of all deaths; a rate of 1.2 deaths per 100,000 workers). Homicide was the leading cause of death among these workers (N=3); all three worked for restaurants.³

⁷ To maintain consistency with denominator data, fatalities among military personnel (0) and workers under 16 years of age (0) were excluded from the numerator in rate calculation.

⁸ Industry definitions based on the 2002 North American Industry Classification Structure (NAICS), The Office of Management and Budget.

Workers in the **Manufacturing** industry accounted for seven of the deaths in 2007–2008 (5% of all deaths; a rate of 1.2 deaths per 100,000 workers). Four of these workers were crushed or struck by machinery or industrial vehicles.

Nine workers employed in the **Educational and Health Services** industry were fatally injured at work in 2007–2008 (7% of all deaths; a rate of 0.7 deaths per 100,000 workers). Two-thirds (N=6) of these workers worked in the healthcare and social assistance sector.

Police Officer Dies when Struck by a Car at Night while Directing Traffic at a Local Fair Massachusetts FACE Report 08MA037

A 67-year-old male municipal police officer was fatally injured while directing traffic and pedestrians for a local annual fair at night. The victim was stationed at a T-shaped intersection close to the fairground's main entrance. Property owners along the fairgrounds and this intersection are allowed to charge fair attendees to park on their lawns and property. The victim had stopped pedestrians and motor vehicle traffic at the intersection to allow a car parked on a lawn adjacent to the intersection to exit its parking location and enter the main roadway. A car that was traveling in the roadway did not stop striking the officer. The victim was using a flashlight and had been wearing a full reflective jacket and white gloves. The police academy training curriculum for recruits typically includes a brief session on directing traffic/work zone safety. This is usually one of the only times that officers receive training on this topic. The victim had been a part-time police officer for one year and had previously been employed for a local county sheriff's department as a part-time deputy sheriff.

To prevent similar incidents Massachusetts FACE recommendations included that municipalities should:

1) Install signs indicating when there are police officers ahead in the roadway and/or pedestrians are crossing ahead; 2) Consider using portable rumble strips in the vicinity of major intersections and pedestrian crossing areas during planned events that will draw large crowds; 3) Evaluate and modify the locations and flow of motor vehicle and pedestrian traffic around routine planned special events that draw crowds; and 4) Consider providing work zone/traffic detail safety training for all municipal officers.

OSHA ENFORCEMENT AND PENALTIES

The Occupational Safety and Health Administration (OSHA) investigated 47 (35%) of the fatal work-related injuries that occurred in Massachusetts during 2007–2008. Of the remaining 89 fatal incidents, 37 occurred in workforce groups that fall outside of OSHA jurisdiction such as commercial fishers, public sector employees, sole proprietors, or the self-employed, and the remainder were events not routinely addressed by OSHA such as homicides, suicides and overdoses, airplane/railway incidents, or roadway motor vehicle-related collisions.

OSHA levied fines for violations of health and safety standards against all of the 46 employer establishments they investigated in response to these fatalities.⁹ In Massachusetts in 2007–2008, the agency assessed a total of \$529,750 in initial penalties, with the lowest fine assessed at \$1,500 and the highest at \$46,800.

COMMENTS

It is important when reporting summary information about fatal occupational injuries to acknowledge the individuals that these numbers represent. These deaths were tragic incidents that were largely preventable. The surveillance findings presented here are intended to guide government, industry, labor, and community organizations in developing and implementing strategies to prevent similar tragedies in the future.

Nationwide, an average of 5,364 workers died as a result of traumatic work-related injuries in 2007–2008, and the average annual rate of fatal occupational injury was 3.7 deaths per 100,000 workers.¹⁰ This rate is substantially higher than the annual

⁹ Two investigations of single fatalities resulted in fines levied against two employers each. One establishment that OSHA fined had an incident that resulted in three fatalities. Another establishment had two fatalities.

¹⁰ U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2007–2008.

**Plumbing Supply Warehouse Worker Dies in a Fall From a Raised Order Picker
Massachusetts FACE Report 08MA026**

A 53-year-old male warehouse worker for a plumbing supply company was fatally injured while operating an order picker. The victim, who was not wearing fall protection, was standing in the elevated operator's area of the order picker accessing a toilet located on a top shelf when he fell approximately 16 feet onto the concrete floor below. The company did not have a comprehensive health and safety program, but had an employee manual with a section on health and safety and held monthly management meetings where safety topics were discussed. The company provided powered industrial truck training every two years for all employees who operated order pickers and other forklifts, but did not provide employees with the Massachusetts Department of Public Safety Hoisting License, required in Massachusetts to operate order pickers. The victim had been an employee of the company for nine years.

To prevent similar incidents Massachusetts FACE recommendations included that municipalities should:

1) Ensure warehouse management systems require heavy items to be stored on lower shelves that are clearly labeled; 2) Ensure that fall protection equipment is worn by employees exposed to fall hazards; 3) Adopt and enforce a mandatory tie-off / no unhook policy for order picker operators; 4) Provide employees comprehensive training on powered industrial trucks; 5) Ensure that employees operating order pickers have a state required hoisting license; and 6) Develop, implement, and enforce a comprehensive written safety and health program that includes topics such as powered industrial trucks and fall protection.

rate of 2.1 deaths per 100,000 workers for Massachusetts. The lower fatality rate in Massachusetts is explained in part by differences in the industrial composition of the Commonwealth's workforce as compared with that of the nation. Nationwide, proportionately more workers were employed in high risk industries such as agriculture, mining and heavy manufacturing. In 2007–2008, Massachusetts also had lower overall rates of fatal highway transportation incidents and homicides, two events that contributed substantially to the national fatality burden. Fatal occupational injury rates computed excluding homicides and highway-related deaths reduced but did not eliminate the gap between the state and national rates (1.7 deaths per 100,000 Massachusetts workers versus 2.4 deaths per 100,000 U.S. workers).

Continued efforts are needed to reduce the human and economic toll of preventable deaths at work in the Commonwealth. Findings in this update highlight several specific issues to be addressed.

The **construction industry** in Massachusetts has continued to have both high numbers and high rates of fatal occupational injuries over time. In 2007–2008, one-quarter of the construction industry deaths (N=10) were among workers employed by small contractors with 10 or fewer employees who were working at residential sites. Fifty-nine percent of all construction deaths were due to falls (23 of 39). Innovative efforts are needed to reach these employers and workers, as well as the homeowners who employ them. Massachusetts FACE disseminates fall prevention materials in multiple languages, and is currently facilitating discussions among stakeholders representing labor, insurers, academic researchers, community organizations and other government agencies, to identify and collaborate on strategies to reduce falls in construction.

In 2007–2008, 12% (16) of the workers fatally injured on the job worked in the **public sector**, 11 of whom were municipal workers. The fatality rate for municipal workers alone was 4.7 deaths per 100,000, more than three times higher than the rate for this group in the previous period (2000–2006). Increasing fatality rates raise special concerns because these municipal workers as well as state workers are not protected under the federal Occupational Safety and Health Act (OSHA) in Massachusetts. In response to concerns at the state level, the governor of Massachusetts issued an Executive Order (EO No. 511) in April 2009 directing all state agencies to address the health and safety risks to their employees. It calls for the establishment of joint labor-management committees in all state agencies to document workplace hazards and the safety measures needed to eliminate these hazards. The Division of Occupational Safety (DOS) in the Massachusetts Department of Labor is overseeing this initiative. The Occupational Health Surveillance Program collaborates with DOS to provide prevention information to state and local agencies. For example, after the death of a municipal refuse collection worker, the FACE Project issued a safety alert recommending safety procedures to be followed when workers ride on the outside of moving vehicles (see pages 7 and 8).

The high fatal occupational injury rate among **Hispanic workers** is consistent with national findings¹¹ and with the disproportionate concentration of Hispanic workers in higher risk jobs. Many other factors may also contribute to their

¹¹ Work-related Injury Deaths Among Hispanics – United States, 1992-2006. MMWR, 57(22): 597-600. June 6, 2008.

increased risk. These include: inadequate experience, training, or supervision; language, literacy, and cultural barriers in the workplace; and fear of discrimination as well as socioeconomic pressures that deter workers from speaking up about workplace hazards.^{12,13} Lack of information about health and safety rights and resources is also a likely factor. In a 2002 MDPH study based on interviews with over 1,400 community health center patients, 71% of the Hispanic/Latin American patients had not heard of OSHA, and almost half (49%) were unaware of the workers' compensation system and its benefits.¹⁴

The Massachusetts FACE Project investigates work-related fatalities of Hispanic and immigrant workers to understand the circumstances and hazards that put these workers at risk and make recommendations to employers on ways to prevent these incidents from happening in the future. FACE also works with community partners to target outreach and educational efforts to the Hispanic community. Currently, FACE is providing custom data, technical assistance, and educational materials to "Protección en Construcción: Lawrence Latino Safety Partnership," a NIOSH-funded partnership with UMASS Lowell, the Lawrence Mayor's Health Task Force, Laborers Local 175, and JSI Inc. to prevent falls and silica exposure among Latino construction workers around Lawrence, Massachusetts. In addition, FACE is participating in this Partnership's new initiative that will include a series of community meetings, or charlas, with Hispanic construction workers, their families and residents of Lawrence, Massachusetts. The charlas will offer an opportunity for an exchange of ideas, experiences, and knowledge between these groups and representatives of government agencies and organizations that regulate, service, and support the construction industry.

CONTACT / MATERIAL REQUEST INFORMATION

For detailed tables of fatal occupational injuries in 2007–2008, previous fatality update reports as well as educational materials (e.g. FACE Facts and Safety Alerts), please contact the Massachusetts Department of Public Health, Occupational Health Surveillance Program, 250 Washington Street, 6th Floor, Boston, MA 02108-4619. Reports are available online at www.mass.gov/dph/face or by calling 1-800-338-5223.

OTHER HEALTH AND SAFETY RESOURCES IN MASSACHUSETTS

- ❖ Massachusetts Division of Occupational Safety – Offers free consultation services to help employers improve their safety and health programs and train employees.
www.mass.gov/dos/consult
- ❖ Massachusetts Department of Industrial Accidents – Has grants available for providing workplace health and safety training to employers and/or employees in companies covered by the Massachusetts Workers' Compensation Insurance Law.
www.mass.gov/dia/safety

ACKNOWLEDGEMENTS

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¹² Frumkin H. Pransky G. (1999), Special Populations in Occupational Health. *Occup Med: State of the Art Reviews*, 4(3):479-84.

¹³ Azaroff L. Levenstein C. Wegman D. (2002), Occupational Injury and Illness Surveillance: Conceptual Filters Explain Underreporting, *Am. J Pub Health*, 92(9): 1421-29.

¹⁴ Occupational Health and Community Health Center Patients: a report on a survey conducted at five Massachusetts CHCs (2007), Occupational Health Surveillance Program, Massachusetts Department of Public Health.

FACE Facts

SAFETY ALERT



Occupational Health Surveillance Program
Massachusetts Department of Public Health
March 2010



City Laborer Dies after Falling Off a Moving Refuse Collection Truck



Photo by Tom Reed

Incident

In 2009, a 49-year-old male city worker died while collecting waste from homes. The victim was part of a three-person work crew assigned to a refuse collection truck with two seats inside the truck's cab. The victim and a co-worker were riding on the rear step of the truck while traveling to the next collection location.

The victim fell from the back of the truck as it drove over an indent in the road, going about 30 miles per hour (mph). The victim landed on the road, hitting his head against the asphalt. He was taken to a local hospital where he died two days later.

What Employees Can Do

Safety Reminders for the Work Crew

Collectors

For safe riding:

- Do not ride on the steps if the truck is going faster than 10 mph or more than 0.2 miles.
- Do not ride on the steps when the truck is backing up.
- Do not board or dismount from riding steps until the truck is completely stopped, and the driver is aware of your location.
- Do not jump, on and off riding steps. Use the handles and step carefully.



Drivers

To help keep collectors safe:

- Alert collectors to get into the truck's cab before you travel over 10 mph or more than 0.2 miles.
- Wait for collectors to signal before moving the truck.

More recommendations and resources on back

MASSACHUSETTS FATALITY ASSESSMENT AND CONTROL EVALUATION (FACE) PROJECT 1-800-338-5223

What Employers Should Do

Safe Refuse Collection Practices

Schedule Ahead

- Set schedules so that work crews have enough time to finish their tasks without rushing.
- Schedule only as many workers to a crew as there are seats inside the collection truck's cab.
- Provide other transportation options if there are more crew members than seats in the truck's cab.

Train Routinely

- Provide employees with an initial training on safety and policies, as well as refresher trainings, as needed.
- Develop a short version of the initial employee training to be used for easy refresher trainings, when an incident or near miss occurs.

Post the Policy

- Use this fact sheet and other safety notices to remind crew members about policies that help ensure worker safety.



Please report work-related fatalities immediately to the
Toll-Free Occupational Fatality Hotline

1-800-338-5223

or

Fax 617-624-5696

When reporting a fatality, include the following information:

- Your name, organization, address, and phone number
- Victim's name, occupation, and employer
- Brief description of the incident, including date and time

The Occupational Health Surveillance Program would like to thank all agencies and people that contribute to our efforts in preventing work-related deaths by reporting fatalities and providing information during our fatality investigations.