

# ***YOUNG WORKERS***

**STAY ALIVE ON THE JOB!**



**Oregon Fatality Assessment and Control Evaluation**

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Each page of this booklet is designed as an independent hazard alert, which may be copied and posted separately according to interest.

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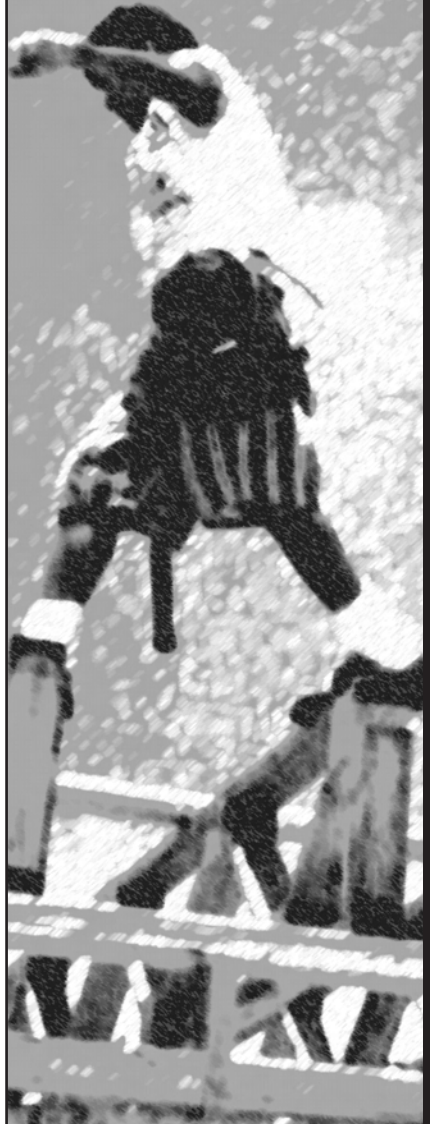
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# Young Workers:

## Stay Alive on the Job!

### CONTENTS

Young Worker Fatalities	3
• Motor Vehicles	4
• Driver Distraction	6
• Drowsy Driving	7
• Heavy Truck Brake Failure	8
• Tractors	9
• All-terrain Vehicles	10
• Horses	11
• Forklifts	12
• Machinery	14
• Logging	16
• Drowning	18
• Falls	19
• Confined Space	20
• Toxic Mist	21
• High Voltage	22
• Fires & Explosions	23
• Compressed Gas	24
• Violence	25
Youth Rules	26
Additional Resources	28



## CONTRIBUTING FACTORS & GENERAL SAFETY TIPS

Lack of training or proper tools	► Know and follow safe work practices. Ask your supervisor about training and getting the proper equipment. Speak up about suspected hazards.
Lack of experience	► Learn to identify common hazards. Remember that hazards often arise in unexpected places.
Lack of supervision	► Do not try to show initiative by performing a job without training. Be sure you know what you are doing.
Lack of knowledge or disregard for laws and standards to protect workers	► Know your rights and the law. Your employer is required to provide a safe and healthy workplace. Never alter or bypass safety devices or shortcut safety procedures.

## WORKPLACE INJURIES

TYPE OF JOB	COMMON HAZARDS
Food service	<ul style="list-style-type: none"> <li>• Hot cooking equipment and grease</li> <li>• Slippery floors</li> <li>• Sharp knives and slicers</li> <li>• Late hours</li> <li>• Toxic chemicals in cleaning products</li> <li>• Standing for long periods</li> </ul>
Retail sales	<ul style="list-style-type: none"> <li>• Lifting heavy objects</li> <li>• Violence</li> <li>• Stress</li> <li>• Late hours</li> <li>• Handling cash</li> </ul>
Janitorial and cleanup	<ul style="list-style-type: none"> <li>• Toxic chemicals in cleaning products</li> <li>• Contact with blood (towels or needles in trash)</li> </ul>
Office setting	<ul style="list-style-type: none"> <li>• Slips, trips, and falls</li> <li>• Stress</li> <li>• Strain from poor work-station setup</li> </ul>

# YOUNG WORKER FATALITIES

**T**his booklet tells the stories of young workers aged 12-24 who were killed on the job in Oregon from 2003 through 2007. In those 5 years, 352 workers of all ages were killed on the job in Oregon, including 45 young workers.

Traumatic injury is the leading cause of death in the USA for youth and young adults.

The true stories told here may help you to recognize and avoid serious hazards on the job. Motor vehicle crashes are the leading cause of death at work. Other fatal events include falls, contact with machines, drowning, poisoning, and violence. All of these events, and more, are told in the stories on the following pages.

## **Staying alive at work depends on you**

- 1. Learn to recognize hazards**
- 2. Speak up**
- 3. Make it safe**

Nationally, over 84,000 teen-aged workers are injured each year. A teen is injured every 6 minutes on the job.

# MOTOR VEHICLES

## Wildfire Crew Head On Crash

Malheur County - Aug 24, 2003

**E**ight members of a woodland fire fighting crew were killed when their 12-passenger van struck an oncoming semi-truck head on. Five of the victims were young workers, aged 19-23. The crew was heading home after working 11 days fighting forest fires. Weather was sunny and dry. The 23-year-old driver in the van attempted to pass in a marked no-passing zone. Alcohol may have been a factor in the incident. Earlier, the crew stopped twice for beer.

## Van on Icy Road

Douglas County – Jan 2, 2005

**T**wo tree planters in a crew van, a 41-year-old driver and a 22-year-old passenger, were killed when their van slipped on ice, left the road, and crashed into a tree. The passenger may not have been wearing a seatbelt. The other six occupants were wearing seatbelts and survived.

## Wet Pavement

Multnomah County - Feb 16, 2004

**A** 23-year-old sales rep for a family advertising business was killed when he lost control of his car on the highway. On wet pavement, the sales rep abruptly switched lanes toward an exit, lost control, and struck a highway sign.

## Musicians in Van

Linn County - Jul 20, 2003

**T**hree musicians, aged 20, 21, and 23, were killed when their van left the road while returning home from an out-of-state performance. The van veered off the paved surface and overturned while trying to get back on the road. The victims were not wearing seatbelts and were ejected from the vehicle. Two other passengers wearing seatbelts survived.

## RECOMMENDATIONS

### ► Never drink and drive.

Alcohol seriously impairs driving performance and judgment.

### ► Wear your seatbelt.

A seatbelt really can save your life.

### ► Beware of gravel shoulders.

Loosing control is likely if a wheel of your vehicle veers onto a gravel shoulder at high speed.

### ► Avoid abrupt movements on wet pavement.

Asphalt is especially slippery in the first rain after a dry spell.

### ► Be sure to speak up when a driver is being reckless.



**Nearly half of all fatal injuries involve motor vehicles.**

**Drivers are not the only ones at risk.**

**Incidents can also injure passengers, other drivers,  
pedestrians, or roadside workers.**

**Motor vehicles are also a hazard when they are parked  
and move unexpectedly. Shut down the engine before  
getting out. Securely block the wheels before working  
underneath a vehicle.**

# DRIVER DISTRACTION

## Work Zone Intrusion

Multnomah County - Oct 3, 2003

A gas utility worker was killed when an SUV entered his short-term work zone and struck him on the edge of a five-lane city road. Traffic was light, weather dry and clear, and the road flat and straight. The worker parked the company pickup half on the sidewalk and half in the bike lane, and correctly set up safety cones for a temporary worksite. He was wearing a bright red T-shirt. The SUV veered off the road and struck the worker when his back was turned to oncoming traffic. The 18-year-old driver of the SUV was allegedly talking on a cell phone.

## Van in Ditch

Marion County - Dec 14, 2005

A 23-year-old driver of a medical transport van was killed when the van veered off the road into a ditch. The ditch was 3-4 feet deep, with the edge about 1 foot from the fog line. The van traveled down the ditch until it hit a driveway, which sent it airborne for about 20 feet. The van landed again in the ditch to plow through 100 feet of chain-link fence before being stopped by a telephone pole. The driver was apparently killed by a 15-foot metal fence pole that penetrated the windshield. The driver may have been distracted by use of a cell phone. An open flip-type cell phone was found on the floor near his right foot.



**CELL  
PHONE  
ALERT**

## RECOMMENDATIONS

### ► Avoid using a cell phone while driving.

Distraction from a cell phone is due mostly to handling the phone to answer or make a call. Text messaging or reading while driving is especially dangerous. Even with a hands-free phone, a remote conversation may distract you from immediate driving tasks and surroundings.

### ► If you choose to use your cell phone while driving, consider the following precautions.

- Familiarize yourself with your phone features for easy dialing.
- Place your phone in an accessible location, preferably in a fixed holder in front of you.
- Avoid using the phone in hazardous conditions or on unfamiliar roads.
- Keep your conversations short.
- Inform the person on the phone that you are speaking from the car.
- If you engage in a conversation that demands your concentration, pull to the side of the road and stop your vehicle completely.
- Be prepared to end a conversation abruptly in hazardous conditions.

# DROWSY DRIVING

## Asleep at the Wheel

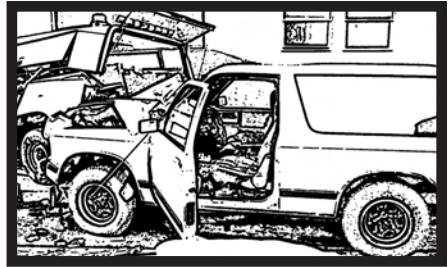
Josephine County - Jul 7, 2004

A 22-year-old logger on his way home in the early afternoon after a full work shift in the woods was killed when his vehicle gradually veered off the road and struck a large tree. There were no skid marks. The victim may have fallen asleep at the wheel.

## Farm Truck in Ditch

Klamath County - Oct 11, 2003

A 20-year-old farm truck driver was killed when his loaded potato truck overturned in an irrigation ditch at the edge of a farm field. The incident occurred about 9:30 p.m., after the driver had worked 13 hours on his sixth day of work in a row. Weather was dark, windy, and overcast. The truck had no seatbelts. Traveling about 15-25 mph on a hard-packed dirt road, the truck veered onto loose soil at the edge of the ditch and slipped over the edge. The truck overturned and the cab was submerged in the water in the ditch. Cause of death was probably drowning. The medical examiner reported the victim was slightly intoxicated. Empty beer cans were found in the cab.



Work zone intrusion – actual scene

## RECOMMENDATIONS

► **Do not drink alcohol during or immediately prior to work hours, especially when driving.**

Even small amounts of alcohol can impair judgment and performance. A binge the night before can also decrease mental and physical capacity the next day at work.

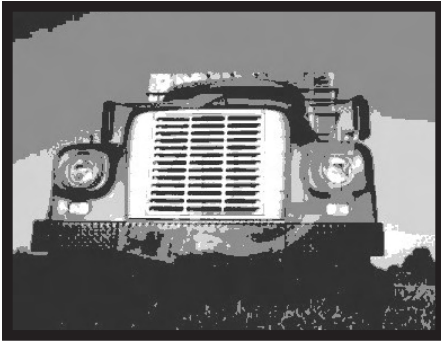
► **Avoid drowsiness while driving.**

A few seconds of inattention is dangerous while driving. Drivers that fall asleep and veer off the road often suffer extremely severe injuries. When drowsy, find a reliable way to stay alert. Talking to a passenger helps, but the best option is to pull over and take a nap.

► **When you drive near an abrupt edge, keep your eyes on the road.**

If distracted, even for an instant, stop.

# HEAVY TRUCK BRAKE FAILURE



## Runaway Wheat Truck

Umatilla County - Jul 14, 2007

A 16-year-old summer ranch worker was killed when he lost control of his fully loaded wheat truck and crashed into an embankment. Heading down a field road, the ranch worker radioed for help, saying the brakes were not holding. He was advised to turn uphill, but he did not want to roll the truck. He was then advised to jump, but he chose against it. The truck reached the bottom of the hill, rolled up the adjoining hill, crossed a road, and struck an embankment at an estimated 50 mph. The cab was completely crushed by the loaded trailer. The vacuum brake system on the truck required the engine to be running and revved up to work properly.

## RECOMMENDATIONS

► **Make sure brakes are in good working condition before driving a loaded truck.**

Check the brakes every day before driving. Know how they work.

► **If brakes fail, stay calm and act purposefully.**

Clear thinking is essential if brakes fail. Rehearsing in advance helps. First try to activate the brakes – failure is often only temporary. If failure persists, try to downshift to slow down, engage the engine brake if available, and look for an upward slope or obstacle that can help stop the truck. Beware of a sudden impact, which can shove the load forward and crush the cab.

► **If the truck cannot be stopped, a choice must be made to either roll the truck on its side, or jump.**

In most cases, the safest choice is to stay in the cab with the seatbelt fastened. Try to run the wheels on one side into a ditch or turn to roll the truck. Dragging the load on the ground will stop the truck and also prevent it from crashing through the cab. Consider jumping only as a last resort. Try to commit the direction of travel to the right, away from the jump. Stand out on the running board, and jump as far away as possible to avoid the rear wheels.

**Brakes wear quickly on heavy trucks. Check brakes daily before driving with a load, and understand how they work.**

# TRACTORS



**Tractor rollovers  
are the leading cause  
of fatal injuries on  
farms and ranches**

## **Overturned Tractor**

Malheur County - Mar 6, 2005

A 17-year-old tractor operator was killed on his family farm when his tractor overturned. The operator was riding the tractor on a dirt road with a large implement attached to the back. He veered off the road over an embankment and overturned in the soft dirt. The tractor was not equipped with a rollover protective structure (ROPS), and the operator was pinned under the seat.

## **RECOMMENDATIONS**

### **► Drive slowly on uneven ground.**

Speed is a crucial factor in tractor overturns. Sideways force increases exponentially with speed (tripling speed from 3 mph to 9 mph multiplies centrifugal force nine times). Small changes in speed can make a big difference.

### **► Be sure the tractor has rollover protection and seatbelts. Wear the seatbelt securely.**

In a tractor rollover, fatalities often involve the operator being ejected and crushed. New tractors come equipped with a rollover protective structure (ROPS) and seatbelts. For older tractors, retrofit kits are available.

### **► Use extra caution on slopes.**

Slopes or uneven ground may easily topple a tractor while moving or while working with a load. Rolling over backward due to the force of the rear wheels pulling against a load is another common source of injury.

# ALL-TERRAIN VEHICLES



## ATV Rider

Columbia County - Aug 12, 2004

A 16-year-old dog trainer was thrown from an all-terrain vehicle and died 4 days later. The trainer was riding the ATV with a passenger downhill into a pasture, and did not see a ditch grown over with vegetation. The front wheels hit the ditch and the ATV rolled end over end. The trainer was found unconscious next to the vehicle. He was not wearing a helmet or other protective gear.

## RECOMMENDATIONS

► **Wear a helmet and other protective gear when riding an ATV.** Primary gear includes a helmet, eye protection, gloves, long pants, and sturdy boots.

► **Know the terrain.**

Ride slowly in unknown areas. Stay aware of concealed hazards, such as a ditch or a rock in tall grass, or unknown terrain on the far side of a hill.



► **Inspect the ATV before you ride.**

Be sure controls work properly and you can easily reach them. Do not ride an ATV too big or too small for you.

► **Train before you ride.**

Read the operator's manual and get safety tips from a rider who knows that particular machine.

► **Do not carry a passenger on an ATV or other mobile machinery unless an appropriate seat and safety harness are available.**

**Incidents involving an overturned ATV are common among agricultural workers**

# HORSES

**Fatal falls of ranchers from a horse have involved a rider's head striking a rock, being trampled in an enclosed area, and drowning.**

## Horse Crossing River

Klamath County - May 10, 2007

A 12-year-old boy, working as a ranch hand, was killed when he was thrown from his horse into a river while out seeking a missing cow. A search for the ranch hand was initiated when he did not return home for dinner. The horse was found near the river, wet up to the saddle blanket. Divers recovered the body of the victim from the river the next day.



## RECOMMENDATIONS

► **Use appropriate equipment while riding to decrease the likelihood and severity of a fall.**

Saddles, stirrups, boots, and other necessary equipment for safe riding should prepare against falling. Consider wearing a helmet. Although ranch workers may prefer traditional headgear, recreational riders should always wear a certified equestrian riding helmet.

► **Stay alert.**

Keep an eye on terrain, movement, and responsiveness of the horse. Use caution in hazardous situations. Injury in a fall from a horse can be as severe as a collision in a car.

# FORKLIFTS – OPERATORS

## Climbing on a Skid Steer

Tillamook County - Aug 16, 2005

A 12-year-old girl was killed at her family's dairy farm when she attempted to get in a skid-steer loader while it was running. The girl's mother was operating the skid steer with an agitator attached. The girl was getting in the machine to take her mother's place when the skid steer started bouncing. The victim lost her balance and was crushed between the frame and the bucket.



Actual scene

## Skidder Passenger

Klamath County - Oct 20, 2005

An 18-year-old logger was killed when he fell off a step outside the cab of a skidder traveling on a logging road. The logger was riding from the landing site to retrieve a fuel truck. On the way, he fell off the skidder and was run over.

## Nursery Skid Steer

Marion County - Mar 25, 2004

A 24-year-old nursery worker was killed while operating a skid-steer loader. He was moving metal carts containing plants from an outside location to inside a greenhouse. It was raining, and the operator had placed his coat across his lap to prevent his pants from getting wet. Apparently, the operator leaned forward to secure the load and a pocket of the coat caught on the skid-steer's hand control, activating the gear. The jolt caused his head to strike the left-front roll bar.

## RECOMMENDATIONS

- ▶ Do not operate heavy equipment with loose clothing, a tool belt, or other apparel that could interfere with the operator controls.
- ▶ Never lean out of the protective cage for any reason.
- ▶ Before you exit the operator's seat, completely shut down the machine: gear in neutral, parking brake set, power off.
- ▶ Do not ride as a passenger on any mobile machinery unless an appropriate seat and safety harness are available.

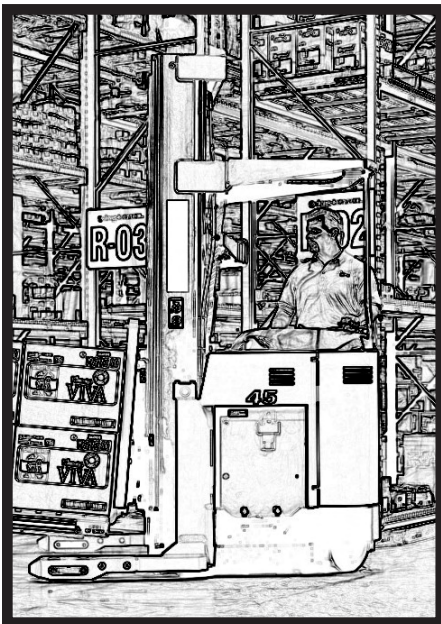
**Forklifts are notorious killers – pay extra attention to safety when operating mobile machinery**

# FORKLIFTS – PEDESTRIANS

## Warehouse Forklift

Jackson County - Nov 6, 2006

An 18-year-old warehouse receiving clerk was killed by a forklift backing into him in a narrow aisle. The warehouse clerk and the forklift operator were working together to prepare newly received merchandise for storage and shipment. With the last pallet load, the forklift operator was backing down a narrow aisle, and looked over his shoulder and saw the warehouse clerk walking up the aisle toward him. He yelled at the clerk and made eye contact. He tried to steer away and hit the brakes, but the forklift struck the warehouse clerk and pinned him against a metal shelf.



## RECOMMENDATIONS

► **Forklift operators must always look in the direction of travel and keep a clear view.**

Forklift operators must be constantly vigilant to avoid colliding with a pedestrian. If the load obscures the view, the operator must travel with the load trailing and keep a clear view in the path of travel. At cross aisles, corners, or other locations where vision is obstructed, the operator must slow down and sound the horn.

► **Stay clear of an operating forklift.**

A forklift striking a worker on foot is one of the most common causes of forklift-related fatalities. Observe the following safety rules.

- Operators must and other workers should know the braking distance of a forklift.
- Pedestrians must inform the forklift operator of their intent to enter an area where a forklift is operating, and must receive acknowledgement from the operator that the operator understands their intention.
- A forklift operator must stop the forklift while pedestrians are in the hazardous area.
- Forklift operators must not drive up to anyone standing in front of a bench or other fixed object.

# MACHINERY

## Hydraulic Press

Linn County - Jul 14, 2004

A 20-year-old machinist was killed while setting up a hydraulic press when a fitting to a hydraulic hose burst and struck him in the chest. The machinist was preparing to punch holes in metal tubing. While changing the punch on the press, he drew back the cylinder all the way, which exerted maximum pressure. The pressure gauge on the press did not work. He was sitting on a small cart directly in front of the 5,000 lb homemade press when high pressure caused a welded fitting attached to the hydraulic cylinder to fail. The fitting, about 2 inches long, broke free from its hose and impaled him.

## Debarker Machine

Washington County - February 7, 2004

A 24-year-old millwright at a sawmill was killed in a routine maintenance operation, grinding the teeth on the feed rolls inside a log debarking machine. The millwright locked out electric power to the debarker, but did not block the holddown press roll, which was held up by compressed air. Pins to block open the press roll were available on the frame of the machine, but were not used. While he was inside the debarker, another employee shut off the compressed-air system in a separate maintenance operation, which allowed air pressure to drop throughout the plant. As the line pressure dropped, the press roll on the debarker descended and crushed the millwright.

## RECOMMENDATIONS

► **Never operate a machine without training on that specific machine.**

► **Make sure all guards are in place at critical pressure points.**

Manufactured hydraulic presses are currently built with guards at the point of operation and around the connection hoses. Older presses or shop-built presses are fairly common, and may not be equipped with important safety features. Retrofit kits are available to add guards.

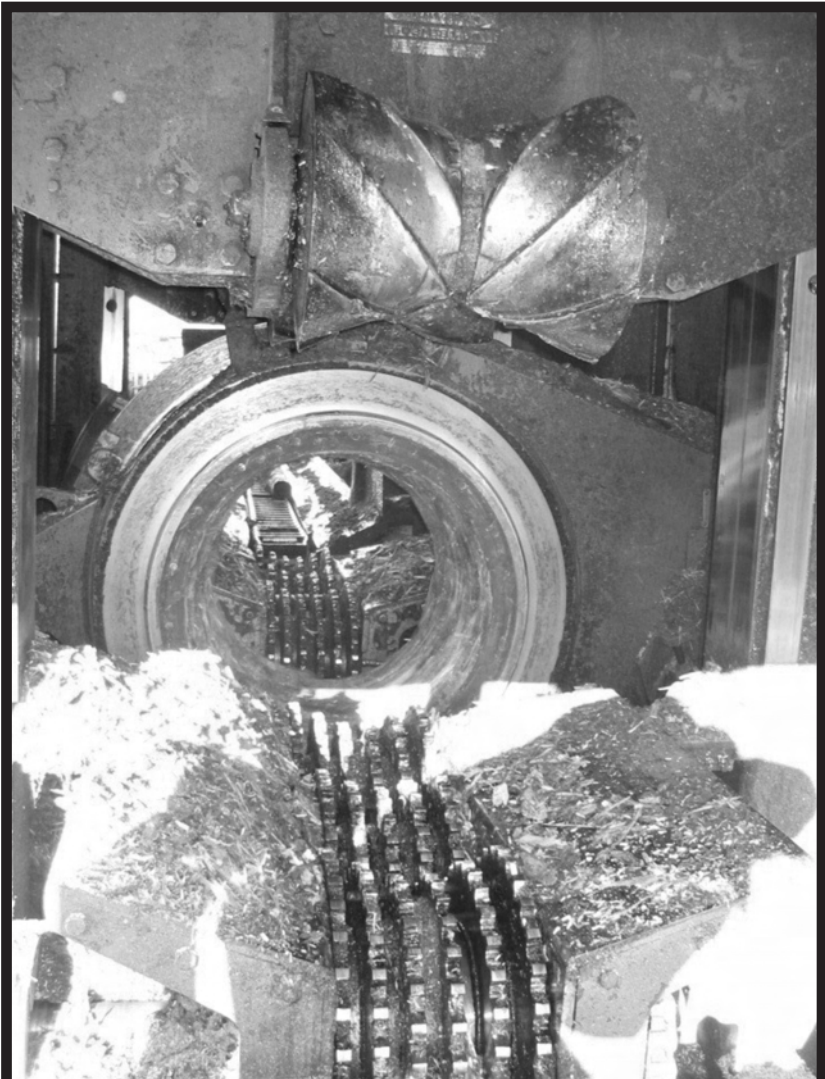
► **Before doing maintenance on a machine, turn off the power and block all forms of hazardous energy.**

Turn off the main switch to electric and other power sources, and block wheels or suspended weights to prevent unexpected movement.

► **Communicate!**

Tell coworkers what you are doing. Fatal incidents can occur when a worker turns off a power switch to perform maintenance, and a coworker comes by and turns it back on. A "tagout" procedure is one way to communicate to others, who may not be around at the time. Attach a tag at the power source with an alert message like the example below.

**- DANGER -**  
**Do not operate**  
**My life is on the line**



**The holddown press roll on this debarker machine descended on the worker grinding the teeth inside. Always block all forms of hazardous energy, including gravity, before conducting maintenance on any machine.**

Actual scene

# LOGGING

## Sliding Pole

Lane County - Mar 21, 2006

A 21-year-old logger, working as a choker setter, was killed by a pole sliding down a hillside. The crew had just hooked a turn of logs to a skyline cable, and moved to a location in the clear as the turn moved uphill to the landing. While the turn was moving, a narrow 41-foot-long pole with a sharp end came sliding downhill toward the crew. The pole narrowly missed the rigging slinger (crew boss) standing next to the young logger; he saw a flash of movement in the corner of his eye and leaned forward. The choker setter was struck and impaled by the pole.



Actual scene

## Yarder Collapse

Washington County - May 2, 2006

A 23-year-old logger, working as a chaser, was killed when a yarder fell over backward and crushed him. While setting up the yarder, the chaser and the siderod (site foreman) worked together to spool the guylines onto guyline drums at the rear of the yarder. As the fourth and final guyline was being spooled, the siderod heard a coworker yelling, and saw the man motioning with his arm over his head, indicating the yarder was going over. He took off running and just made it past the tracks when the yarder toppled backward over the steep hillside. The chaser did not manage to get clear.

## RECOMMENDATIONS

### ► Stay alert for hazards.

Logging safety involves many specific details, but one feature stands out clearly in the incidents involving young loggers: a sudden hazard threatened a novice logger working side by side with an experienced lead worker, and the experienced worker was able to escape to safety, while the new logger did not. In each instance, the lead worker was more aware of the surrounding environment and responded immediately in a crisis. Naturally, new workers are more likely to get absorbed in the challenge of doing the job well, but to stay alive, a logger must also be constantly alert and immediately responsive to communication signals from coworkers.

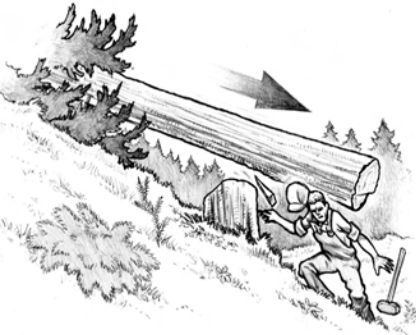
# FALLING TREES

## Tree Wedge

Jackson County - Oct 15, 2003

A 24-year-old logger, helping an experienced faller, was killed by the kickback of the tree they were falling. The tree was a 65-foot pine. The novice logger was responsible for hammering a wedge into the tree to make it fall uphill. The faller saw the tree was beginning to fall and yelled twice for the logger to get away. Busy driving the wedge, the victim moved too late. The butt of the tree rose over his head and crushed him.

Phil Fehrenbacher



## Brush Clearing

Lane County - Aug 23, 2005

A 24-year-old male inmate on a prison work crew was killed during brush-clearing operations on a roadway when he went off by himself and cut down a tree. The tree fell in the wrong direction and crushed him.

## RECOMMENDATIONS

### ► Train before you work in the woods.

Most new workers do not understand the hazards in falling trees. Training is vital. For all loggers, planning and communication as a team are essential before work activity begins.

### ► Assess the area.

Identify hazards and potential failure zones of snags and danger trees. Remove hazards or avoid working in hazardous areas.

### ► Assess the tree.

Calculate the falling direction, assess potential impacts, and wind. Avoid an uphill fall. Discuss danger trees with an experienced faller.

### ► Establish a safe work area.

Clear the area around the tree and establish an escape route. Make sure no one is present in the falling zone.

### ► Make the right cut.

The face-cut must be clean and within a specified proportion to the size of the tree. The backcut must leave an adequate hinge to avoid kickback. Never stand directly behind the direction of the fall.

### ► Get in the clear.

Most injuries occur at the stump of a falling tree. As soon as the tree starts to fall, put the saw down and get away immediately by your escape route. Never turn your back on a falling tree. Always stay alert for impacts that could send a branch or debris in your direction.

# DROWNING

## Landscape Pond

Washington County - May 2, 2003

A 23-year-old male landscaping laborer drowned after falling into a pond at the base of a steep slope. Immediately before the incident, a wheelbarrow loaded with rocks was delivered to the laborer. The wheelbarrow was later found lying on its side, with the rocks strewn down the slope. A coworker on the slope above responded and managed to grab the laborer's hand in the water, but was pulled in as well. The coworker could not relocate the victim. The pond sloped from 4 feet to 12 feet deep. The victim was unable to swim, and he disappeared quickly as his boots filled with water.

## Fishing on the Columbia River

Multnomah County – Sep 19, 2003

Two commercial fishermen, aged 34 and 18, drowned in the Columbia River. The older man had 20 years of experience on the river. The boat did not appear to be overloaded and all the proper safety equipment was aboard. However, neither of the fishermen was wearing a life jacket.

## Crab Boat Overboard

Lane County – Dec 7, 2007

A 22-year-old crab boat fisherman was killed when he was swept overboard into the ocean from a 75-foot vessel. The fisherman was wearing rain gear and heavy boots, but no life jacket.



## RECOMMENDATIONS

► **In a boat, always wear a personal flotation device in hazardous conditions or when alone on deck.**

Like seatbelts in a car, a flotation vest in the water can save your life.

► **Use special precautions when working around water.**

A fall into deep water while fully clothed is dangerous, even for a good swimmer. Safety devices include flotation devices, grab lines or poles, personal fall-prevention gear, or temporary fencing.

► **Rescuers should beware of water hazards, plus the added hazard produced by panic in the person being rescued.**

► **Workers should be trained in basic emergency-response skills and first-aid, especially in remote locations.**

# FALLS

## Roof Skylight

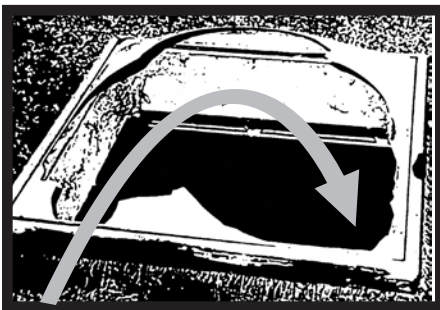
Multnomah County - Jan 23, 2003

A 19-year-old roofer's helper died when he fell through a skylight to a concrete floor 35 feet below. The worker was assisting his father, a roofing contractor, to repair water leaks on the flat roof of a commercial warehouse. The victim was backing up with a torch hose when he stepped or tripped into the skylight. The skylight broke under his weight.

## Drywall Scaffold

Multnomah County - Feb 1, 2006

A 22-year-old drywall installer fell from a scaffold while hanging sheetrock at a construction site, and died 2 days later. He had been on the job only 2 weeks and was inexperienced. The lead worker locked the wheels of the scaffold on his end, but was not sure if the new installer locked his wheels before mounting to the work platform. The installer was holding the sheetrock against the wall when the scaffold suddenly moved backward, causing him to lose his balance and fall. He hit his head on the concrete floor.



## RECOMMENDATIONS

### ► Identify and set up guards against hazards at a work site.

A skylight without a steel grill should be surrounded with a temporary railing or secure cover during work, just like any other hole or passage in the roof.

### ► Stay alert while moving about on a roof or other elevation.

Don't be taken by surprise. "Whoops!" incidents are incredibly common in fall injuries. When working at a height, remember that the force of gravity can easily kill you.

### ► Use personal fall protection when working 10 feet or more above the ground.

Personal fall-protection equipment includes a body harness attached to a rope or web line, and a secure anchor point. Training is a must.

### ► Double-check the structural stability of scaffolding, guards, or lifelines before working at a height.

Employers must provide training and proper equipment wherever fall hazards exist, but you should also take personal responsibility: double-check equipment before you put your life on the line, and communicate with coworkers to ensure their safety, too.

**Fall injuries are common  
in roof repair and at  
construction sites**

# CONFINED SPACE



Actual scene

## Tanker Confined Space

Multnomah County - Feb 4, 2004

A 23-year-old mechanic died when he entered a permit-required confined space. The mechanic was assigned to prepare for a visual inspection of a shipping container used to transport silicon tetrachloride. While waiting for an inspector to arrive, the mechanic entered the tank without testing the atmosphere, and passed out. He was discovered about 45 minutes later, dead from asphyxiation. Upon discovering the victim, a coworker jumped into the space, also without testing the atmosphere, and lifted the victim up to others standing on top of the tank. The rescuer had to hold his breath and barely made it back out of the tank. Testing showed the atmosphere in the tank to be about 12% oxygen, below the minimum safe level of about 20% oxygen.

## RECOMMENDATIONS

### ► Recognize a “confined space.”

Lack of oxygen, toxic exposure, or engulfment by shifting materials are common hazards in places such as a tank, pipeline, pit, silo, sewer, ship's hold, vault, vat, or container.

### ► Use an instrument to test the atmosphere.

Your senses cannot reliably detect air quality.

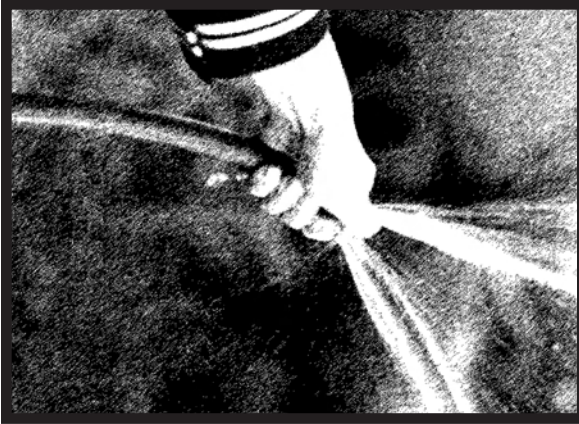
### ► Use the right mask or respirator.

A filter mask may not keep out certain toxic vapors, and will not supply air if none exists.

### ► Do not enter a confined space to rescue a coworker without proper equipment.

Multiple fatalities in a confined space are common. Most of the victims are would-be rescuers.

# TOXIC MIST



## Chemical Washer

Multnomah County - Jun 10, 2003

A 22-year-old male worker died 23 days after cleaning a waste antifreeze storage tank with a high-pressure washer at a waste management plant. The worker was not wearing respiratory protection. Shortly after completing the daylong job, the worker complained of shortness of breath, and was admitted to a hospital. After returning home, a follow-up examination showed he was not improving, and he was readmitted to the hospital. He died four days later. Hydrofluoric acid was the suspected agent.

## RECOMMENDATIONS

### ► Recognize toxic substances.

Read product labels or inquire about vapors from paints, solvents, cleaning products, auto or pool chemicals, pesticides, and fumes from soldering or other sources. If pregnant, avoid any exposure.

### ► Wear personal protective gear.

All protective materials are permeable, so disposable gloves should be thick or doubled up (and changed often) to avoid skin contact. An appropriate respirator and face shield should be worn whenever splashes or mists may be generated. When air is not sufficient, you must have supplied air.

► **Keep food or anything else you may ingest away from the area. Wash hands and exposed skin after any exposure to hazardous substances.**

# HIGH VOLTAGE



Actual scene

## Overhead Power Lines

Umatilla County - Nov 3, 2003

A 20-year-old construction worker was electrocuted while replacing a guardrail on a highway construction project. A truck-mounted tower, adapted to hold the guardrail in position, came in contact with an 8,000-volt power line as the worker was removing bolts on a rail about 24 feet away. The crew was aware of the power lines, but the tower operator misjudged the narrower clearance in the new work location. Receiving an electric shock, the worker walked to a lower road to lie down, and died shortly after.

## RECOMMENDATIONS

### ► Stay alert near heavy machinery.

While working near heavy machinery, stay aware of the position of the machine in relation to you, and in relation to power lines or other hazards. Avoid standing directly beneath or behind mobile machinery.

### ► Use a spotter.

When working near power lines with tower equipment, use a spotter to be sure there is always a safe working distance.

### ► While working on a roadway, establish a formal work zone.

In any hazardous area, you should plan your work in advance. Identify hazards and decide how to control them. A highway work zone should include safety cones, warning signs for motorists, and a trained flagger.

# FIRES & EXPLOSIONS

## Aviation Fuel

Umatilla County - Feb 11, 2006

An 18-year-old aviation mechanic was killed in a fuel explosion at an airport. The mechanic was working with his father, transferring aviation fuel from a tanker truck when it caught fire and exploded. Both workers were badly burned. The source of ignition was unknown, but may have been caused by a buildup of static electricity.

### RECOMMENDATIONS

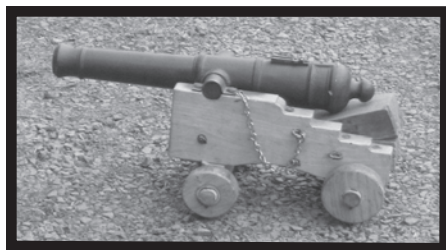
► **Before working with gasoline, be sure to have training and proper equipment to avoid ignition due to static electricity.**

Fires are known to occur from static electricity while filling portable gasoline containers in the back of a pickup, or on the carpeted surface of a car, due to friction between different types of material. Always fill the container on the ground to dissipate any charge.



Resources on static electricity hazards:

- NIOSH <[www.cdc.gov/niosh/hid2.html](http://www.cdc.gov/niosh/hid2.html)>
- CCOHS <[www.ccohs.ca/oshanswers/prevention/flammable\\_static.html](http://www.ccohs.ca/oshanswers/prevention/flammable_static.html)>



## Cannon Misfire

Tillamook County - Aug 1, 2003

A 16-year-old camp counselor was killed when a ceremonial cannon used at flag-lowering ceremonies burst into pieces. The counselor tried to fire the cannon during an evening flag lowering, but the wind blew out the touchstick twice. Later, the counselor and a coworker tried again to fire the cannon. Additional black powder was added to the breech hole and ignited. In the explosion, the breech of the cannon burst into pieces, and a large fragment struck the victim in the forehead.

### RECOMMENDATIONS

► **Workers under age 18 are prohibited from handling explosive materials.**

► **Follow standard procedures exactly when using explosives.**

Training is critical in the use of a cannon or other explosive devices. Extra caution is essential in the case of a misfire, as occurred in this incident. Periodically review firing procedures to ensure safety.

# COMPRESSED GAS

## Helium High Pressure

Jackson County - Nov 27, 2003

A 21-year-old attendant at an ice rink died after inhaling helium at work to change his voice. After inhaling the helium from a tank, the attendant walked over and spoke with coworkers for less than a minute before collapsing. He started to have convulsions. The victim was pronounced dead 1 hour later, due to a massive air embolism caused by the high-pressure gas.



## RECOMMENDATIONS

### ► Never ingest compressed gas.

Compressed air or gas can cause an air bubble in the blood stream, known as an embolism, which can induce a coma, paralysis, or death (scuba divers are subject to this hazard when they rise to the surface too fast). Playing with compressed gas is extremely dangerous. The consequences of even a small quantity of air or other gas in the blood can be quickly fatal.

### ► Never point compressed air at your body.

On rare occasions, compressed air can enter the blood stream through a break in the skin or through a body opening. In addition, depending on its pressure, compressed air can make particles air borne, and result in eye or other injury. There have also been reports of hearing damage caused by compressed air pressure or by its sound.

# VIOLENCE

## Random Shooting

Clackamas County - Apr 6, 2003

A 20-year-old female animal care taker at a horse-training stable was shot and killed while walking across the parking lot where she worked. The alleged shooter had no connection to the victim. He reportedly had mental health problems, and had been hallucinating before the shooting.



**In the USA in 2003, VIOLENCE occurred in one-sixth of all worker fatalities.**

**For WOMEN, violence occurred twice as often as for men, comprising one-third of all female worker fatalities in the USA, second only to motor vehicle crashes.**

**In OREGON, violence occurred less often – in only 6% of all worker fatalities.**

## RISK FACTORS FOR WORKPLACE VIOLENCE

- ▶ Contact with the public
- ▶ Working as a cashier, handling money
- ▶ Delivery of passengers, goods, or services
- ▶ Mobile workplace, such as taxicab or police cruiser
- ▶ Working with unstable or volatile persons in health or criminal justice, or personal relationships that follow you to work.
- ▶ Working alone or in small numbers
- ▶ Working late at night or early morning hours
- ▶ Working in high-crime areas
- ▶ Guarding valuable property or possessions

You have a right to a safe workplace. You cannot be required to perform a dangerous job or to lift any weight which is too heavy.

# YOUTH RULES

If you are injured on the job, tell your employer right away. Your employer has an obligation to provide you with employer-paid medical treatment.

Oregon prohibits youth **under age 18** from working in jobs defined as hazardous. Additional prohibitions apply to youth **under age 16**. In general, youth **under age 14** are not allowed to work, except in nonhazardous jobs with written parental consent, or on the same farm where their parents work. In Oregon, work by special permit is allowed in certain businesses.

Young workers of any age may work in any job on a farm owned or operated by their parents.

Many exceptions apply, and state laws vary. Check the work rules related to your own circumstances in the state where you work.

**Oregon Bureau of Labor and Industries**  
• Child Labor Unit •  
971-673-0836  
[www.oregon.gov/boli](http://www.oregon.gov/boli)

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**U.S. Department of Labor**  
• Youth Rules Help Line •  
1-866-487-9243  
[www.youthrules.dol.gov](http://www.youthrules.dol.gov)

## ALLOWED WORK HOURS

	AGE 14-15	AGE 16-17
Hours you can work	7 am—7 pm (Labor day to June 1)  7 am—9 pm (June 1—Labor Day)  You may not work during school hours	No limitations
Maximum hours when school is in session	18 hours per week  3 hours per day on school days  8 hours per day on weekends and holidays	44 hours per week —no other limitations
Maximum hours when school is not in session	40 hours per week, 8 hours per day	44 hours per week —no other limitations

**HAZARDOUS JOBS  
PROHIBITED FOR  
YOUNG WORKERS  
UNDER AGE 18**

- Manufacturing, using, and storing explosives
- Motor vehicle driving (some driving allowed for workers age 17)
- Motor vehicle outside helper
- Mining and excavation
- Logging and sawmilling
- Using power woodworking machines
- Where there is exposure to radiation
- Using power hoist apparatus
- Using power metal-forming, punching, and shearing machines
- Slaughtering or meat processing
- Using power bakery machines
- Using power paper-product machines
- Manufacturing brick, tile, and related products
- Using power saws and shears
- Wrecking, demolition, and ship-breaking operations
- Roofing
- Messenger service between the hours of 10 p.m. and 5 a.m.

**ADDITIONAL HAZARDOUS  
JOBS PROHIBITED FOR  
YOUNG WORKERS  
UNDER AGE 16**

- Cold storage plants
- Commercial docks
- Construction
- Firefighting
- Grain elevators
- Gravel or sand plants
- Ice Plants
- Land clearing (with blasting or presence of heavy equipment)
- Lumber loading
- Mechanical amusements
- Surveying
- Window cleaning (above ground)
- Wood cutting, sawing
- All kinds of work in workshops or any premise, room, or place where power machinery is used
- Only office work is allowed in the following operations:
  - Auto-wrecking yards
  - Junk dealers
  - Water works
  - Lumbering
  - Motor vehicles (transportation)

THE INFORMATION ON THESE PAGES IS ONLY A SUMMARY OF APPLICABLE RULES PROVIDED BY THE OREGON BUREAU OF LABOR AND INDUSTRIES – FOR MORE COMPLETE INFORMATION, CONTACT THE BUREAU DIRECTLY. SPECIFIC RULES APPLY FOR THE EMPLOYMENT OF MINORS IN AGRICULTURE.

# ADDITIONAL RESOURCES

## Safety and Health Websites

(All listed publications are available online)

CROETWEB (Center for Research on Occupational and Environmental Toxicology online resource): [www.croetweb.com/](http://www.croetweb.com/)

NIOSH (National Institute for Occupational Safety and Health): [www.cdc.gov/niosh/publistd.html](http://www.cdc.gov/niosh/publistd.html)

OR-FACE (Oregon Fatality Assessment and Control Evaluation): [www.ohsu.edu/croet/face/](http://www.ohsu.edu/croet/face/)

Oregon OSHA (Oregon Occupational Safety and Health): [www.oroSHA.org](http://www.oroSHA.org)

## Common Factors and Safety Tips

NIOSH (2003). *Fatality Assessment and Control Evaluation: FACE program.*

NIOSH (2003). *Preventing deaths, injuries, and illnesses of young workers.*

Labor Occupational Health Program (2004). *Are you a working teen? Protect your health! Know your rights!* [Broadsheet]. University of California, Berkeley.

Higgins, D.N., Tierney, J. & Hanrahan, L. (2002). Preventing young worker fatalities: The Fatality Assessment and Control Evaluation (FACE) program. *American Association of Occupational Health Nurses Journal*, 50(11), 508-514.

## Motor Vehicles

National Highway Traffic Safety Administration (2002). *Alcohol*. Available online: [www.nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2002/2002alcfacts.pdf](http://www.nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2002/2002alcfacts.pdf)

National Institute on Alcohol Abuse and Alcoholism (1994). *Alcohol Alert*. Available online: [www.niaaa.nih.gov/publications/aa25.htm](http://www.niaaa.nih.gov/publications/aa25.htm)

## Driver Distraction

OR-FACE (2007). *State regulation of cell phone use and the risks of driver distraction.*

National Safety Council (2001). *Does cell phone conversation impair driving performance?* Available online: [www.nsc.org/issues/idrive/inincell.htm](http://www.nsc.org/issues/idrive/inincell.htm)

## Drowsy Driving

National Highway Traffic Safety Administration. *Drowsy driving and automobile crashes*. Available online (under "Driver Distraction"): [www.nrd.nhtsa.dot.gov](http://www.nrd.nhtsa.dot.gov)

## Heavy Truck Brake Failure

Mine Safety and Health Administration. *Truck drivers safe operating procedures*. Available online: [www.msha.gov/s%26hinfo/safety/hcard/trucksaf.asp](http://www.msha.gov/s%26hinfo/safety/hcard/trucksaf.asp)

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## **Tractors**

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National Ag Safety Database. Search "Tractor safety." Available online: [www.cdc.gov/nasd/](http://www.cdc.gov/nasd/)

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## **All-terrain Vehicles**

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ATV Safety Institute (2001). *Tips and practice guide for the all-terrain vehicle rider*. Available online: [www.atvsafety.org/InfoSheets/ATV\\_Riding\\_Tips.pdf](http://www.atvsafety.org/InfoSheets/ATV_Riding_Tips.pdf)

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## **Forklifts**

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NIOSH (2001). *Preventing injuries and deaths of workers who operate or work near forklifts*.

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## **Machinery**

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Oregon OSHA (2006). *Machine safeguarding at the point of operation*.

NIOSH (1999). *Preventing worker deaths from uncontrolled release of electrical, mechanical, and other types of hazardous energy*.

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## **Logging**

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OR-FACE (2007). *Fallers Logging safety*.

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## **Falls**

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NIOSH (2000). *Worker deaths by falls*.

Oregon OSHA (2006). *Fall protection for the construction industry*.

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## **Violence**

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NIOSH (1996). *Violence in the workplace: Risk factors and prevention strategies*.

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## **Confined Space**

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NIOSH (1987). *A guide to safety in confined spaces*.

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## **Toxic Mist**

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NIOSH (2003). *Respirator fact sheet*.

Village of Mamaroneck Fire Department. *Household hazardous waste*. Available online: [www.vmfd.org/hazardous\\_materials.asp#inhal](http://www.vmfd.org/hazardous_materials.asp#inhal)

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## **High Voltage**

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NIOSH (2001). *Building safer highway work zones*.

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## **Compressed Gas**

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Canadian Centre for Occupational Health and Safety (1998). *Cleaning with compressed air*. Available online: [www.ccohs.ca/oshanswers/safety\\_haz/compressed\\_air.html](http://www.ccohs.ca/oshanswers/safety_haz/compressed_air.html)

About 10 young workers aged 12-24 die on the job each year in Oregon. This booklet tells their stories, highlights the hazards, and offers safety recommendations to help young workers stay alive on the job.

**Motor Vehicles**

**Driver Distraction**

**Drowsy Driving**

**Heavy Truck Brake Failure**

**Tractors**

**All-terrain Vehicles**

**Horses**

**Forklifts**

**Machinery**

**Logging**

**Drowning**

**Falls**

**Confined Space**

**Toxic Mist**

**High Voltage**

**Fires & Explosions**

**Compressed Gas**

**Violence**