**Workplace Safety and Robots: NIOSH Develops Program to Study Robot-Related Injuries**

With the increased use in robotic technology, NIOSH has been looking into the safety impact of working alongside these machines. While robots can help reduce workplace injuries by replacing workers in some types of hazardous work conditions, the use of robots may create their own set of hazards.

The National Institute for Occupational Safety and Health (NIOSH) has a Center for Occupational Robotics Research, and more specifically, a special program called the Fatality Assessment and Control Evaluation (FACE) Program. Through the FACE program, NIOSH is conducting surveillance, targeted investigations, and prevention activities. The program is conducting in-depth investigations of robot-related deaths. The FACE program is currently operated in 7 states through local state health or labor agencies.

Recently the Washington State FACE Program issued recommendations for safety actions for two separate types of robots: laser guided vehicles and remote controlled demolition machines.

**Laser Guided Vehicles**

In one case, NIOSH investigated a death at a water bottling company where a worker was crushed. At the facility, each vehicle had safety sensors to detect objects or workers in the vehicle’s path. An alarm would sound when an obstruction was present, and the vehicles would stop moving until the obstruction was removed.

The worker heard an alarm sound on one of the vehicles indicating sensors detected an object in its path. He attempted to remove a piece of plastic that likely tore off of a pallet. Before removing the plastic and reaching under the forks, the worker had not cut the power to the machine. He also had not heeded label warnings to stay clear of the forks. Investigators believe that when he removed the plastic obstruction, he was positioned outside the path of the sensor. The vehicle resumed operation, the forks came down, and the worker was crushed.

**FACE recommends the following safety practices to prevent injury from laser guided vehicles:**

* Incorporate manufacturer safety requirements into written company safety procedures for automated guided industrial vehicles;
* Train workers about the specific hazards and safety requirements associated with automated guided industrial vehicles; and,
* Emphasize workers are expected to follow required safety procedures every time, and ensure compliance through periodic refresher training and spot checks.

**Demolition Robots**

FACE investigated two cases where workers were severely injured by demolition robots. In the first case, a worker was using a machine that had a wire connected to a remote control the worker wore on his waist. When the worker attempted to move the machine’s power cable, he bumped the remote control against the machine, pinning him between the machine and the wall.

In another case, a worker broke his foot when operating a machine to chip concrete. He was in a tight spot between an excavation wall and the machine. When he tried to apply more force on the machine to chip the concrete, the machine shifted and the outrigger came down on his foot.

**As a result, FACE has developed recommendations for demolition robots:**

* Prepare a job hazard analysis with operators for each new job to identify and control hazards. Use the manufacturer’s safety instructions to establish the risk zone for the specific machine, attachment, and task;
* Always stay outside the risk zone when the machine is in operation, and do not enter until the machine is put into emergency stop mode or de-energized;
* Consider using a proximity warning system, such as those based on radio frequency identification (RFID), to maintain a safe worker-to-machine distance;
* Train operators to manage power cables and to continually monitor the process for hazards and redefine the risk zone;
* Ensure operators always read and follow manufacturer’s provided safety instructions; and,
* Consider using a spotter to assist the operator.

**NIOSH is Looking for Case Studies**

NIOSH’s Center for Occupational Robotics Research, and its FACE programs are looking for other instances where robotics technology has contributed to injuries. Through their research, they hope to develop additional safety programs and guidance to help companies keep workers safe. If you know of a related incident, NIOSH would like to hear from you for an anonymous investigation. You can find more about them at <https://www.cdc.gov/niosh/topics/robotics/aboutthecenter.html>.

With spring and summer, along with the barbeques, pool parties and vacation days that come with warm weather, so does one other inevitability: road construction. The week of April 26-30, 2021 is National Work Zone Awareness Week. Road construction occurs all throughout the year, but tends to start ramping up in the warmer spring and summer months. So now is a good time to review some good safety practices on construction zone safety.

Work zones separate construction activities and construction workers from traffic, allowing both to work in harmony. However, construction zones create a different traffic pattern and can sometimes be confusing areas. On top of that, there are workers and machinery moving about. Speed reduction areas, delays for pilot cars, and even route changes can affect our time schedules too.

According to the U.S. Department of Transportation, 2019 fatalities rose 11% from 2018.

* There were 762 fatal crashes in work zones, 324 on arterial roads and 287 on the interstates
* There were 842 fatalities in work zones, 690 of those fatalities were drivers and passengers
* Of the fatal crashes, 33% were commercial motor vehicles
* 31% of fatalities involved speed
* 24% of fatalities were rear-end collisions

**National Work Zone Awareness Week Events and Materials**

You are encouraged to participate in Go Orange Day on Wednesday April 28, 2021 and wear orange to spread the message of work zone safety with your friends, family, coworkers and community. There are a ton of resources out there to share with your workers as part of your weekly safety messages and meetings. Here are some links to some sites for national and state event information and resources you can download:

[National WorkZone Safety Information Clearinghouse (National and State Site Links)](https://www.workzonesafety.org/meetings-and-events/wz-awareness-week/)

[Download a Flyer to Share with Your Workers](http://www.ksdot.org/Assets/wwwksdotorg/bureaus/offTransInfo/GoOrange/pdf/21-027_FHWA_NWZAW-2021_v02.pdf)

[National Work Zone Awareness Week Website](https://www.nwzaw.org/)

[Participate – National Work Zone Awareness Event Tool Kit](https://www.nwzaw.org/uploads/6/7/1/0/67107387/nwzaw2021_toolkit.pdf)

**Struck-By National Stand-Down Week**

Along with National Work Zone Awareness Week, NIOSH’s National Occupational Research Agenda’s (NORA) Construction Sector Council is promoting the National Stand-Down to Prevent Struck-By Incidents. Struck-by hazards have been OSHA’s leading cause of death and non-fatal injuries since 1992.

NORA will be hosting 2 webinars on Monday April 26. One is about cranes and lifting and the other is preventing struck-by incidents. To register, [download this flyer](https://www.cpwr.com/wp-content/uploads/2021-Struck-By-Stand-Down-Virtual-Events-flyer.pdf) about the event.

You can also find a wide variety of training materials, infographics and other resources on struck by hazards [here on the Center for Construction Research and Training Website](https://www.cpwr.com/research/research-to-practice-r2p/r2p-library/other-resources-for-stakeholders/struck-by-hazards/).

**Who Regulates Hazardous Material Shipments?**

In the environmental and safety world, it’s pretty simple to determine who’s the regulatory authority. For safety, in most cases it’s OSHA, and if you’re in a “state plan” state or if you’re a public entity, your state has an additional safety regulatory agency. For environmental issues, it’s EPA and for many states there is an additional state agency which covers environmental regulations plus you have municipal environmental rules. However, when it comes to shipping hazardous materials, it gets a little more complicated.

In the U.S., the shipment of hazardous materials is covered by federal regulation 49 CFR. 49 CFR addresses the shipment of hazardous materials by ground, air and vessel. The Department of Transportation ([DOT](https://www.transportation.gov/)) is responsible for enforcing 49 CFR.

DOT contains a variety of agencies which are responsible for ensuring specific parts of 49 CFR are being followed:

* Pipeline and Hazardous Materials Security Administration ([PHMSA](https://www.phmsa.dot.gov/));
* Federal Aviation Administration ([FAA](https://www.faa.gov/));
* Federal Motor Carrier Safety Administration ([FMCSA](https://www.fmcsa.dot.gov/)); and,
* Federal Railroad Administration ([FRA](https://railroads.dot.gov/)).

In addition to the federal agencies, there are additional state agencies with the authority to enforce DOT regulations. For example, this could be your state’s department of transportation and additional agencies which govern the highway patrol, rail lines or pipelines. Thus, you could receive inspections from a variety of state officials and highway patrol in additional to the federal agencies.

If there was one arm of DOT which takes the lead in hazardous materials, it’s PHMSA. PHMSA’s focus is safe shipments and it creates and publicizes regulations. Thus, if you wanted to learn new information about shipping hazardous materials, start with PHMSA.

When it comes to air and vessel shipments, you’ll find that although 49 CFR has rules regarding these types of shipments, in parts, 49 CFR defers to two other agencies, the International Air Transport Association ([IATA](https://www.iata.org/pages/default.aspx)) and the [International Maritime Organization](http://www.imo.org/) who publishes the International Dangerous Goods Code (IMDG). These are international organizations, as the shipment of hazardous materials will often cross country boundaries via ocean or air. Thus, when you’re required to have training, you need the training of both 49 CFR and IATA or IMDG. IMDG can also be applicable to shipments within in the U.S. when shipping to Hawaii, Alaska or Puerto Rico.

Radioactive materials shipments are regulated under the U.S. Nuclear Regulatory Commission ([NRC](https://www.nrc.gov/)).

Both OSHA and EPA mention and defer to DOT within its regulations. Thus, you need to be aware AND trained in both the regulations of OSHA/EPA and DOT when dealing with environmental or safety issues.

49 CFR regulations can become very confusing. If you need help determining which regulations apply to you and how you need to ship your hazardous materials, [contact us](https://isienvironmental.com/index.php/contact-us/) and we’d be happy to help!