

Safety Lines

Dangers of working in hot conditions: Steps, tools to prevent heat illness

Extreme heat is the deadliest weather-related hazard and, in the United States, causes more deaths than flooding, tornadoes and hurricanes combined, according to the [Minnesota Department of Health](#). Although heat-related illness is preventable, thousands of workers become ill each year while working in hot or humid conditions and some cases are fatal. Nearly three out of four fatalities from heat illness happen during the first week of work because new and returning employees have not built a tolerance to the heat gradually, known as acclimatization.

Signs and symptoms – take action

A range of heat illnesses can affect anyone, regardless of age or physical condition. Furthermore, exposure to heat can occur in a variety of outdoor and indoor environments, such as construction, agriculture, bakeries and kitchens with heat-generating appliances, foundries and warehousing. Below are a few common types of heat illnesses and their signs and symptoms.

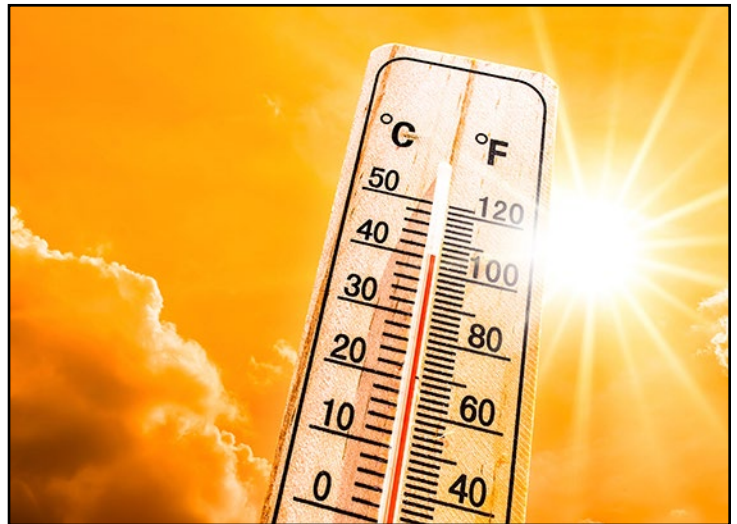
- **Heat stroke:** confusion, slurred speech, unconsciousness, seizures, heavy sweating or hot and dry skin, very high body temperature and rapid heart rate.
- **Heat exhaustion:** fatigue, irritability, thirst, nausea or vomiting, dizziness or lightheadedness, heavy sweating, and elevated body temperature or fast heart rate.
- **Heat cramps:** less serious than heat exhaustion or stroke; marked by muscle spasms or pain (usually in legs, arms or trunk).

If heat stroke is suspected based on symptoms, call 911 right away – this is a medical emergency!

For any case of heat illness, cool the employee off by following first aid recommendations provided on [federal OSHA's Heat-related Illnesses and First Aid webpage](#).

Never leave a worker with heat illness alone and, when in doubt, call 911.

- Take the affected worker to a cooler area (such as in the shade or in air conditioning).
- Immerse the worker in cold water or an ice bath – this is the best method to cool the worker rapidly.
- Remove the worker's outer layers of clothing, especially heavy gear.
- Place ice or cold wet towels on the worker's head, neck, trunk, armpits and groin.



Employer's responsibility to protect workers

Under the Occupational Safety and Health Act, employers are responsible for providing workplaces free of known safety hazards. This includes protecting workers from heat-related hazards. It is the employer's responsibility to:

- provide workers with water, rest and shade;
- allow new or returning workers to gradually increase workloads and take more frequent breaks during the first week of work (acclimatizing);
- plan for emergencies and train workers about prevention; and
- monitor workers for signs of illness.

For indoor workplaces in Minnesota, employers must also adhere to [Minnesota Rules 5205.0110, subpart 2, Heat conditions](#).

Creating a heat illness prevention plan

Federal OSHA's [Heat Illness Prevention Campaign](#) was designed to educate employers and workers about the dangers of working in the heat and to provide resources for developing a heat illness prevention plan, which may include the following components:

- planning and supervision – explaining who will develop and manage the plan;
- protection of new workers by establishing a culture of acclimatization;
- recognition of heat hazards, including environmental monitoring; and
- determination of engineering controls, work practices and personal protective equipment (PPE).

Methods of reducing heat stress

Employers should always follow the “hierarchy of controls” when determining how to eliminate and reduce hazards. Engineering controls should be used first, followed by work practices and then PPE.

Engineering controls

- Install air conditioning, increased ventilation or cooling fans.
- Use reflective shields to redirect radiant heat.
- Insulate hot surfaces and eliminate steam leaks.
- Use cooled seats or benches and misting fans.

Work practices

- Modify work schedules and schedule shorter shifts for unacclimatized workers (gradually increasing shifts over one to two weeks).
- Follow the “rule of 20%,” where new employees work only 20% of the normal duration on their first day and then increase work duration by 20% on subsequent days until the worker is performing a normal schedule.
- Require mandatory rest breaks in a cooler environment.
- Consider scheduling work at cooler times of the day, such as early morning or late afternoon.
- Reduce physical demands as much as possible and rotate job functions to minimize worker exertion.



Personal protective equipment

- Provide insulated suits, reflective clothing, face shields and cooling neck wraps.
- For extreme heat, provide cooling vests or jackets with reusable ice pack inserts.

See a [comprehensive list of controls from federal OSHA](#).

Other helpful tools and information

Minnesota OSHA Compliance

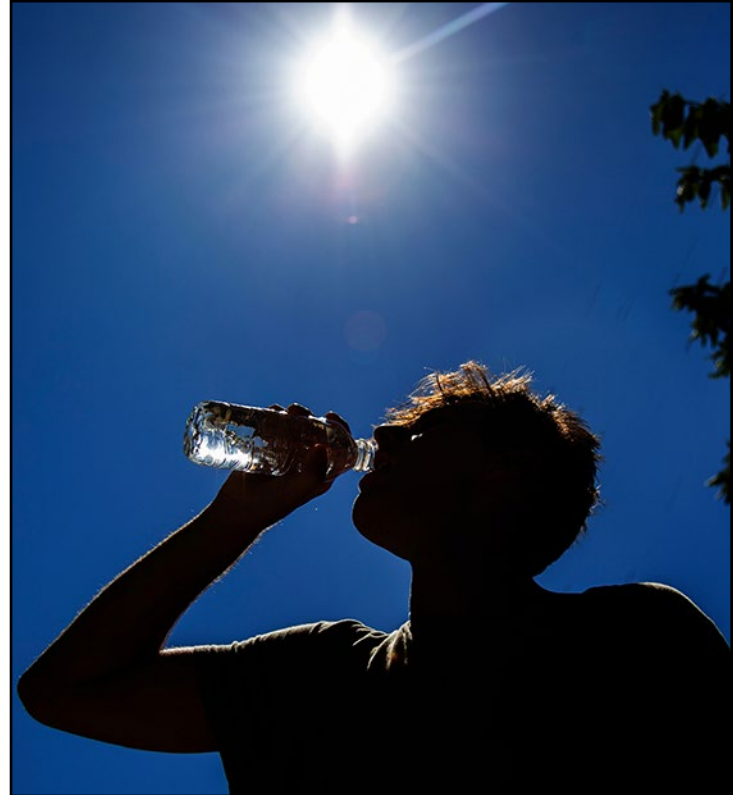
The [MNOSHA Compliance: Heat stress webpage](#) contains information, links to helpful resources and contact information.

Minnesota Department of Health

Recently, the Minnesota Department of Health launched the Stay Cool MN campaign, which provides information about and resources for staying hydrated, informed and cool on its Extreme Heat webpage (linked above). Vulnerable groups most at risk of heat-related illnesses include adults older than 65, young children, people with disabilities, people with certain health conditions and pregnant people. The [Extreme Heat Toolkit](#) contains flexible heat safety strategies and guidance to meet unique needs of Minnesota communities.

OSHA-NIOSH heat safety tool app

- Allows workers and supervisors to calculate the heat index for their worksite.
- Displays a risk level to outdoor workers and has reminders about protective measures.
- Available in English and Spanish for Android and iPhone devices.



Federal OSHA proposed rulemaking

Federal OSHA has initiated the rulemaking process for a standard for heat injury and illness prevention in outdoor and indoor work settings. Updates regarding the rulemaking process and current status, including links to the proposed rulemaking, [are available online](#).

National Weather Service

The [National Weather Service “HeatRisk”](#) webpage shows a color-numeric-based index that provides a forecast risk of heat-related impacts over a 24-hour period.

Other resources, links

The majority of the information provided here was obtained from federal OSHA’s Heat Illness Prevention Campaign webpage; federal OSHA also provides an [Additional Resources](#) webpage.

Nancy Zentgraf presented with Arthur E. McCauley safety, health award

Nancy Zentgraf, Minnesota OSHA (MNOSHA) Compliance, was recently presented the Arthur E. McCauley, Jr. Award. The annual award honors an individual who has high ideals, personal character, and safety and health competence.

Since joining MNOSHA in 1993, Zentgraf has served as a safety investigator, safety investigator 4, supervisor, acting MNOSHA director and director of training and outreach – plus has also guided the discrimination and partnerships teams.

“At every step, Nancy has brought integrity, expertise and a deep commitment to protecting workers and strengthening the MNOSHA program,” said Department of Labor and Industry Commissioner Nicole Blissenbach. “In the past three decades, she has served the public through times of incredible change, challenge and growth. Her career has been remarkable.”

Three major highlights in 33-year MNOSHA career

- After the August 2007 I-35W bridge collapse, Zentgraf’s leadership during the resulting project, which remains one of the greatest accomplishments in MNOSHA’s history, was recognized nationally. Most recently, information developed during that project was provided to the state of Maryland to support its response to the Francis Scott Key Bridge collapse in March 2024.
- In the years leading up to 2010, Minnesota experienced three fatalities during a three-year period involving window-washing activities. Zentgraf collaborated with stakeholders, including legislators, to draft a Minnesota-specific window-washing standard. The standard took effect March 1, 2012.
- Throughout her tenure, Zentgraf ensured Minnesota had staff members trained and ready to respond to trenching incidents, one of the leading causes of workplace fatalities for many years. Thanks to her efforts and her ongoing commitment to training and preparedness, Minnesota has reduced trenching-related fatalities.

Zentgraf credits colleagues, leadership, partners

After thanking the Minnesota Safety Council for the recognition, as well as acknowledging the legacy of Arthur McCauley himself, Zentgraf credited others.

“This award and recognition wouldn’t be possible for me without so many factors,” Zentgraf said. “My colleagues at MNOSHA, our leadership and the partners we work with across Minnesota – over the years, they have all inspired me with their expertise, knowledge, dedication and refusal to settle for ‘good enough’ when it comes to protecting workers throughout the state of Minnesota. I’m proud to work in a state where safety is valued, where collaboration is strong and where people at every level care deeply about doing the right thing. Promoting safety isn’t always easy, but it is always meaningful. And being able to contribute to that mission is something I have never taken for granted.”

More about the award

The award honors McCauley, who was highly regarded for his work as a manager of the Minnesota Safety Council, as a member of the Minnesota Occupational Safety and Health Advisory Council and for his efforts to improve the safety and health of Minnesota’s workplaces. He died in 1996.



Nancy Zentgraf (center) receives the Arthur E. McCauley, Jr. Award from MNOSHA Workplace Safety Consultation Director Ryan Nosan (left) and MNOSHA Compliance Director James Krueger.



Department of Labor and Industry Commissioner Nicole Blissenbach speaks during the Minnesota Safety Council’s annual safety and health conference in May 2026.



Nancy Zentgraf, MNOSHA Compliance director of outreach and training, accepts the Arthur E. McCauley Jr. Award.

Preventing struck-by incidents involving backing vehicles

Struck-by incidents involving backing vehicles remain a persistent and deadly hazard in Minnesota workplaces. Minnesota OSHA (MNOSHA) identified there were an average of nine fatalities each year involving contact with objects and equipment, which includes struck-by hazards, from 2021 through 2025. MNOSHA Compliance investigated numerous fatalities where employees were struck by trucks, loaders or other mobile equipment operating in reverse.

These incidents often occur in loading areas, yards, warehouses and construction sites – settings where space is tight, visibility is limited and communication can easily break down. Common contributing factors include blind spots, restricted rear visibility, noise interference and assumptions about worker locations. The good news is that effective planning and proven control measures can greatly reduce the risk of struck-by incidents.

Safer practices for backing operations

Employers can strengthen their safety programs by implementing the following approaches.

- **Use a trained spotter:** Spotters should wear high-visibility apparel, use standardized hand signals or communication methods, and maintain constant visual contact with equipment operators. Operators should stop immediately if they lose sight of the spotter.
- **Install and maintain backup alarms:** Audible alarms warn nearby workers of reversing equipment. Also consider combining backup alarms with rear-mounted cameras.
- **Improve communication and traffic management:** Establish and communicate how vehicles, equipment and supplies should move in and through worksites. Limit access to backing zones and create designated travel paths.
- **Minimize the need to back up:** During preplanning, design jobsite layouts, material staging areas and vehicle flow to reduce or eliminate backing whenever feasible.
- **Train all workers:** Operators and ground personnel should understand blind spots, equipment capabilities and site-specific safe work practices for working around mobile equipment.



Support through the MNOSHA Safety Grant Program

MNOSHA Workplace Safety Consultation administers the Safety Grant Program, a dollar-for-dollar matching grant designed to help employers invest in effective safety and health improvements. Installation of backup cameras and related technologies to prevent struck-by incidents is considered a priority when grant applications are evaluated.

Employers interested in applying can find details, eligibility criteria and application materials on the [MNOSHA WSC: Safety Grant Program webpage](#).

For additional assistance, contact MNOSHA Workplace Safety Consultation at 651-284-5060 or dli.grants@state.mn.us.

A shared responsibility

Reducing struck-by incidents requires commitment from both operators and ground workers. Through strong communication, proper equipment, clear procedures and strategic investments, employers can significantly reduce risks and help prevent future tragedies.

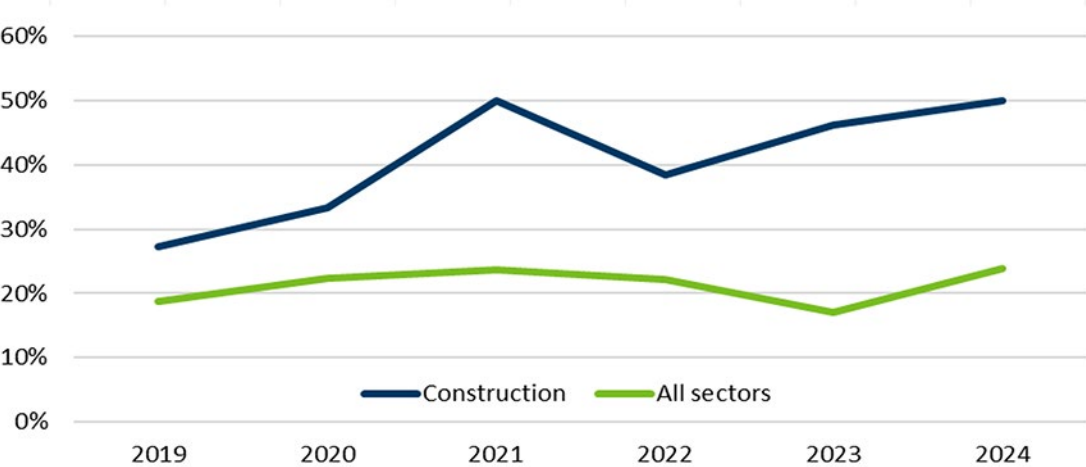
Fatal and nonfatal fall injuries rise in Minnesota construction

By Ender Kavas, Research and Data Analytics

Falls remain one of the leading causes of fatal and nonfatal work-related injuries in the construction industry. In May 2026, OSHA held its 13th annual [National Safety Stand-down to Prevent Falls in Construction](#), with the goal of raising hazard awareness and preventing fall injuries in construction. This article examines trends in fatal and nonfatal work-related fall injuries in the construction industry in Minnesota, using data from the Bureau of Labor Statistics Census of Fatal Occupational Injuries (CFOI) and Survey of Occupational Injuries and Illnesses (SOII).

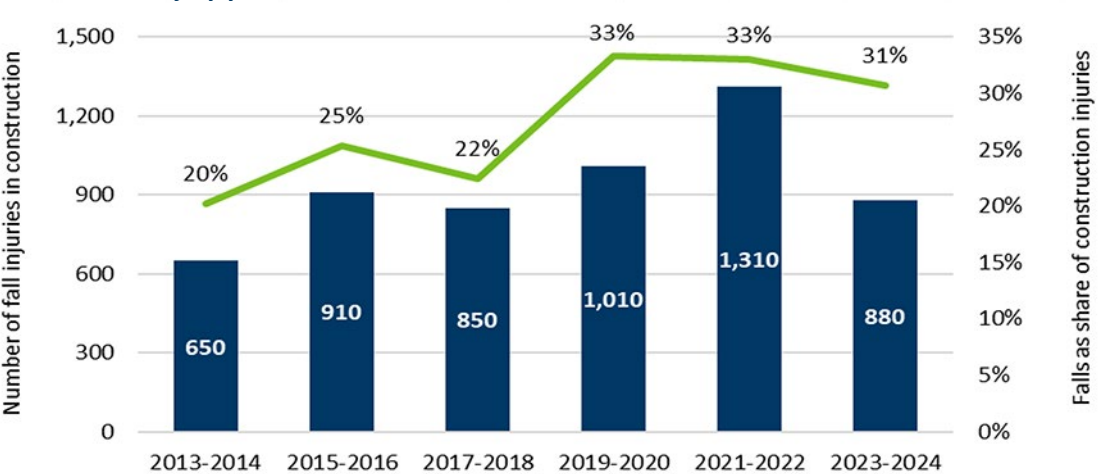
From 2019 through 2024, CFOI recorded 99 work-related fatalities caused by falls, slips and trips in Minnesota, 37 of which occurred in the construction industry. In 2023 and 2024, nearly half of all fall-related fatalities in the state were in construction. On average, falls, slips and trips accounted for 42% of all construction fatalities (37 out of 88) during 2019 through 2024, and 89% of these fall fatalities involved falls from elevation to a lower level. The share of construction fatalities caused by falls increased from 27% in 2019 to 50% in 2024. By comparison, falls accounted for 17% to 24% of fatalities across all industry sectors (Figure 1).

Figure 1. Falls as a share of work-related fatalities in Minnesota: Construction vs. all sectors, 2019-2024



According to SOII nonfatal workplace injury data, Minnesota private-sector construction recorded an estimated 5,610 falls, slips and trips resulting in days away from work from 2013 through 2024, with an average of 935 cases a year. Nearly half (48%) of these injuries were due to falls from elevation. The estimated number of fall injuries increased 102% from 650 cases in the 2013 through 2014 biennial period to a peak of 1,310 in 2021 through 2022, before declining to 880 in 2023 through 2024. The large increase in 2021 through 2022 may be related in part to the surge in construction activity in the pandemic recovery period. Falls also accounted for a growing share of all construction injuries during the past decade, increasing from an average of 23% in the 2013 through 2018 period to 32% in the 2019 through 2024 period (Figure 2).

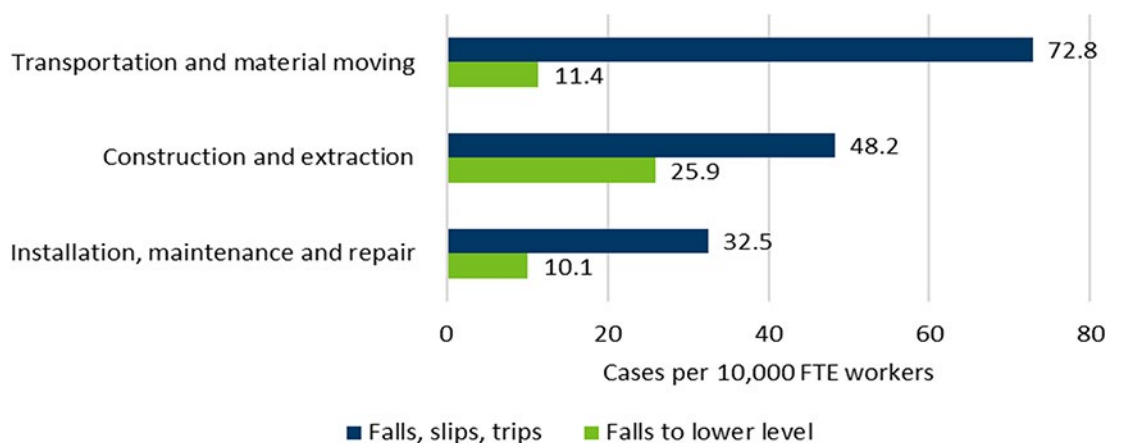
Figure 2. Estimated number of fall injuries with days away from work in Minnesota private-sector construction, injury-years 2013-2024



The incidence rate of fall injuries with days away from work in private-sector construction remains considerably higher than the statewide average rate for all private-sector workers. In 2023 through 2024, the injury rates per 10,000 full-time-equivalent (FTE) workers in private-sector construction were 35.0 cases for falls, slips and trips and 18.8 cases for falls to a lower level. By comparison, the rates across all private industry were 22.4 and 3.8, respectively.

Construction workers experience some of the highest fall injury rates among all occupations. In 2023 through 2024, construction and extraction occupations had the second highest injury rate of falls, slips and trips resulting in days away from work, with 48.2 cases per 10,000 FTE workers, and the highest rate of falls to a lower level, with 25.9 (Figure 3).

Figure 3. Top three occupation groups in Minnesota with the highest rates of fall injuries with days away from work, 2023-2024



Fall injuries for construction and extraction workers also require longer days away from work compared to other causes of injury. In 2023 through 2024, the estimated median number of days away from work was 30 days for falls to a lower level and 60 days for falls from heights of six to 30 feet. In contrast, the median for all injury events was 10 days away from work for workers in this occupation group.

Falls constitute an increasing share of both fatal and nonfatal workplace injuries in construction. In addition, the severity of fall injuries results in longer time away from work for injured workers. These statistics underscore the importance of employers prioritizing effective planning, training and access to proper safety equipment to protect workers from fall injuries.

Results from federal fiscal year of Minnesota OSHA program

The federal OSHA fiscal-year 2025 State OSHA Annual Report (SOAR) report is available at dli.mn.gov/sites/default/files/pdf/soar_ffy25.pdf.

Through federal-fiscal-year 2025 (Oct. 1, 2024, through Sept. 30, 2025), Minnesota OSHA:

- investigated 20 work-related fatalities and 20 serious injuries that occurred under its jurisdiction;
- conducted 1,519 inspections (3.6% at public-sector employers), with 3,620 hazards identified – 69% serious;
- handled 212 total on-site complaint inspections, with the response time to these complaints at 3.3 days;
- issued citations within 23 days (safety) and 43 days (health);
- increased average violations per inspection from 2.14 to 2.30 for serious, willful or repeat violations and from 0.51 to 0.94 for non-serious violations; and
- decreased the lapse time from the opening conference date to the issue date from 55.39 to 22.75 days for safety and from 53.75 to 42.99 days for health.



Save the dates: 2026/2027 MNOSHA Compliance Construction Seminars

Mark your calendars now to participate in the free 2026/2027 Minnesota OSHA (MNOSHA) Compliance [Construction Seminars](#), which are usually offered both in person, at the Department of Labor and Industry, and online.

All dates are Tuesdays and the presentation starts at 7 a.m. Topics are currently being determined. The dates are:

- Sept. 15, 2026;
- Nov. 17, 2026;
- Jan. 19, 2027;
- March 16, 2027; and
- May 18, 2027.

About the seminars

The Construction Seminars feature a presentation about a specific construction safety or health topic – with time for questions, answers and input – plus an update from MNOSHA Compliance about what’s currently happening regarding investigations. The seminars are set up for interaction with the audience, leading to better understanding of the topic and more practical learning, and providing a safe environment for participants to ask real worksite questions and get real worksite safety and health solutions.



Minnesota OSHA (MNOSHA) Compliance’s Health Director Ron Anderson (center) addresses attendees during the May 19 Construction Seminar at the Department of Labor and Industry and online. To Anderson’s right is co-presenter MNOSHA Compliance Senior Industrial Hygienist Maia Mann. Both were leading a discussion about MNOSHA Compliance’s proposed, draft lead in construction standard.

Sign up to get notices about the seminars

Subscribe to the [Construction Seminar email list](#) to receive notices before each event.

Be a part of Workplace Rights Week 2026

The Minnesota Department of Labor and Industry (DLI) has started planning for the third annual Workplace Rights Week, Sept. 13 through 19, 2026.

Workplace Rights Week in Minnesota is an opportunity to educate workers and employers about their rights and responsibilities in the Workplace. Safe and healthy workplaces are what make our economy and communities strong, and it is important Minnesotans understand their workplace rights and are empowered to assert those rights.

We invite you to join us in this effort. DLI is looking to partner with organizations to host webinars, distribute educational materials or host other events. If are interested in participating in educational or outreach activities with DLI or hosting your own event during Workplace Rights Week 2026, email Diana Salas at diana.salas@state.mn.us.

To see what is already planned, visit the [Workplace Rights Week webpage](#).



MNOSHA fatality, serious-injury investigations summaries online

Each month, Minnesota OSHA (MNOSHA) Compliance publishes current, updated summaries of its fatality investigations and serious-injury investigations.

For the federal-fiscal-year that began Oct. 1, 2025, MNOSHA Compliance has investigated 21 fatalities as of June 25.

The information provided about each investigation is: the inspection number, date of incident and worksite city; the type of business and number of employees; a description of the event; and the outcome of the MNOSHA Compliance investigation.

The summaries, plus other helpful workplace safety and health information from MNOSHA, are available on the [MNOSHA Compliance: Resources for all industries webpage](#).



Translated materials, webpages, Language Line available via DLI website

The Department of Labor and Industry (DLI) posts its available translated materials online at dli.mn.gov/translations. It has documents available in Chinese, Hmong, Karen, Somali and Spanish. A few other documents throughout the website are available in additional languages.



Also, the DLI website now provides Google Translate near the upper left corner of all webpages on its site, allowing visitors to choose the language for the website text.

In addition, DLI has access to Language Line, a free language translation phone service for limited-English speakers. If DLI help is needed, view the contact information at dli.mn.gov/about-department/about-dli/contact-us, call and a DLI employees will get in touch with an interpreter in the needed language.

Training: OSHA recordkeeping basics offered online Aug. 7, Oct. 30

The Department of Labor and Industry is offering two free, online introductory-level training seminars about OSHA recordkeeping requirements Aug. 7 and Oct. 30, 8:30 to 11:30 a.m. Maintaining an accurate OSHA log of recordable work-related injuries and illnesses is an important skill that benefits employers, workers, safety professionals and government agencies.

Topics

- Recordability of injuries and illnesses
- Privacy cases
- Creating a log summary
- Differences between OSHA cases and workers' compensation claims
- Classifying cases
- How many logs to keep
- Reporting log data to OSHA
- Counting time
- Maintaining logs
- Recording COVID-19 cases

More information

Learn more and register to attend (required) on the [MNOSHA Compliance: Recordkeeping standard webpage](#).

MNOSHA Compliance signs safety, health partnerships

Minnesota OSHA (MNOSHA) Compliance recently signed four Level 3 Cooperative Compliance Partnerships under the Construction Health and Safety Excellence (CHASE) Minnesota safety initiative. Level 3 is the peak level of the compliance partnerships, with applicants striving to be an industry leader with very comprehensive safety and health programs.

The partners and projects recently recognized are:

- **C.S. McCrossan Construction, Inc.** and its Carver County Reconstruct project in Carver County, Minnesota. The project is scheduled to be completed Nov. 1.
- **Kraus-Anderson Construction Company** and its Arcadia Lofts project in Rochester, Minnesota. The project is scheduled to be completed June 30, 2027.
- **Meyer Contracting, Inc.** and its Franklin Avenue Reconstruction project in Minneapolis. The project is scheduled to be completed Nov. 30.
- **Weis Builders** and its Terasa Apartments project in St. Louis Park, Minnesota. The project is scheduled to be completed Sept. 1, 2027.

View complete information on the [MNOSHA Compliance: Partnership programs webpage](#).



C.S. McCrossan Construction, Inc. • Carver County Reconstruct • Carver County, Minnesota



Kraus-Anderson Construction Company • Arcadia Lofts • Rochester, Minnesota



Meyer Contracting, Inc. • Franklin Avenue Reconstruction • Minneapolis



Weis Builders • Terasa Apartments • St. Louis Park, Minnesota

Georg Fischer Building Flow Solutions recognized as MNSTAR worksite

Minnesota OSHA Workplace Safety Consultation recently recognized [Georg Fischer Building Flow Solutions Americas](#), in Lakeville, Minnesota, as a Minnesota Star (MNSTAR) Program worksite.

The MNSTAR Program recognizes companies in which managers and employees work together to develop safety and health management systems that go beyond basic compliance with all applicable OSHA standards, and result in immediate and long-term prevention of job-related injuries and illnesses.

Get complete information on the [MNOSHA WSC: Minnesota Star Program](#) webpage.



Georg Fischer Building Flow Solutions Americas • Lakeville, Minnesota

Murphy Logistics reattains MNSHARP status after move to new worksite

Minnesota OSHA Workplace Safety Consultation recently recognized the Murphy Logistics Solutions, Inc. in St. Paul, as a Minnesota Safety and Health Achievement Recognition Program (MNSHARP) worksite. Murphy had previously attained MNSHARP status in June 2004 at its Minneapolis site and began the MNSHARP certification process at its new St. Paul worksite in February 2025.

MNSHARP recognizes companies whose management and employees work together to develop safety and health programs that go beyond basic compliance with all applicable OSHA standards and have injury and illness rates below the national industry average. Get complete information on the [MNOSHA WSC: MNSHARP](#) webpage.



Murphy Logistics Solutions, Inc. • St. Paul

Minnesota OSHA's calendar of events*

August 2026

Aug. 7 **Training: OSHA recordkeeping basics**
dli.mn.gov/business/workplace-safety-and-health/mnosha-compliance-recordkeeping-standard

September 2026

Sept. 4 **Occupational Safety and Health Review Board**
dli.mn.gov/about-department/boards-and-councils/occupational-safety-and-health-review-board

Sept. 13-19 **Workplace Rights Week**
dli.mn.gov/rights-week

Sept. 15 **Construction Seminar (topic to be determined)**
dli.mn.gov/business/workplace-safety-and-health/mnosha-compliance-construction-seminars

October 2026

Oct. 28 **Health Care Seminar (topic to be determined)**
dli.mn.gov/business/workplace-safety-and-health/mnosha-compliance-health-care-seminars

Oct. 30 **Training: OSHA recordkeeping basics**
dli.mn.gov/business/workplace-safety-and-health/mnosha-compliance-recordkeeping-standard

Free on-site safety and health consultations available

Minnesota OSHA Workplace Safety Consultation offers free consultation services, where employers can find out about potential hazards at their worksites, improve safety management systems and apply for grants to abate safety standards.

The program targets small, high-hazard businesses. It is separate from Minnesota OSHA Compliance inspection activities and no citations are issued as part of a consultation visit.

Learn more and request a consultation

Web: dli.mn.gov/wsc

Email: osha.consultation@state.mn.us

Phone: 651-284-5060 or 800-657-3776

