A SOLUTIONS GUIDE FOR:

Protecting Employees from Severe Weather

aem

Contents

Introduction

The risk of severe weather is constant. However, Environmental Health & Safety focus on weather isn't.

While certain times of the year like hurricane season heighten employers' interests, weather still goes overlooked for a vast majority of the year. The U.S. had 457 fatalities, 1,425 injuries, and $26.8 million in property damage due to severe hazardous weather during the year 2020 alone. These numbers, recorded by the National Weather Service (NWS) show the devastating effects that severe weather can have on livelihood and infrastructure all year long.

Environmental Health & Safety Professionals cannot afford to overlook the risks that severe weather imposes on finances, operations, and people as well. Employees and the public alike need to be protected from conditions like flash flooding, high heat, lightning strikes, and poor air quality. However, this task is easier said than done.

QUICK STATS:

The U.S. had 457 fatalities, 1,425 injuries, and $26.8 million in property damage

Due to severe hazardous weather during the year 2020 alone.

QUICK STAT:

1,235,000

Car accidents per year involve hazardous weather.

Source: U.S. Department of Transportation

Outdoor employees and weather risks

The weather has a much greater effect on outdoor employees than indoor employees. Industries with employees most at risk include:

- Construction
- Heavy equipment operations
- Agriculture
- Oil & gas operations
- Landscaping
- Transportation
- Emergency management

There are a plethora of different dangerous weather conditions that threaten employees who work outdoors. We're going to take a look at four key weather risks.

1. DANGEROUS TRANSPORTATION CONDITIONS

There are plenty of weather-related risks that threaten drivers. These include risks that can damage vehicles, such as hail, wind gusts, and lightning strikes. Also included are conditions that can cause major accidents like hydroplaning, black ice, and low visibility. Each of these risks is unique in the way they threaten drivers, vehicles, and even cargo. You can help your employees stay safe from these conditions if you know they are coming ahead of time and prepare for them accordingly. For example, EHS professionals at transportation companies can use weather intelligence to ensure drivers avoid high bridges during periods of gusty winds. Similarly, alerts on recent rainstorms or upcoming heavy rains can help EHS professionals help on-the-go employees avoid hydroplaning.

According to the U.S. Department of Transportation, about 21% of vehicle crashes each year involve hazardous weather. That's close to approximately 1,235,000 accidents that transportation companies and any company that employs drivers, have to worry about each year. All employees who commute to and from work could potentially meet dangerous weather conditions on the roads. This makes rain, snow, and fog three of the most important conditions for EHS professionals to monitor and plan for throughout the year.

2. HIGH TEMPERATURES

Rain, snow and fog aren't the only dangerous weather conditions. The second weather-related risk on our list is heat. Dangerously high temperatures are important to monitor because they can result in injuries, dehydration, and even death.

From 2011-2019, there were 31,560 work-related heat injuries and illnesses involving days away from work, according to The BLS Annual Survey of Occupational Injuries and Illnesses. Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for causing heat-related illnesses in employees.

The heat often negatively affects employees working in agriculture, construction, and landscaping. This is especially true for new employees that aren't used to working outdoors in high temperatures. Without proper heat acclimatization guidelines, new employees are especially at risk of developing heat-related illnesses. According to the Korey Stringer Institute, Heat acclimatization is a broad term that can be defined as a complex series of changes or adaptations that occur in response to heat stress in a natural environment. By slowly acclimating employees to high heat, you can reduce things like heart rate, body temperature responses, skin temperature responses, and perceived exertion. Employers who acclimate their employees to heat also increase their sweat rates, sweat onset, heart function, and overall ability to perform in heat. This will keep employees safe from heat-related injuries.

QUICK STAT:

31,560

Work-related heat injuries and illnesses involving days away from work, from 2011-2019

Source: Occupational Safety and Health Administration (OSHA)

3. LIGHTNING AND STORMS

Oil & gas refinery workers, emergency responders and other outdoor workers are susceptible to weather-related risks such as lightning and fast moving storms. Lightning is a deadly threat against your workforce. Lightning can strike from over 10 miles away from a storm. That means your employees are at risk before you can see any storm clouds or hear any thunder. On average, the U.S. loses 43 people per year as a result of lightning strikes. The National Weather Service also reports that only about 10% of people who are struck by lightning are killed, leaving 90% with various degrees of disability.

One of the biggest mistakes a place of employment can make is to allow employees to keep working outdoors after they observe lightning. Unless you are in a lightning safe shelter, you are risking their lives. Remember, trees and sheds do not count as lightning safe shelters. In fact, since lightning can strike from so far away, companies should invest in a lightning alerting system so they can move workers to safety before they are in immediate danger.

QUICK STAT:

10% of people

Struck by lightning are killed, leaving 90% with various degrees of disability.

Source: National Weather Service

4. AIR QUALITY

The last major severe weather condition employers have to worry about is air quality. Air quality is hard to measure since it can't be seen. For this reason, it's also difficult to convince people that there is any danger present. However, there are plenty of ways to protect employees from this dangerous weather condition.

You should check the Air Quality Index (AQI) every day. The EPA issues the AQI on a daily basis for five major air pollutants for five major air pollutants that can negatively impact worker health. As the AQI rises, an increasingly large percentage of the population is likely to experience severe adverse health problems such as cardiovascular issues.

If the air quality is a problem for your workforce on a day of high pollutant levels, there are a few different things you can do as an EHS professional to protect them. You can advise any sensitive groups in your workplace that they should take more breaks. Your organization could also declare an action day to encourage voluntary measures to reduce air emissions, such as using public transportation or hand out face masks to keep fine particles from entering the lungs of your workers.

QUICK FACT:

As the AQI rises, an increasingly large percentage of the population is likely to experience severe adverse health problems such as cardiovascular issues.

Source: National Weather Service

An equation for overall safety

Environmental Health & Safety Professionals can follow a checklist for weather-related employee safety.

First of all, you need to identify your locations of importance. These can include an office building, work site, a driving route, or even the location of a remote worker. If you work at a large mining facility or a have landscaping teams in different locations, it's imperative that you include multiple locations in this part of your plan.

The second action on the EHS Employee Safety Equation is to define location-specific weather conditions that trigger an action plan. Different areas of operations have different severe weather threats. For example, a large agriculture site or farm in the Midwest might define lightning and tornadoes as triggers for their action plans. On the other hand, an oil & gas refinery on the gulf coast would most likely define a hurricane or high winds as their trigger. What severe weather events are the biggest threat to you in your area?

The next thing you must do is to trust that alerts reach the right people when those conditions occur and they take action. This requires the proper alerting equipment. Relying on alerts from a free weather service simply isn't foolproof enough. Not to mention, most free weather applications gather weather conditions from airports. As a result, your alerts could be delayed, faulty, or you might not even get the alerts in time. It's imperative to look for a company that uses hyper-local sensors or even allows you to purchase your own sensors and stations to install at your locations of interest. We recommend relying on an entire network; that way, you get the "big picture," of the weather conditions in your area.

Elements of a comprehensive solution

While the need for severe weather intelligence is important for Environmental Health & Safety professionals across a wide variety of industries, everyone has their own specific needs.

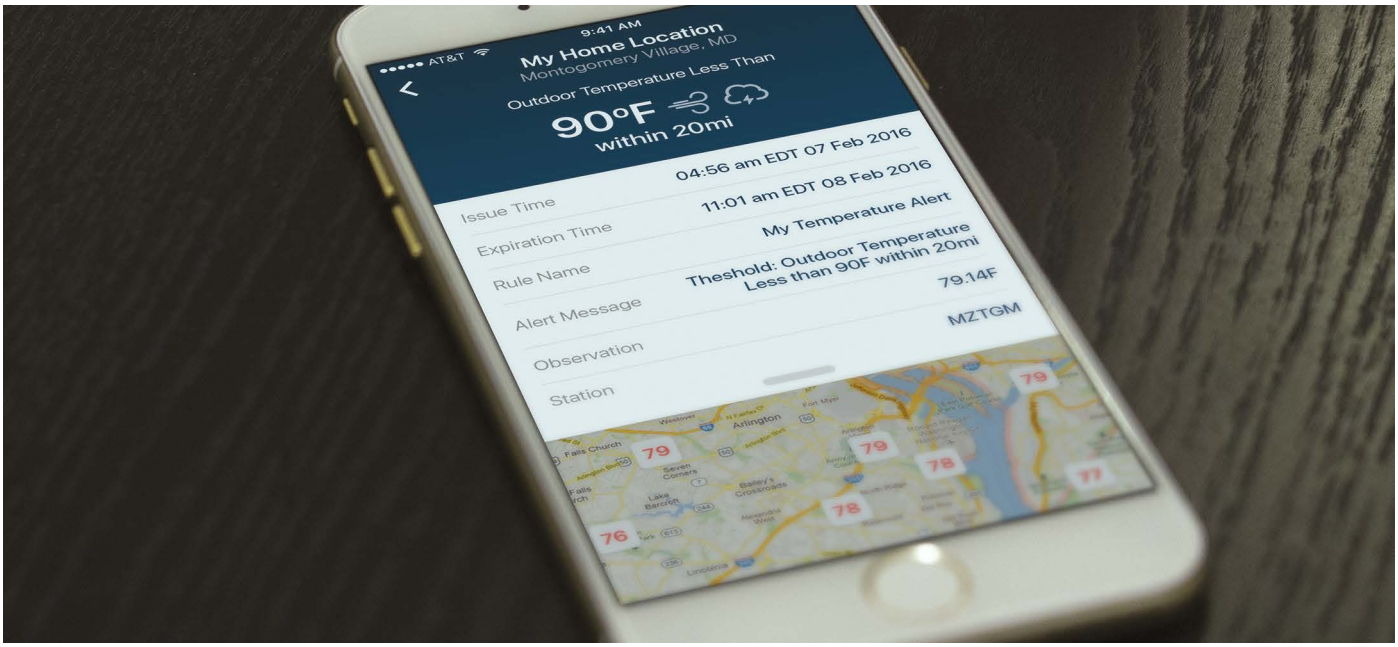
AUTOMATION IS THE ANSWER

Environmental Health and Safety Professionals are busy. We know you don't have all day to keep checking the current weather conditions like air quality, temperature, and storm reports.

That's why automation is so important. Automated alerts take the effort, worry, and guesswork out of protecting employees from severe weather.

With over 15,000 weather stations and 1,800 lightning sensors that measure lightning in over 100 countries, AEM is able to produce the most advanced, real-time weather alerts to help decision-makers like you make the right call no matter where you operate or how many locations you have.

You can choose weather visualization software, like Sferic Maps, complete with hyper-local alerts so you stay updated in the areas that matter to you most. Have multiple locations? Program alerts for all of them. Have a large infrastructure? Monitor it all with customizable drawing tools that allow you to set exact alert parameters. With a visualization and alerting software, no employees are left in the dark.



OUTDOOR ALERTING SYSTEM

Another way to go is with an outdoor alerting system. With auditory and visual alerts, outdoor alerting systems are a foolproof way of disseminating severe weather alerts and prompting employees to seek shelter. The best tools are ones that are integrated with weather and lightning networks so no instance of severe weather is missed.

REAL-TIME DATA

The next thing a comprehensive solution needs is real-time data. When it comes to protecting employees, you can't rely on this morning's forecast. Weather conditions change by the minute. That's why it's imperative to monitor weather conditions in real time.

Real-time data does a couple of different things for environmental health and safety professionals. First of all, it enables them to have the most accurate picture of current weather conditions so they can predict times when severe weather may threaten operations. Real-time weather data is also the preferred type of weather data for powering automatic alerts.

A combination of these tools and data points turns a EHS professional into a real protector of outdoor employees when it comes to severe weather. To learn more about how a comprehensive severe weather alerting system can improve your worker safety,

About AEM

AEM is combining global technology leaders to empower communities and organizations to survive and thrive in the face of escalating environment risks.

By deploying and operating reliable sensing networks on a secure and scalable data infrastructure, and transforming the data into actionable visualizations, analytics, and alerts delivered through purpose-built applications, AEM serves as the essential source for environmental insights. These technologies enable positive outcomes, helping reduce environmental impact and creating a safer and more resilient world. For more information, visit **www.aem.eco**.

AEM's family of innovative brands include Davis Instruments, Earth Networks, FTS, High Sierra Electronics, Lambrecht meteo, OneRain, and Vieux & Associates.

Contact us

Sources

- U.S. Department of Transportation
- Occupational Safety and Health Administration (OSHA)
- National Weather Service
- Korey Stringer Institute
- Earth Networks

For more information, let's talk at:
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