MOHSS

Montana Occupational Health & Safety Surveillance

Summer Newsletter 2024

Hot Topics: Working Outside Safely in the Summer

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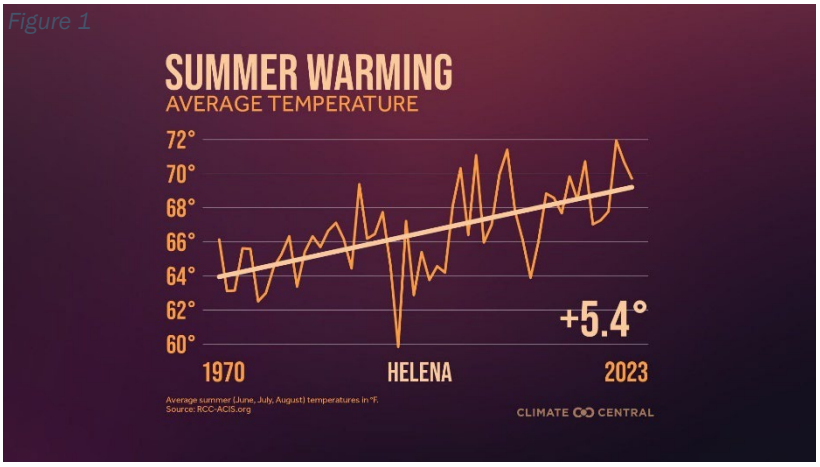
Montana workers need to be prepared for weather alterations that can include spikes in temperature. Although Montana is not amongst the hottest of states in the country, heat can be very hazardous during the summer months. According to the Mayo Clinic, medical professionals recommend seeking medical attention when we have an internal temperature of 103 or higher[1] which is just over 4 degrees higher than normal.

Elevated body temperature can have serious effects on our health especially when it comes to the central nervous system.

Figure 1



This takes us to the first important aspect of exposure risk which is high heat. Our bodies sweat when the temperature increases or when we are exerting ourselves physically. Sweat is mainly composed of water. When we sweat, our skin undergoes a process known as "evaporative transpiration".[2] What this means is that sweating has the effect of cooling us down. If you want to do a fun experiment, hold one hand under running water for a few seconds and then blow on it. If you do the same experiment to the other hand, you will notice that the damp hand will feel cooler than the dry one.

This process can be affected in several ways. If one doesn't drink enough water, the sweating process is inhibited. The effect of this is a decreased ability to regulate overheating also known as "hyperthermia". Because of this, increasing water consumption during hot days is critical to regulating our body temperature. Other liquids can have the opposite effect. For example, coffee and alcohol have a dehydrating effect and therefore decrease the amount of water available to cool us off.

Other important factors include the type of clothing we wear on hot days. Materials such as cotton and wool tend to insulate and therefore decrease the ability to allow cooling of our bodies. Wearing light, breathable synthetic fabrics is a better choice during the hot summer months.

[1] https://www.mayoclinic.org
[2] https://www.usgs.gov

A second thing to keep in mind is ultraviolet (UV) exposure. Montana's high elevations put people at risk because the higher up we get, the less atmosphere there is between us and the sun's harmful radiation. Although Montana's relatively low humidity allows our bodies to cool better, the trade-off is that our skin is more exposed to UV than at lower elevations. This can be extremely dangerous because repeated/prolonged UV exposure can cause health problems including skin cancer.

Wearing breathable long sleeve shirts and applying sunscreen to exposed skin lessens the dangers associated with UV exposure. Other things to prioritize are wearing sunglasses and a lightweight hat.

Figure 2

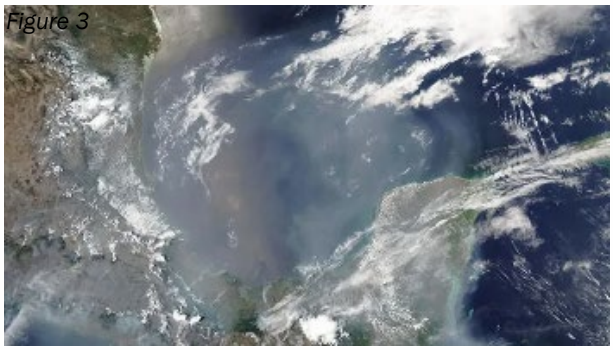
Thirdly, another risk that Montana workers are exposed to during the summer months is smoke from wildfires. Smoky conditions can have adverse side effects especially on those that work outdoors. In addition to particulate matter (soot), wildfire smoke contains elevated levels of toxic chemicals including nitrates and various sulfur containing compounds[3]. The combination of soot with toxic chemicals can affect sensitive organs such as the eyes and lungs. When trees and other vegetation are burned, the chemicals they have accumulated from the atmosphere and soil are dispersed into the air and can pose serious inhalation hazards.

Wildfire smoke can travel for hundreds/thousands of miles so it's not just local fires that can cause health problems. Montana is almost always downwind of areas that are particularly prone to wildfires. These include Washington State, Oregon, Idaho, California, and parts of Canada. Smoke from intense and widespread fire systems can even be observed from space[4].

In conclusion, stay hydrated, wear proper clothing and, when possible, limit exposure to intense heat, UV radiation, and wildfire smoke inhalation. These are difficult to avoid, but they can be minimized using a combination of common sense and good management practices.

Stay cool and stay safe this summer!

Figure 3



[3] epa.gov
[4] science.nasa.gov