

Record breaking heat wave puts hundreds of millions in US and Canada under heat risk advisories

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A record-breaking heat wave is making its way across much of the Eastern and Southern United States and Eastern Canada this week, sending temperatures into the high 90s and over 100 degrees Fahrenheit for hundreds of millions of people. As of Monday the National Weather Service estimated that over 72.6 million people are under heat alerts, more than a fifth of the entire US population, and CNN Weather predicts that more than 260 million people will see temperatures of 90 degrees or more over the coming week. Overall, temperatures will reach 15–25 degrees above normal for this time of year in areas affected.

For many areas affected, the heat dome will break records for June temperatures. Cities like Pittsburgh and Syracuse, New York, have not seen June temperatures this hot in nearly three decades.

The high temperatures are the result of a “heat dome,” a high pressure atmospheric system that produces extreme heat events. The heat dome is produced by a high pressure system that pushes and compresses air from the atmosphere to the surface. As the air warms under compression it begins to rise but is pushed back down by the high pressure, creating a large mass of stagnant heated air that is made hotter as cloud formation is prevented and solar radiation heats the air even more.

This process has been compared to placing a lid on a pan on a stove, trapping heat inside.

This heat dome began forming over the American Southwest and Mexico two weeks ago, putting 20 million people from California to Eastern Texas under federal excessive heat advisories with a further 11 million under general heat advisories.

As of Monday the center of the heat wave had moved

to the area around St. Louis, placing parts of Illinois and Missouri under extreme heat risk, the highest rating by the National Weather Service. Large sections of Kansas, Iowa, Wisconsin, Indiana, Michigan and Ohio were also under major heat risk advisories.

According to projections from the NWS, the heat wave will peak from Tuesday through Saturday with extreme heat risks affecting the Midwest and Northeast from Missouri to Maine. States like Texas, New Mexico and Oklahoma, currently under moderate to extreme heat risk, will see a brief respite from the heat but the heat dome is expected to move south over the weekend, putting much of the Southern US under major heat risk advisories. Southwestern states will also see a resurgence in moderate to major heat risks at that time.

By the weekend the heat dome is expected to break into two systems, with one traveling out into the Atlantic and one migrating south. This will weaken the system somewhat across much of the US.

Heat domes are a common natural phenomenon, but climate scientists have noted that the intensity and frequency of them is fueled by climate change driven by the emission of carbon dioxide from capitalist industrial production into the atmosphere. One study estimates that the conditions that cause heat domes could double in magnitude by the end of the century.

As such events become more common and stronger the risk to public health increases.

Excessive heat is the top weather-related cause of death in the US, with more than 1,200 people killed by extreme heat each year. The intense temperatures from heat domes make them a deadly event.

The Western North America heat wave of 2021, caused by a heat dome, resulted in prolonged

temperatures up to of 121 degrees Fahrenheit across much of Washington and Oregon in the US and British Columbia in Canada. The high heat caused damage to roads and railways, melted snow caps resulting in flooding, destroyed crops, killed livestock and caused wildfires that destroyed the town of Lytton in British Columbia, Canada.

In total, that heat wave killed between 1,400–1,600 people and cause nearly \$9 billion in damage.

Multiple studies attributed the 2021 heat wave directly to climate change, finding that it would have been virtually impossible without human-caused climate change and that the likelihood of such events occurring is increasing as the Earth warms.

Cities are especially vulnerable to the increasing severity of heat waves. Urban areas can suffer from the “urban heat island effect” whereby concrete and asphalt absorbs more heat than more vegetated suburban and rural areas, increasing temperatures. When large heat waves set in, they can cause even higher temperatures in cities, especially areas that lack trees.

In order to combat extreme summer heat, many cities have set up heat warning systems and cooling stations with water misters and shade to help provide respite from the heat. Such services can be lifesaving for many. After a deadly heat wave in 1993 which killed more than 100 residents, Philadelphia implemented a system of heat warnings and cooling centers that has resulted in a decline in heat-related deaths. But the limited nature of such measures nationally still leaves millions at risk.

While air conditioning has become widespread in the US, many households still do not have it or lack reliable cooling. In Vermont and New Hampshire, which will see several days of extreme heat this week, 67 percent and 77 percent of residences respectively do not have any air conditioning and many homes, schools and businesses do not have adequate systems for countering the high heat.

Many occupations and workplaces suffer from a lack of air conditioning or proper climate control as well. People who work in industries such as construction and landscaping are exposed to the full brunt of the heat and those working in warehouses and factories without air conditioning or even ventilation will find themselves working in a veritable oven. And the Occupational

Safety and Health Administration (OSHA) has no requirements on workplaces to maintain a certain temperature, only a vague mandate for a workplace to be “free from recognizable hazards.”

According to OSHA, 50–70 percent of outdoor fatalities occur in the first few days of working in hot weather. This is because the human body requires time to acclimate to the new temperatures and is susceptible to heat-related risks when temperatures rise. By failing to provide adequate protective measures against extreme temperatures, employers put millions of workers at risk every year.

The influence of climate change also reflects a broader social crime against the working class. The first warnings against the adverse impacts of greenhouse gasses on the climate go back to the 1960s, yet only limited measures have been taken by capitalist governments to fight climate change. Today, the Earth has seen an increase in average temperatures of 1.36 degrees Celsius (2.45 degrees Fahrenheit). Every month globally for the past year has been the warmest on record.

Climate scientists warn that if average temperature increases reach 1.5–2 degrees Celsius, the Earth could reach a tipping point of no return, making certain climatic events irreversible and having disastrous effects on global climate and weather patterns.

This makes the occurrence of extreme and deadly weather events not an accident of nature beyond human control but a social and political issue that raises the question of which class controls the world’s resources: a capitalist class with an interest in extracting as much wealth as possible, regardless of the consequences for billions of people, or an international working class with an interest in combating climate change on a rational, scientific basis through the expropriation of the wealth of the rich and reorganizing of society to meet the needs of humanity.



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