



Health & Wellness



Wildfire Smoke: MUCH More Dangerous Than You Think



Dr. Kate Thomsen and Silky

When you don't pay attention to warning signs, the consequences just get bigger. It seems that humans can't seem to get it through their collective minds that pooping in your nest is not a good idea. We have created a toxic soup of pollution: air pollution, water and ocean pollution, soil pollution, food pollution, space pollution – with physical and mental health consequences that continue to accumulate. Now that the results of our actions have also created a dangerous overheating of the earth, we are setting all these toxins on fire, destroying our homes, businesses, health, and our nest itself. It feels like the entire Earth is a Hazmat zone.

Fire and Smoke is not just Fire and Smoke

A forest fire, where purely vegetation is burned, produces smoke and ash which is a cocktail of carcinogens including volatile organic compounds (VOCs) like benzene, formaldehyde, acrolein and acetaldehyde, polycyclic aromatic hydrocarbons, the lung hazard silica dust, dioxins (no safe level of these) and furans, carbon monoxide, and heavy metals including arsenic, cadmium, lead and manganese. Mercury, from Asian coal combustion has travelled across the Pacific in a plume, scavenged from the air by the trees and stored in their needles. As the trees burn, mercury is burned, then vaporized, condensed and released back into a plume in the air and finally

deposited into a watershed – unless you breathe it in from the plume. The "plume" from the fire is a mixed bag of these chemicals, metals, and black carbon soot in tiny particles, changing form as they react with the sunlight making their way downwind. This plume of wildfire smoke is full of toxic PM2.5 (particulate matter less than 2.5 microns in size). Breathing these particulates can cause lung damage and the UltraFine toxic particles PM0.1 can get through your lungs into the blood stream and deposit into your organs and tissues.

The wildfires making headlines these days are a combination of burning forest vegetation AND burning man-made structures (homes, industrial sites, vehicles...). These fires are certainly tragic for the immediate losses they have produced and the smoke, ash and soot created is even more toxic to human health than the forest fire. Lyn Patrick MD, an environmental health expert, has called these, "Hazmat fires". In addition to all the toxins from the forest fire, these fires release volatilized plastic siding, toxic metals, flame retardants from furniture, VOCs from personal care products, cleaning chemicals, solvents and paints stored in basements and garages, etc... all turned into Ultra Fine Particles by the excessive heat.

Increasing Wildfires

New data shows that forest fires are getting worse, burning more than twice as much tree cover today as they did 20 years ago, largely due to climate change. Global increases in burning forests provides some evidence that climate change is at the root of this problem. Europe is warming faster than any other continent, fueling intense heat waves and summer droughts promoting fire activity. Canada, Russia, Spain, France, Portugal, Greece Australia, Chile, and

South Korea have all reported that recent fire seasons have been some of the worst in years. Even portions of the Amazon rain forest have been burning.

A quick look at the National Interagency Fire Center website (nifc.gov/fire-information) on August 15, 2026 showed 125 new fires reported, including three new large fires. Firefighters were currently working to contain 88 uncontained large fires, and 29,363 personnel were assigned to incidents nationwide. You can look at these websites (Fire.airnow.gov; usgs.gov/science-explorer/climate/wildfire) to see maps of the current fires. It's crazy.

Health Effects of Wildfire Smoke

Smoke can ride weather systems for days and travel thousands of miles, making wildfire pollution no longer a regional problem confined to fire-prone states. So far, our East Coast has not been an area where loss of life, homes, and towns have occurred. However, the very air we breathe daily can contain air pollution from wildfires many miles away – some days worse than others. A few weeks ago, smoke from wildfires burning in northern Ontario traveled hundreds of miles south, placing more than 100 million Americans under air-quality alerts including New York City. Short-term exposure to wildfire smoke commonly causes coughing, wheezing, itchy or burning eyes, a scratchy throat, and difficulty breathing. More seriously, Particulate Matter that is 2.5 microns in size or less (PM2.5) is well documented to stress the cardiovascular system. Smoke exposure is linked to increases in emergency department visits for respiratory complaints, heart attacks, strokes, and even death in people with heart disease. Dangerous wildfire smoke is estimated to cause more than 1.5 million deaths each year.

Longer-term and repeated

inhalation exposure also carries serious risks. Some of the specific risks depend on the size of the particulates in the smoke. PM10 are coarse particles that land in the upper respiratory track. PM 2.5 are fine particles that end up in the lower respiratory tract. PM 1 are fine particles that can end up in the tiny lung sacs called alveoli where oxygen exchange occurs. PM0.1 are called UltraFine Particles (1/1000th the width of a human hair) and these are so small that they can get through the lungs into the blood and travel to various organs.

Autopsies of children and babies with neurological symptoms found toxic Ultra-Fine Particles (PM0.1) in the brain. During life, these children and babies were breathing air in the most polluted city in the world, Metropolitan Mexico City. UltraFine Particle exposure has been associated with risk of low birthweight, diabetes, cancer, cerebral and autonomic

dysfunction, cardiovascular disease, hypertension, stroke and decreased short and long term lung function.

The New Normal

We may be used to checking the temperature and the barometer in the morning but it is time we start checking the AQI (Air Quality Index). The EPA website, airnow.gov gives the PM2.5 and Ozone rating for your zip code. (It is also an APP).

Dr. Kate Thomsen's office for holistic health care is located in Pennington, NJ. She is

trained in Family Medicine, and Board Certified in Integrative Medicine.

She is an Institute for Functional Medicine Certified Practitioner. She has been practicing Functional Medicine for 26 years.

For more information see www.drkatethomsen.com or call the office at 609-818-9700.

Checking the Air Quality Index: (airnow.gov)

AQI 101-150 (Orange) Unhealthy for Sensitive Groups (people with asthma, COPD, heart disease, are pregnant, elderly, or a child). Mask when outdoors and reduce exertion

AQI 151+ (Red) Unhealthy. Everyone, not just sensitive groups, should consider a mask outdoors.

AQI 301-500 (Maroon) Hazardous – avoid outdoor exposure entirely if possible. If you must be outside, masking is non-optional rather than precautionary.

AQI >500 (no color) Off the scale. Masking is mandatory in California; N95 definitely is not sufficient. You need a respirator with a higher assigned protection factor.

About Masks:

N95 masks: keeps 95% of PM 2.5 out (Do you want 5% of those concentrated toxins? I don't)

I prefer a Respirator mask. It should have a solvent filter for the volatile chemicals and a particle 100 filter (keeping 100% of PM 2.5 out); 3M makes these and they are available online and in hardware stores (3M7500 is best, and don't forget extra filters)

Fitting is important. You want no outside air to get in.

Depending on your proximity to wildfires, you may also need to seal your house, have a "Go" Bag for evacuation, need an air purifier and water filter, you may need supplements and breathing treatments after exposure. You can learn the all the details for Before, During and After a Wildfire Smoke incident from: envmedicine.org; scroll down to Wildfire Smoke Preparation. It is a great free resource.



Office of Dr. Kate Thomsen
252 West Delaware Ave., Pennington, NJ 08534
609-818-9700 www.drkatethomsen.com

Additional articles on holistic health topics can be found on the website