

Wildfires, Air Pollution, and the Fire Retardant's Toll On the Ecosystem

The wildfires in California have dominated the headlines lately. The devastation has been serious, but it's easy to forget about the what this means for the health of those both caught in the fires and trying to live their lives normally in spite of the high levels of air pollution they're currently dealing with. Those in California are being exposed to hazardous air conditions, and air pollution can cause serious health issues. Additionally, a new study from the University of Texas has found that poor air quality has reduced global life expectancy by 2 years. The severity of these wildfires is another sign of how close we are to this kind of climate event becoming our new normal, leaving us fighting environmental and medical battles on multiple fronts.

Quality of Life

Life won't return to normal for CA residents for a while. During the peak of the smoke and air pollution from the fires, the air quality index (AQI) in areas of CA was registering as high as a 313. For some context, good quality registers from 0 to 50. Numbers are down from their peak, but parts of Northern CA are still dealing with air unhealthy for sensitive groups. Vulnerable populations include children, the elderly, those with heart or lung conditions, and pregnant women.

Air pollution can have a serious impact on health. A recent study from the University of Texas examined air pollution data from the Global Burden of Disease Study in an effort to understand the consequences of atmospheric particulates.

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The fact that fine particle air pollution is a major global killer is already well known...And we all care about how long we live. Here, we were able to systematically identify how air pollution also substantially shortens lives around the world. What we found is that air pollution has a very large effect on survival – on average about a year globally.”

The Great Outdoors

2018 is the most destructive wildfire season recorded in California, with over 1.6 million acres burned and 2.9 million dollars in damage costs. The previous holder of that title was 2017, and that isn't a new trend. All of the conditions needed for an intense fire season are there: dry conditions due to little rain, the hottest summer on record, warm winds that regularly exceed 50 miles an hour, and plenty of fuel for the fire to consume. Those conditions are also creating an increasingly longer wildfire season. According to Scott McLean, deputy chief of communications for the California Department of Forestry and Fire Protection, that trend will likely continue.

It's progressively been getting longer. We don't even call it a season anymore, to be frank with you. We're seeing wildfires every week of each year right now...We've basically taken the season aspect out of the equation.”

The Red Stuff

There are also environmental concerns with the way we fight forest fires, namely Phos-chek, the weapon of choice for

modern firefighters. Previously owned by Monsanto (the product is now produced by Israel Chemicals Ltd.), Phos-chek is frequently seen streaming out of planes like a crimson waterfall. Although the formula is kept secret, the fire retardant is composed primarily of fertilizers like ammonium phosphate combined with clay or guar thickeners designed to keep the solution from dispersing in the air. Phos-chek use in the state of CA has multiplied rapidly over the last few years, going from 9 million gallons sprayed in 2014 to 19 million gallons used in 2016. That trend promises to continue, as more than a million gallons of the chemical were used on the Mendocino Complex fire this year.

There wasn't a serious look at the environmental impact of Phos-chek until a Montana judge ordered a thorough examination of the product in 2014. Previous attempts by the U.S. Forest Service to determine the environmental impact of the fire retardant have proclaimed it safe, despite marine plant and animal deaths recorded after the use of the chemical. In 2002, fire retardant chemicals dropped in the Fall River in Oregon killed 22,000 fish in one day. Now, reports maintain that Phos-chek does no harm if it's used correctly and well away from bodies of water, which are highly susceptible to phosphate pollution.

The Feedback Loop

Proponents of Phos-chek and other phosphate-based fire retardants mention that the chemicals perform a service beyond fire containment – fertilization. But how does that actually work? Phosphorus is an essential nutrient for plant growth, but too much of it is detrimental to plant health. Excess phosphorus, which remains in the soil for 3 to 5 years, causes plants to develop yellowing leaves due to an inability to properly absorb nutrients like iron, manganese, and zinc. It also harms root fungi, interfering with a plant's ability to absorb water.

Firefighting organizations are dumping 19 million pounds of this phosphate-based fertilizers a year, and that's also harming native plants. According to Andy Stahl, executive director of Forest Service Employees for Environmental Ethics,

Phosphate fertilizer, e.g., Phos-Chek, can have adverse effects on plants adapted to nutritionally poor soil by increasing competition from invasive species better suited to growing in the newly-fertilized soil. For this reason, the U.S. Forest Service bars aerial fire retardant from being used in critical habitat of many threatened or endangered plants."

In many ways, we keep telling the same story. We eliminate the natural systems that keep our bodies and environment healthy. We look for the most likely cause and often accept the first plausible explanation. It's not that simple and the longer we think it is, the likelihood of actually addressing climate change drastically decreases.

Sources:

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