

Episode 56WM August 5 2024 Trees don't like to breathe wildfire smoke, either and they'll hold their breath to avoid it

In Episode 56WM 1 Colorado and New York. RAWSEP View Trees do not absorb PM2.5 From the Article Trees don't like to breathe wildfire smoke, either and they'll hold their breath to avoid it WOODTV.com Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization. Accidental research in the middle of a wildfire We didn't set out to study plant responses to wildfire smoke. Fall 2020 was a bad season for wildfires in the western U.S., and thick smoke came through a field site where we were working in the Rocky Mountains of Colorado. On the first morning of heavy smoke, we did our usual test to measure leaf-level photosynthesis of Ponderosa pines. We were surprised to discover that the tree's pores were completely closed and photosynthesis was nearly zero. 2 World. Booming Wood Pellet Production Raises Health Concerns 3 United States. Is it legal to have a fire in your backyard? Advice from an attorney Homes & Gardens RAWSEP View Wood Smoke Polluted Homes and Gardens 4 Colorado 5 Georgia. Groups challenge Georgia biomass facility's unlawful air permit Southern Environmental Law Center 6 New Hampshire 7 North Carolina 8 Oregon 9 Canada 10 Scotland 11 India 12 Uzbekistan 13 PM2.5 and Human Health. Main Content. 1 Colorado and New York. RAWSEP View Trees do not absorb PM2.5 From the Article Trees don't like to breathe wildfire smoke, either and they'll hold their breath to avoid it WOODTV.com Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization. Accidental research in the middle of a wildfire We didn't set out to study plant responses to wildfire smoke. Fall 2020 was a bad season for wildfires in the western U.S., and thick smoke came through a field site where we were working in the Rocky Mountains of Colorado. On the first morning of heavy smoke, we did our usual test to measure leaf-level photosynthesis of Ponderosa pines. We were surprised to discover that the tree's pores were completely closed and photosynthesis was nearly zero. We also measured the leaves' emissions of their usual volatile organic compounds and found very low readings. This meant that the leaves weren't "breathing" they weren't inhaling the carbon dioxide they need to grow and weren't exhaling the chemicals they usually release. With these unexpected results, we decided to try to force photosynthesis and see if we could "defibrillate" the leaf into its normal rhythm. By changing the leaf's temperature and humidity, we cleared the leaf's "airways" and saw a sudden improvement in photosynthesis and a burst of volatile organic compounds. What our months of data told us is that some plants respond to heavy bouts of wildfire smoke by shutting down their exchange with outside air. They are effectively holding their breath, but not before they have been exposed to the smoke. We hypothesize a few processes that could have caused leaves to close their pores: Smoke particles could coat the leaves, creating a layer that prevents the pores from opening. Smoke could also enter the leaves and clog their pores, keeping them sticky. Or the leaves could physically respond to the first signs of smoke and close their pores before they get the worst of it. It's likely a combination of these and other responses. When wildfire smoke is in the air, doctors urge people to stay indoors to avoid breathing in harmful particles and gases. But what happens to trees and other plants that can't escape? They may respond a bit like us, it turns out: Some trees essentially shut their windows and doors and hold their breath. WPIX New York City, NY Trees don't like to breathe wildfire smoke, either and they'll hold their breath to avoid it A woman Professor of Chemistry, Colorado State University August 3, 2024. In a study that started quite by accident when smoke overwhelmed our research site in Colorado, we were able to watch in real time how the leaves of living pine trees responded. How plants breathe Plants have pores on the surface of their leaves called stomata. These pores are much like our mouths, except that while we inhale oxygen and exhale carbon dioxide, plants inhale carbon dioxide and exhale oxygen. Both humans and plants inhale other chemicals in the air around them and exhale chemicals produced inside them coffee breath for some people, pine scents for some trees. Unlike humans, however, leaves breathe in and out at the same time, constantly taking in and releasing atmospheric gases. In the early 1900s, scientists studying trees in heavily polluted

areas discovered that those chronically exposed to pollution from coal-burning had black granules clogging the leaf pores through which plants breathe. They suspected that the substance in these granules was partly created by the trees, but due to the lack of available instruments at the time, the chemistry of those granules was never explored, nor were the effects on the plants' photosynthesis. a lab study in which plants were exposed to artificial smoke found that plant productivity dropped during and after smoke exposure though those plants did recover after a few hours. There are other clues that wildfire smoke can impact plants in negative ways. What makes smoke toxic, even far from the fire When wildfire smoke travels long distances, the smoke cooks in sunlight and chemically changes. Mixing volatile organic compounds, nitrogen oxides and sunlight will make ground-level ozone, which can cause breathing problems in humans. It can also damage plants by degrading the leaf surface, oxidizing plant tissue and slowing photosynthesis. studies suggest that wildfire smoke interacts with plants, but in poorly understood ways. This lack of research is driven by the fact that studying smoke effects on the leaves of living plants in the wild is hard: Wildfires are hard to predict, and it can be unsafe to be in smoky conditions.

2 World. Booming Wood Pellet Production Raises Health Concerns The Pinnacle Gazette Evrim Ağacı pollution and industrial activities. Environmental activists have The inhalation of fine particulate matter often released during wood

3 United States. Is it legal to have a fire in your backyard? Advice from an attorney Homes & Gardens RAWSEP View Wood Smoke Polluted Homes and Gardens In most HOAs, wood-burning fire pits are prohibited as a safety measure. In some places you can get around this law with a propane fire pit, but Untreated wood for fire pits is pretty easy to buy online, but you may be out of luck if you want to burn yard waste.

4. Find a safe spot for your 4A Colorado. The Lake Shore Fire, near Boulder Colorado is 100% contained, one home destroyed YouTube Lakeshore Fire burning northwest of Gross Reservoir. 9NEWS New 945 Explosive development of CAL WOOD FIRE just 10 miles NW of Boulder, CO. 4B Colorado Boulder. Stone Canyon Fire Updates | Friday, August 2 – YouTube 9NEWS New 604 views · 5:18 · Go to channel. Explosive development of CAL WOOD FIRE just 10 miles NW of Boulder, CO. 5 Georgia. Groups challenge Georgia biomass facility's unlawful air permit Southern Environmental Law Center wood pellet plant to Biomass energy is the process of cutting down trees, turning them into wood pellets, and then burning them for power. Environmentalists challenge big expansion of Georgia wood pellet mill Atlanta Journal-Constitution Supporters of biomass say it should be considered a clean energy source because even though burning wood emits greenhouse gases, trees are

6 New Hampshire Manchester. Multiple crews battle fire at LL&S Wood Recycling in Salem YouTube First responders said most of the flames are out now, but there is still smoke. Subscribe to WMUR on YouTube now for more: <http://bit.ly/1lOjX9C>

7 North Carolina Charlotte. Three Treated For Smoke Inhalation In Two-Alarm Fire - WCCB Charlotte's CW WCCB Charlotte Around 4:30 a.m., Charlotte Fire responded to the Charlotte Wood Apartments on Scaleybark Road near Woodlawn Road. While battling the fire, a second

8A Oregon. Air quality alert affecting Oregon - oregonlive.com Oregon Live Avoid using wood-burning stoves and other sources of indoor smoke if possible." Guidance for air quality alerts: Insights from the weather

8B Oregon Roseburg. AIR QUALITY ALERT THROUGH 11:00 A.M. MONDAY KQEN News Radio smoke in Jackson County through at least Monday due to smoke *Avoid using wood-burning stoves and other sources of indoor smoke if possible.

9A Canada Alberta Calgary Forest Area Wildfire Update August 2, 2024 The Alberta Wildfire Blog - Government of Alberta Propane fire pits are still allowed during a fire ban but wood burning fires, charcoal briquettes, fireworks and exploding targets are all prohibited.

9B Canada Alberta Cochrane. Wildfire strikes Peter Lougheed Provincial Park CochraneNow Propane fire pits are still allowed during a fire ban but wood-burning fires, charcoal briquettes, fireworks, and exploding targets are all prohibited

9C Canada British Columbia Penticton. Smoke arriving for long weekend pentictonherald.ca Penticton Herald As of Friday, the outlook for holiday Monday was a return to clear skies. Through the long weekend, the level of PM 2.5, a fine particulate that can

10 Scotland Moodiesburn. Butcher used golf club to save children trapped in burning car BBC News Fortunately, the 7.7 handicap golfer, who is a member of Crow Wood Golf Club in Moodiesburn, had his six iron in his car. Mister Mackie gave the

11 India Rising lung cancer in non-

smokers: Growing concern in India - The New Indian Express Indoor Air Pollution: Many households in India use biomass fuels like wood, and crop residues for cooking and heating. The smoke from these fuels 12 Uzbekistan's capital struggles with air pollution: PM 2.5 exceeds WHO limit by over 5 times Daryo.uz On August 2, the IQAir portal reported that the concentration of PM 2.5 (fine particulate matter) in the city was 5.4 times higher than the World 13 PM2.5 and human health. How to Stop Wildfire Smoke Damaging Your Health WIRED California's average level of fine particulate matter, or PM2.5, is $10\mu\text{g}/\text{m}^3$. During big wildfire years, rates can almost double. Graph: Data from