Please submit these comments in full for the DEIS 4FRI public comment period ending January, 16, 2020

From: Marsha Honn
[redacted]

The USFS already is conducting too many prescribed burns, managed wildfires and pile burning. They need to look towards methods that preserve our water sheds, sustain wildlife and protect the public's health. Logging for fire breaks, thinning the forests, mulching and grazing are far safer for all these matters. If the USFS has time to stack slash and debris into pile burns, then why can't they place this same debris into mulchers/shredders? Then leave the fine debris on forest floor to nourish it? This would eliminate massive amounts of smoke pollution, destruction of the soil from accelerants/high heat and protect the public and our water sheds. The purchase of air tankers and development of water holding tanks is critical to wildfire prevention and should be a number one priority for the forest service.

The forest service purports that prescribed burns are safer for the public than wildfires, yet refuses to take into account the frequency and amount of burning the forest service performs on a yearly basis, which makes it as or far worse than a wildfire. They are also portraying to the public that wildfires are getting larger, while the USFS is actually growing them for fire management. Their total lack of concern for public health will be looked at historically as a travesty to human health. The benefit to the forest does not outweigh the damage to public health. The smoke particles are so small they can be inhaled deeply into the lungs. They can enter the body's blood circulation causing inflammation and result in increased asthma attacks, COPD, heart problems, arthritis, and a whole host of other medical problems.

Unfortunately forest management has become big business with no regard the public health. The same people who outcry the hazards of power plants emissions are turning a blind eye to the massive amount of smoke and toxins being released by the USFS. The forest service needs to protect the public, not harm it with unending toxic smoke production. There is a monumental amount of evidence that shows why the forest service should limit the amount of burning it performs and therefore should change their forest service management policies. Below are just a few samples for reasons why their constant burn policies need to change.

Impact of smoke from prescribed burning: Is it a public health concern?

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Abstract

Given the increase in wildfire intensity and frequency worldwide, prescribed burning is becoming a more common and widespread practice. Prescribed burning is a fire management tool used to reduce fuel loads for wildfire suppression purposes and occurs on an annual basis in many parts of the world. Smoke from prescribed burning can have a substantial impact on air quality and the environment. Prescribed burning is a significant source of fine particulate matter (PM2.5 aerodynamic diameter<2.5μm) and these particulates are found to be consistently elevated during smoke events. Due to their fine nature PM2.5 are particularly harmful to human health. Here we discuss the impact of prescribed burning on air quality particularly focussing on PM2.5. We have summarised available case studies from Australia including a recent study we conducted in regional Victoria, Australia during the prescribed burning season in 2013. The studies reported very high short-term (hourly) concentrations of PM2.5 during prescribed burning. Given the increase in PM2.5 concentrations during smoke events, there is a need to understand the influence of prescribed burning smoke exposure on human health. This is important especially since adverse health impacts have been observed during wildfire events when PM2.5 concentrations were similar to those observed during prescribed burning events. Robust research is required to quantify and determine health impacts from prescribed burning smoke exposure and derive evidence based interventions for managing the risk.

IMPLICATIONS:

Given the increase in PM2.5 concentrations during PB smoke events and its impact on the local air quality, the need to understand the influence of PB smoke exposure on human health is important. This knowledge will be important to inform policy and practice of the integrated, consistent, and adaptive approach to the appropriate planning and implementation of public health strategies during PB events. This will also have important implications for land management and public health organizations in developing evidence based objectives to minimize the risk of PB smoke exposure.

Document Title

The impacts of prescribed fire on PM2.5 air quality and human health: application to asthma-related emergency room visits in Georgia, USA

Document Type: Journal Article

Author(s): Ran Huang; Yongtao Hu; Armistead G. Russell; James A. Mulholland; Mehmet Talat Odman

Publication Year: 2019

Cataloging Information

Description

Short-term exposure to fire smoke, especially particulate matter with an aerodynamic diameter less than 2.5 μm (PM2.5), is associated with adverse health effects. In order to quantify the impact of prescribed burning on human health, a general health impact function was used with exposure fields of PM2.5 from prescribed burning in Georgia, USA, during the burn seasons of 2015 to 2018, generated using a data fusion method. A method was developed to identify the days and areas when and where the prescribed burning had a major impact on local air quality to explore the relationship between prescribed burning and acute health effects. The results showed strong spatial and temporal variations in prescribed burning impacts. April 2018 exhibited a larger estimated daily health impact with more burned areas compared to Aprils in previous years, likely due to an extended burn season resulting from the need to burn more areas in Georgia. There were an estimated 145 emergency room (ER) visits in Georgia for asthma due to prescribed burning impacts in 2015 during the burn season, and this number increased by about 18% in 2018. Although southwestern, central, and east-central Georgia had large fire impacts on air quality, the absolute number of estimated ER asthma visits resulting from burn impacts was small in these regions compared to metropolitan areas where the population density is higher. Metro-Atlanta had the largest estimated prescribed burn-related asthma ER visits in Georgia, with an average of about 66 during the reporting years.

Online Link(s):

Link to this document

Citation:

Huang, Ran; Hu, Yongtao; Russell, Armistead G.; Mulholland, James A.; Odman, Mehmet Talat. 2019. The impacts of prescribed fire on PM2.5 air quality and human health: application to asthma-related emergency room visits in Georgia, USA. International Journal of Environmental Research and Public Health 16(13):2312.

Science News

from research organizations

Gene Altering Chemicals Found In Forest Fire Smoke

Date:

May 2, 2009

Source:

DOE/Pacific Northwest National Laboratory

Summary:

Researchers have detected common plant toxins that affect human health and ecosystems in smoke from forest fires. The results from the new study also suggest that smoldering fires may produce more toxins than wildfires - a reason to keep human exposures to a minimum during controlled burns. Finding these toxins -- known as alkaloids -- helps researchers understand how they cycle through earth and air.

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FULL STORY

Researchers have detected common plant toxins that affect human health and ecosystems in smoke from forest fires. The results from the new study also suggest that smoldering fires may produce more toxins than wildfires - a reason to keep human exposures to a minimum during controlled burns.

Finding these toxins -- known as alkaloids -- helps researchers understand how they cycle through earth and air. Smoke-related alkaloids in the environment can change aquatic and terrestrial ecosystems, as well as where and when clouds form. The study, which was of Ponderosa pines, by scientists at the Department of Energy's Pacific Northwest National Laboratory will appear June 1 in *Environmental Science and Technology.*

"Ponderosa pines are widespread in areas that are prone to forest fires," said PNNL physical chemist Julia Laskin, one of the coauthors. "This study shows us which molecules are in smoke so we can better understand smoke's environmental impact."

As trees and underbrush burn, billowing smoke made up of tiny particles drifts away. The tiny particles contain a variety of natural compounds released from the plant matter. Researchers have long suspected the presence of alkaloids in smoke or detected them in air during fire season, but no one had directly measured them coming off a fire. The PNNL researchers had recently developed the technology to pick out alkaloids from the background of similar molecules.

To investigate chemicals given off by fires, the team captured some smoke from test fires organized by Colorado State University researchers. These researchers were

doing controlled burns of ponderosa pines, underbrush and other fuels at the Forest Service Fire Science Laboratory in Missoula, Mont.

The scientists collected smoke samples in a device that corrals small particles. Using high-resolution spectrometry instruments in EMSL, DOE's Environmental Molecular Sciences Laboratory on the PNNL campus, they then determined which molecules the smoke contained. At EMSL, the researchers used the new methods to glean highly detailed information about the smoke's composition.

The team found a wide variety of molecules. When they compared their results to other studies, they found that 70 percent of these molecules had not been previously reported in smoke.

"The research significantly expanded the previous observations," said aerosol chemist and coauthor Alexander Laskin.

In addition, 10 to 30 percent of these were alkaloids, common plant molecules that proved to be quite resistant to the high temperatures of fire. Plants often use alkaloids for protection, because they can poison other plants and animals, including humans. Alkaloids also have medicinal value (caffeine and nicotine, for example, are well-known alkaloids that aren't found in pine trees).

A large percentage of the alkaloids were those that carry biologically useful nitrogen through atmospheric, terrestrial and aquatic environments. Because of this, the results suggest smoke might be an important step in this transport. Also, the nitrogen-containing alkaloids have a basic pH, which can make cloud-forming particles less acidic, and in turn impact cloud formation that is critical to global agriculture and water supplies.

The researchers also found that the abundance of alkaloids depends on how vigorously the fire burns. Smoldering fires such as those in controlled burns produce more of the compounds than blazing fires such as those fanned by high winds. Because some plant alkaloids might be harmful, the result could affect planned fires upwind of human populations.

For future studies, the researchers are developing a method to quantify the alkaloids and related compounds in smoke to better understand their chemical composition and prevalence.

This work was funded by the DOE Office of Science through the Office of Basic Energy Sciences, the Office of Biological and Environmental Research, and the Science Undergraduate Laboratory Internship program.

Story Source:

Materials provided by **DOE/Pacific Northwest National Laboratory**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Laskin et al. **Molecular Characterization of Nitrogen-Containing Organic Compounds in Biomass Burning Aerosols Using High-Resolution Mass Spectrometry**. *Environmental Science & Technology*, 2009; 090417112314078 DOI: 10.1021/es803456n

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DOE/Pacific Northwest National Laboratory. "Gene Altering Chemicals Found In Forest Fire Smoke." ScienceDaily. ScienceDaily, 2 May 2009. <www.sciencedaily.com/releases/2009/04/090430091057.htm>.