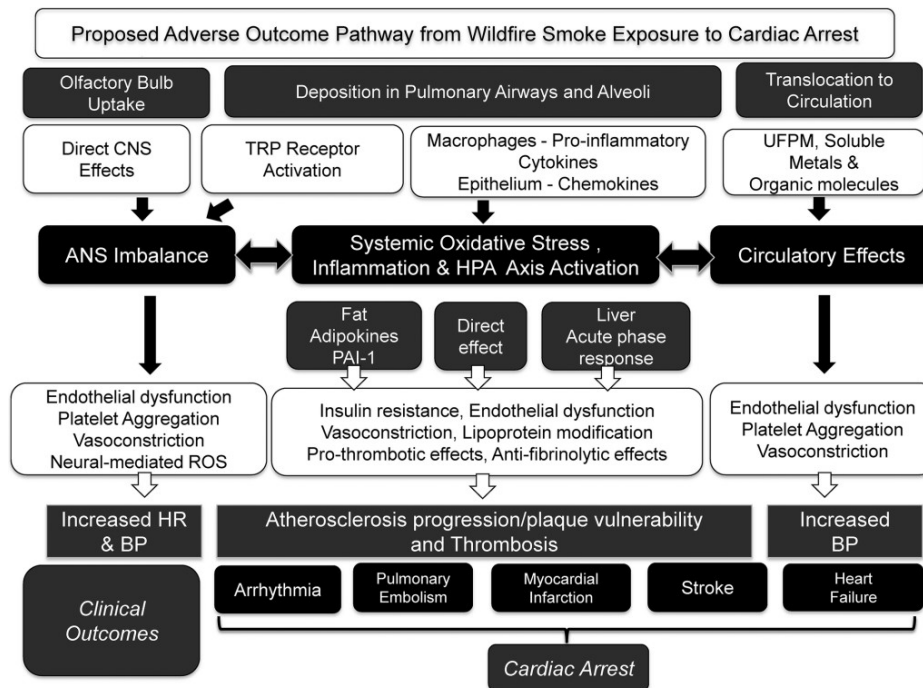


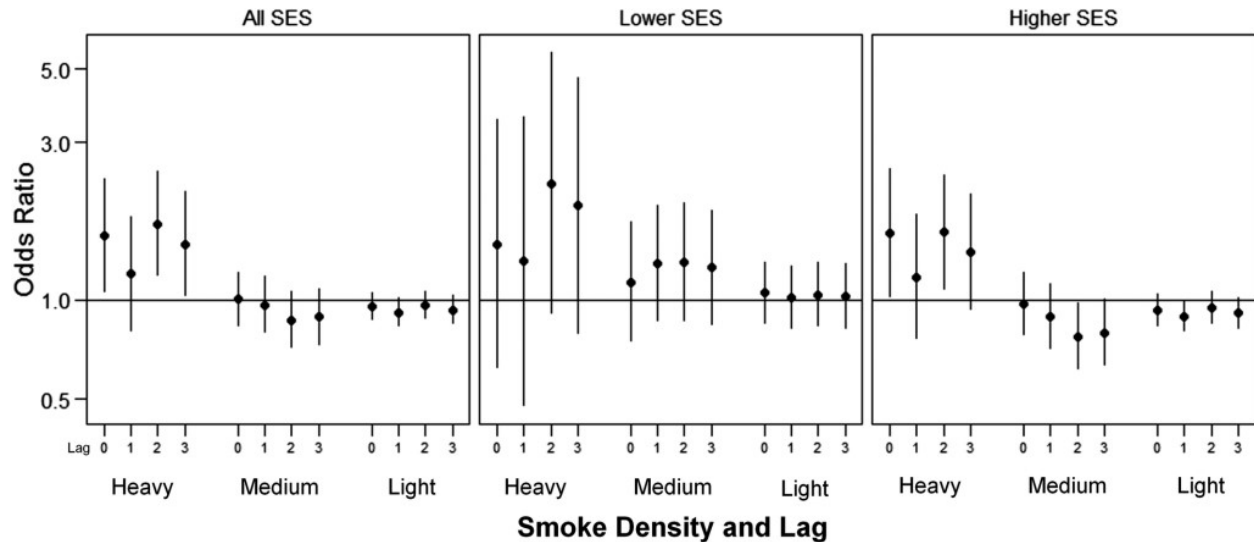
HB 2813- Testimony in support of respiratory protection for outdoor workers

Thank you for the opportunity to submit testimony on this very important topic. The health effects of wildfires are real. We have known for a long time that smoking tobacco is terrible for one's health. It appears that wildfire smoke is also deadly. There are [many health effects](#) from wildfire smoke, and this committee will hear the testimony of medical experts today. As an example of how wildfire smoke can be lethal to our outdoor workers, I will focus in my written testimony on one of the most dramatic ways of dying: out-of-hospital cardiac arrest. An out-of-hospital cardiac arrest is when suddenly someone just drops dead from their heart being unable to pump correctly. The inflammation in their system has often grown so severe that a blood vessel perfusing their heart has occluded- that means the platelets in their bloodstream have formed into a mass that completely blocks the coronary artery because the levels of inflammation in the blood vessels themselves are so high, the platelets respond by clotting off the vessel. This leads to sudden lack of oxygen in a part of the heart muscle, and the heart frequently responds by going into an arrhythmia, which means it does not pump well and therefore does not perfuse the rest of the heart or body. People just drop dead unless resuscitated promptly by CPR and/or opening the blockage. Below is a figure from a [study](#) highlighting the different ways wildfire smoke can lead to cardiac arrest.



These events can be measured, and a group of researchers looked at the levels of particulate matter and air pollution following the wildfires in California from 2015-2017, and they were able to see that as exposure to wildfire particulate matter increased, this most fulminant manifestation of cardiac toxicity from air pollution also increased. One thing we always look for in studies in medicine is a dose-response curve to ensure the

effect is likely a real one; if something is toxic, bad health outcomes should happen more when there are higher concentrations or exposures to it. This study found that on days of higher air pollution, these episodes of sudden cardiac death were more common. When I think of our outdoor workers on farms or at construction sites, who are often forced by economic circumstance or potential other factors in their work to continue to labor outside, taking in deep breaths of unhealthy air, breathing heavily due to the exertional nature of their work, which pulls even more toxic air into their system, causing more systemic damage, I worry as a physician for their health.



Figure= Wildfire smoke density and sudden cardiac death in 3 days following

The costs of this are obviously astronomical. The most immediate cost is the loss of life or disability from suffering an out-of-hospital cardiac arrest. If you're lucky, and you're able to be resuscitated and taken to a hospital where we can save your life, hopefully you go back to your family.... but not until after significant healthcare expenditures, including the trip to the cardiac cath lab, your new stent and the very expensive medications required to keep it open, your ICU stay, the doctor and hospital fees, the post-hospitalization rehab facility, etc. You may suffer long-term brain damage from the time of poor perfusion and CPR, which may affect your ability to work and enjoy life. If you die from your out-of-hospital cardiac arrest, your family loses a caregiver, a breadwinner, and an essential element of the family sense of identity and safety. Either way, that's a massive personal and economic loss for a family and a community. One study placed estimated short-term costs of the US wildfires from 2008 to 2012 at between \$11 and \$20 BILLION dollars (in 2010 dollars), totalling \$63 billion dollars in today's currency (95% confidence intervals \$6-\$170), and the cost of long-term exposures as between \$76 and 130 billion, totalling \$450 billion (or between \$42 billion to \$1200 billion) in today's dollars.

These are the real costs of unhealthy air from wildfires. We are paying these costs now. In our state, after the next wildfire, outdoor workers are going to start dying. When they

show up to the hospital with a severe heart attack, or stroke, or respiratory exacerbation, maybe it will be attributed to the wildfires, but probably everyone will just be focusing on getting through their shift, and the context of this one death, this one illness, will be missed. But make no mistake, the wave of hospitalizations, ER visits and deaths that will follow the next fire will not be random, and perhaps they can be lessened by at least trying to provide respiratory protection for those who cannot reduce their exposure and leave hazardous air. We know that even an imperfectly-fit N95 can decrease the particulate matter burden to at least some degree, hopefully sparing those who cannot rest in clean indoor air when the fires come.

The cost of respirators pales in comparison to the costs we are already paying from the health toll of wildfire smoke. We should not penalize ethical businesses who try to protect their workers from wildfire smoke. We should show our outdoor workers that their lives matter to us as a State- that we are doing what we can to protect them and ensure they return home safely to their families. We also need to make sure these are obtained prior to surges in demand. As we all saw with the last fires and with the COVID19 pandemic, irregular demand for respirators leads to surges and sudden scarcity and high prices. Sadly, regular exposure to particulate matter will be a regular part of the future in the West, and we need to prepare for resilience.

Thank you for your time, and your service to our state.

Sincerely,

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Past President: Oregon Thoracic Society
Founder: Air Health Our Health

References:

[Fan et al. "The health impacts and economic value of wildland fire episodes in the U.S.: 2008–2012" Sci Tot Env. Jan 2018.](#)

[Jones et al. "Out of Hospital Cardiac Arrests and Wildfire-Related Particulate Matter During 2015-2017 California Wildfires." JAHA 2020](#)

[Reid et al. "Critical Review of Health Impacts of Wildfire Smoke Exposure." Environ Health Perspect 2016 Sep; 124\(9\) 124\(9\): 1334-1343.](#)