



5/16/17

## Testimony to Senate Rules Committee on Clean Engines, Clean Air Bill (SB 1008)

Oregon Physicians for Social Responsibility strongly supports the original version of SB 1008 and we were disappointed to see the health protective provisions stripped from the original bill. We support the amendments considered in the Rules Committee as a positive step in the right direction but caution that they are not nearly enough to protect the health of Oregonians from the serious health hazard of diesel pollution.

We encourage the committee to restore a firm timeline for retiring or retrofitting the dirtiest diesel engines currently in use, or else Oregonians will continue to lose lives and pay the high cost of chronic disease attributable to diesel pollution.

Specifically, we support the amendment that will prohibit the addition of pre-2007 diesel engines to Oregon fleets. Old engines are lasting longer than expected, with the rate of retirement for old engines in Oregon lagging behind EPA estimates. If we do not take action, Oregonians will bear the burden of diesel pollution for decades to come. We must act to ensure that Oregon does not inherit California's problem. By 2023, all of California's trucks and buses will run 95% cleaner, and old construction vehicles are also on a timeline for upgrades in California. Unless we take action, old engines that don't meet California's standards will be sold for many more years of use in Oregon.

We also support the amendment that allows local governments to create "no idle" zones near schools, hospitals, care centers and day care centers. Diesel exhaust currently creates an enormous public health burden, resulting in emergency room visits, lost productivity, chronic disease and premature death. By protecting our most vulnerable population from exposure, we can begin to reduce this public health burden.

Decreasing harmful diesel particulate matter emissions will lead to a great gain for the health of Oregonians, particularly those who live in urban areas near roadways and train lines, who are more likely to be low-income communities and communities of color.

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The dangers of diesel emissions are underestimated by both DEQ and OHA, and by the experts who testified on this subject on February 23rd, in that they do not take into account the latest research since 2007. Many large epidemiological studies of humans document serious health effects in many systems of the body in large numbers of people, which can be linked with increasing certainty to the inhalation of diesel pollution from our air. Our recent diesel particulate matter fact sheet is attached with references to these most up-to-date studies.

In summary, we urge the committee to consider the large savings in health costs which would occur by passing health protective diesel legislation and encourage you to restore the original provisions in SB 1008 to protect the health of Oregonians.

Sincerely,



Kelly Campbell  
Executive Director



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# Diesel, Small Particle Emissions & Public Health

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## BACKGROUND

Outdoor air quality is an increasing global concern as industrial and transportation emissions increase worldwide, and without borders. The World Health Organization (WHO 1) has declared that Particulate Matter (PM) in ambient outdoor air affects more people than any other pollutant. Chronic exposure to small particles in the air we breathe contributes to the risk of developing or dying from serious disease (WHO 1; [www.oregonpsr.org](http://www.oregonpsr.org)).

For many years serious health effects have been documented for fine particulate matter, PM 2.5. For information regarding airborne particulate matter in general, please see the *Airborne Particulate Matter and Public Health* factsheet on the Oregon PSR website ([www.oregonpsr.org](http://www.oregonpsr.org)). Health effects discussed there are also true for diesel emissions which are made up of even finer particles than PM 2.5. A new photometric absorbance method, which distinguishes which emissions come specifically from diesel, has made these studies even more important. Black Carbon is recognized as a signifier of diesel emissions.



New studies have shown that Black Carbon (BC), a component of fine particulate matter (PM 2.5), is even more dangerous than the larger particles that are measured with it in older methods (filtration based). It originates mainly from combustion engines (especially diesel), power stations that use coal and heavy oil, residential burning of wood and coal, field burning of agricultural wastes and forest fires (WHO 2). The World Health Organization classified airborne BC as carcinogenic in 2011, and it was found that a unit of airborne particles measured as BC as compared to a unit of PM 2.5, increases risk by a factor four to nine times (WHO 2; Janssen et al 2011). That means that all the studies, which have shown the dangers of PM 2.5, have probably underestimated how dangerous small particulate matter is to health.

In urban areas of the United States, it is estimated that as much as 60% of BC emissions originate from engines used in transport (i.e., busses, cars, trains, etc.), and diesel engines emit eight times more BC than gasoline powered sources (Graeme et al 2014). Importantly, BC from various sources appears to be “causally involved in all-cause, lung cancer, and cardiovascular mortality, morbidity, and perhaps adverse birth and nervous system effects” (Graeme et al 2014).

**SPECIFIC DISEASES ASSOCIATED WITH DIESEL EMISSION EXPOSURE****Cancer**

- Lung and bladder cancer (WHO 1);
- Decreased lung cancer mortality of 4.9% in people living in Tokyo with diesel emission control after eight years (Yorifuji et al 2016), compared to a city in Japan with no diesel emission control.

**Neurodevelopmental**

- Associations between prenatal BC exposure and decreased memory in children, especially boys (Cowell et al 2015);
- In children increases in ADHD, Autism, Learning Disabilities, and decreases in IQ documented related to PM 2.5 and associated toxicants like PAHs that they carry (Perera et al 2012);
- In Mexico City, young people exposed to fine particulate matter, including BC, developed “vascular and perivascular damage in the prefrontal white matter” of their brains, which is associated with vascular-based neurodegenerative disorders like Alzheimer’s disease (Calderón-Garcidueñas et al. 2016);
- BC and other traffic related air pollution seen to be associated with dementia incidence and cognitive impairment (Oudin et al. 2016; Power et al. 2011; Chen et al. 2017);
- In older adults, BC associated with increases in Parkinson’s Disease (Ritz et al 2016).

**Cardiovascular**

- Heart disease and stroke (WHO 1);
- In regions in Tokyo where diesel emissions had been controlled, mortality rates related to cardiovascular disease were decreased by at least 10%, compared to areas where emissions had not been regulated (Yorifuji et al 2016). This means decreases in heart attacks and strokes and fewer new cases of heart failure;
- Blood pressure in elderly men was adversely affected by increased exposure to BC (Bind et al 2015).

**Respiratory**

- Inhalation of BC creates inflammation that results in the start of, and exacerbation of asthma in children and adults. It also means increases in prevalence and severity of disease in people with emphysema, COPD, and pneumonia (Ristovski et al 2012);
- In another study in Tokyo total pulmonary disease was decreased by 22% over 12 years when diesel emission control was initiated (Yorifuji et al 2016).

**Birth Effects**

- Increase in miscarriages, low birth weight babies, infertility and other pregnancy problems in women with exposure to high concentrations of traffic-related air pollution (Frutos et al 2015).

In summary then, decreasing allowable diesel particulate matter in our air will yield many positive health effects, relatively easily and all with one achievable change. There will be decreases in morbidity and mortality from many diseases, and a commensurate decrease in the costs of caring for these chronic and acute illnesses.

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