

Oregon Thoracic Society Testimony – HB 2007

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Dear Chair Helm and Oregon State Legislators-

Thank you for the opportunity to submit testimony and thank you all for your service to our State. The Oregon Thoracic Society is comprised of lung doctors, thoracic surgeons, and healthcare professionals who care for patients suffering from respiratory illnesses. We witness the health toll of air pollution and diesel in our practices while treating those who suffer from some of the many diseases caused or worsened by diesel and other air pollution. We are particularly concerned about the health burden of diesel on children, who frequently attend school by high traffic corridors around the state and ride diesel buses that negatively impact their health. This is not only a problem for urban children and adults, but for all children around the state attending schools near high-traffic roads and commuting to school in school buses or in traffic with older diesel engines.

It may seem hard to understand how particulate matter from a tailpipe can sicken people, but it is important to remember that the lungs are designed to extract oxygen from the air straight into our blood stream. Think of inhaling something small as an intravenous injection- fine particulate matter goes from the air into the bloodstream and circulates throughout the body causing disease.

Damage from air pollution starts in the womb. Exposure of pregnant women to ambient air pollution causes premature and low birth weight children.¹ Traffic pollution causes asthma attacks in children, and likely causes asthma itself with impaired lung function.^{2,3} We can measure black carbon coughed up by children and see more lung damage with higher concentrations.⁴ Traffic-related air pollution further causes deficits in memory, cognitive function,⁵ and attention⁶ with a study even showing MRI changes in children's brains.⁷ Children in high-emitting diesel school buses are particularly vulnerable, whether windows are open or closed. Low emitting school buses result in improved air quality for children.⁸

Diesel is a human carcinogen and causes lung cancer and likely other cancers.⁹ Air pollution from traffic decreases adult lung function and causes COPD.^{10,11} It also causes heart attacks and death.^{12,13} Air pollution not only increasing risk of dementia¹⁴ and stroke,¹⁵ but it also increases osteoporosis and bone fracture risk.¹⁶ Increases of 10 ug/m³ in PM_{2.5}, abundant in diesel exhaust, are associated with a 7.3% increase in all-cause mortality among Medicare beneficiaries.¹⁷

Diesel exhaust is particularly toxic, a known human carcinogen, and children are especially vulnerable to the long-term and short-term health effects of exposure to it due to their higher respiratory rates, increased activity, and vulnerable developmental windows. The American Lung Association of Oregon (for whom we are the Oregon Medical Advisory Board) has testified about these dangers to this legislative body. People who work with diesel (eg truckers, miners, farmers, tollworkers, other industrial work) are also vulnerable, as are those who spend a great deal of time commuting in traffic for other reasons or live by high traffic roads.

Fortunately, we can make it better. Decreasing air pollution improves lung function in children.¹⁸ Washington State, when cleaning up its diesel fleet, decreased the particulates to which children were exposed and also decreased missed school days, particularly in children with asthma.¹⁹

The lung diseases that are caused or worsened by air pollution are very expensive and common. Around 6% of Oregon residents surveyed in 2011 stated they had been told that they had COPD, but the number is likely higher.²⁰ Cost for this care will fall disproportionately on taxpayers, as patients with COPD are more likely to be unable to work and have a household income less than \$25,000.⁸ Asthma is also a significant burden in our state, affecting 10% of adults and 7% of children totaling over 360,000 Oregonians²¹ and responsible for over 2000 people hospitalized for asthma in 2012 alone. Healthcare costs will again fall disproportionately on taxpayers, since those affected by asthma often have lower income, and are more frequently enrolled in the Oregon Health Plan and CHIP. In addition to the toll on human health and direct healthcare spending, there are also costs in worker productivity. Over 25% of people in Oregon with asthma missed more than one day of work due to asthma,²² and children are also likely to miss school because of asthma, particularly if their school is located by high traffic area and exposure to air pollution is high (which it often is).

COPD and asthma cost more than \$100 billion per year, over \$50 billion for COPD in the US²³ and \$56 billion for asthma in 2007,²⁴ likely more since that time, with estimates of asthma in Oregon alone at 3 billion. Inhaler costs are skyrocketing.²⁵ These are likely low estimates since the increase in inhaler costs and medical costs in general have not been factored in adequately. List price for regular inhaler therapy for asthma and COPD is currently around \$4,000-11,000 per year, not including rescue medications, doctor visits, etc. This will only worsen as more people move to the state, traffic congestion around the state worsens, and idling and air pollution by schools both urban and rural increases. For every dollar we invest in cleaner diesel, we will reap many multiples in health benefits.

Newer diesel engines are 95-99% cleaner and much less likely to contribute to the devastating and expensive diseases we treat. We endorse HB 2007, and sincerely appreciate the legislature's work on improving the health of Oregonians. We need a firm timeline to retire and retrofit older diesel engines. Specifically, we must prohibit the addition of any pre-2007 diesel engines to our Oregon fleet and ensure we are not taking on older engines that are now not used in other states. We must ensure that all diesel engines operating in our state pass emissions tests that prevent damage to health. We must also allow local ordinances to prohibit idling in areas where sensitive populations breathe, especially our children.

We also ask that the legislature ensure that all vehicles of the same model year are held to the same standard. "Glider" trucks present a risky exception that can defeat the purpose of a clean air health standard. Furthermore, the sooner these trucks are removed from the fleet, the healthier our communities would be, and a 2023 deadline would ensure a healthier and speedier transition if it is feasible.

It is also very important for patients to be able to make decisions about workspaces, local breathing environment, etc and a sticker registration program is very important to reassure the public and to inform vulnerable patients about whether a vehicle is emitting a safer level of particulate matter.

Thank you for your consideration and your service to our State.

Sincerely,

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References- *There is a large wealth of data on the health effects of air pollution and diesel. These are a representative few, several particularly chosen for strength and reputation of journal (eg New England Journal of Medicine, American Journal of Respiratory and Critical Care Medicine, Lancet) as well relevance to Oregon. Please contact OTS and ALA if you would like to discuss further.*

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¹ Smith et al. Impact of London's road traffic air and noise pollution on birth weight: retrospective population based cohort study *BMJ* 2017; 359 :j5299

² Khreis et al. "Exposure to traffic-related air pollution and risk of development of childhood asthma: A systematic review and meta-analysis." *Environ Int.* 2017 Mar;100:1-31

³ Health Effects Institute Panel on the Health Effects of Traffic-Related Air Pollution, *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects*. Health Effects Institute: Boston, 2010. Available at www.healtheffects.org.

⁴ Kulkarni et al. "Carbon in Airway Macrophages and Lung Function in Children." *N Engl J Med* 2006; 355:21-30

⁵ Suglia et al. "Association of Black Carbon with Cognition among Children in a Prospective Birth Cohort Study." *American Journal of Epidemiology*, Volume 167, Issue 3, 1 February 2008, Pages 280–286,

⁶ Braun JM, Kahn RS, Froehlich T, Auinger P, Lanphear BP. 2006. Exposures to environmental toxicants and attention deficit hyperactivity disorder in U.S. children. *Environ Health Perspect* 114:1904–1909.

⁷ Calderón-Garcidueñas L, Mora-Tiscareño A, Ontiveros E, Gómez-Garza G, Barragán-Mejía G, Broadway J, et al. 2008a. Air pollution, cognitive deficits and brain abnormalities: a pilot study with children and dogs. *Brain Cogn* 68:117–127.

⁸ Behrentz et al. "Relative importance of school bus-related microenvironments to children's pollutant exposure." *J Air Waste Manag Assoc.* 2005 Oct;55(10):1418-30.

⁹ Mult studies- American Cancer Society summary: <https://www.cancer.org/cancer/cancer-causes/diesel-exhaust-and-cancer.html>. Last Medical Review: July 24, 2015 Last Revised: July 27, 2015. Accessed Feb 2018. See reference list for mult studies.

¹⁰ Andersen ZJ et al/ Chronic Obstructive Pulmonary Disease and Long-Term Exposure to Traffic-related Air Pollution: A Cohort Study. *Am J Respir Crit Care Med.* 2011; 183: 455-461.

¹¹ Suglia SF et al. Association between Traffic-Related Black Carbon Exposure and Lung Function among Urban Women. *Environ Health Perspect.* 2008;116 (10): 1333-1337.

¹² Peters A et al. Exposure to Traffic and the Onset of Myocardial Infarction. *N Engl J Med.* 2004; 351: 1721-1730.

¹³ Finklestein MM et al. Traffic Air Pollution and Mortality Rate Advancement Periods. *Am J Epidemiol.* 2004; 160: 173-177; Hoek G, Brunekreef B, Goldbohn S, Fischer P, van den Brandt. Associations between mortality and indicators of traffic-related air pollution in the Netherlands: a cohort study. *Lancet.* 2002; 360: 1203-1209.

¹⁴ Oudin et al. "Traffic-Related Air Pollution and Dementia Incidence in Northern Sweden: A Longitudinal Study." *Environ Health Perspect.* 2016 Mar;124(3):306-12. doi: 10.1289/ehp.1408322.

¹⁵ Yang WS. "An evidence-based appraisal of global association between air pollution and risk of stroke." *Int J Cardiol.* 2014;175:307–313.

¹⁶ Prada et al. Association of air particulate pollution with bone loss over time and bone fracture risk: analysis of data from two independent studies. *The Lancet Planetary Health* , Volume 1 , Issue 8 , e337 - e347

¹⁷ Qian et al. "Air Pollution and Mortality in the Medicare Population." *New England Journal of Medicine.* 29 June 2017.

¹⁸ Gauderman. "Association of Improved Air Quality with Lung Development in Children." *NEJM* 2015; 372:905-913

¹⁹ Adar et al. "Adopting Clean Fuels and Technologies on School Buses: Pollution and Health Impacts in Children." *Am J Respir Crit Care Med.* . 191(12) 2015.

²⁰ “Chronic Obstructive Pulmonary Disease Among Adults—United States, 2011.” *MMWR*. 2012;61:938-943. <http://www.cdc.gov/mmwr/PDF/wk/mm6146.pdf>.

²¹ Behavioral Risk Factor Surveillance System (BRFSS)- survey. Referenced in Oregon Asthma Leadership Plan.

²² “Oregon Asthma Leadership Plan-2014-2019.” Oregon Health Authority.

²³ Guarascio et al. “The clinical and economic burden of chronic obstructive pulmonary disease in the USA.” *ClinicoEconomics and Outcomes Research*. 2013;5:235-245.

²⁴ Barnett et al. “Costs of asthma in the United States: 2002-2007.” *J Allergy Clin Immunol*. 2011 Jan 127(1):145-52.

²⁵ Rosenthal. “Soaring Cost of a Simple Breath.” *The New York Times*. October 12 2013.