

## **Diesel pollution from indirect sources creates substantial air pollution risk to Portlanders**

Testimony to the House Energy and Environment Committee Hearing on HB 2814, which would direct the Environmental Quality Commission to Promulgate an Indirect Source Rule

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Juliane L. Fry, Ph.D. and Calin Grimm  
Chemistry and Environmental Studies  
Reed College, Portland, OR

Linda A. George, Ph.D. and Kirsten Sarle  
Environmental Science and Management  
Portland State University, Portland, OR

In this testimony, we present an example of recent research results from a collaboration between our groups, aimed at investigating the sources and ambient levels of diesel pollution in Portland, OR. While our focus is in the Portland, OR metropolitan area, we note that statewide regulations result in similar construction equipment fleets statewide.

With funding from the EPA's Community-Scale Air Toxics Ambient Monitoring program, funded in 2015 under the project title "Improving Diesel Particulate Matter Exposure Assessment for Vulnerable Populations in the Portland Metropolitan Area," the Fry and George groups established a multi-year collaboration, aiming to study (1) diesel emissions from particular source groups (marine, freight, rail, construction), and (2) diesel exposure in socioeconomically vulnerable neighborhoods. Several of the studies that have been part of our work together can help to inform identification specifically of indirect sources of diesel particulate matter in Portland, and we excerpt these results below. The indirect sources we have investigated include construction sites, freight distribution centers, and railyards. We have made many measurements around Portland: downtown, NW Portland, SE Portland, near freeways and railyards. **Our unequivocal result is that our measurements generally agree with Oregon DEQ modeling and confirm that diesel particulate matter is very elevated in Portland compared to health benchmarks.**

For this testimony we focus on a key source that can best be addressed by an Indirect Source Rule: **construction equipment**. We urge the Oregon legislature to approve HB 2814 and begin the cleanup of diesel emissions in Oregon. Please feel free to contact us with any questions.

In an effort to distinguish ambient diesel particulate matter concentrations (measured as the marker species Black Carbon, quantified by a Magee Aethelometer) contributed by a construction site, we conducted several days of mobile monitoring around a major highrise construction site in downtown Portland (on the block between SW 9 and 10th, SW Alder and Washington) during November 2019, results shown in Figure 1 below. We made measurements before construction work started on weekdays, after construction started on weekdays, and on weekend mornings at a similar time. We find that the concentrations of black carbon observed around this construction site during operation are elevated by 2,000 - 4,000 ng/m<sup>3</sup> (= 2-4 µg/m<sup>3</sup>; a factor of 2-3 enhancement) above the values measured either at the site while construction work is not occurring, or a block away from the site during construction operations. While source attribution in urban areas is complicated by the presence of multiple sources, the observed spatial pattern is strong evidence of the construction activities contributing on average 2-4 µg/m<sup>3</sup> to ambient black carbon levels. This is 20 to 40 times the Oregon Ambient Benchmark Concentration for diesel particulate matter of 0.1 µg/m<sup>3</sup>.<sup>1</sup>



**Figure 1.** Measurements of black carbon around a major downtown Portland construction site in Fall 2019, (left) on the weekend, (middle) before construction operations start on weekday mornings, (right) during construction operations. Figure credit: Kirsten Sarle, Portland State University.

<sup>1</sup> <https://www.oregon.gov/deq/FilterDocs/airtox-abc.pdf>