

DIESEL POLLUTION

BAD FOR OREGON'S HEALTH

BAD FOR YOUR HEALTH

Exposure to diesel engine exhaust causes cancer; increases the risk of heart attack, stroke, and cardiovascular disease, exacerbates asthma and can lead to low-weight and preterm births.

There is also a growing body of evidence linking traffic-related air pollution, including diesel exhaust, to neurodevelopmental disorders like Autism Spectrum Disorder.

Although there are no areas of Multnomah County with safe levels of diesel pollution, the pollution “hot-spots” are in neighborhoods with higher proportions of residents who are people of color. The disproportionate exposure to diesel mirrors health disparities in the community, particularly asthma, cardiovascular disease and low birth-weights.¹ Children are also especially vulnerable because their lungs are still in the developmental phase and they breathe, on average, 50 percent more air per pound of body weight than adults do.

BAD FOR OREGON

Levels of pollution: Pollution from diesel engines is deadly, and diesel pollution is presently at unhealthy concentrations throughout the state, especially in the Portland Metropolitan region.² Multnomah County ranks highest in total and exposure concentrations among Oregon counties and the Tri-County region is in the 95th percentile for exposure nationally.³

Health Impacts: The levels of diesel pollution in Oregon result in significant public health impacts. A snapshot of annual impacts include:

- Over 400 premature deaths
- Over 140 non-fatal heart attacks
- Over 25,000 work loss days

The monetized value of health impacts in Oregon exceeds \$3 billion annually.⁴

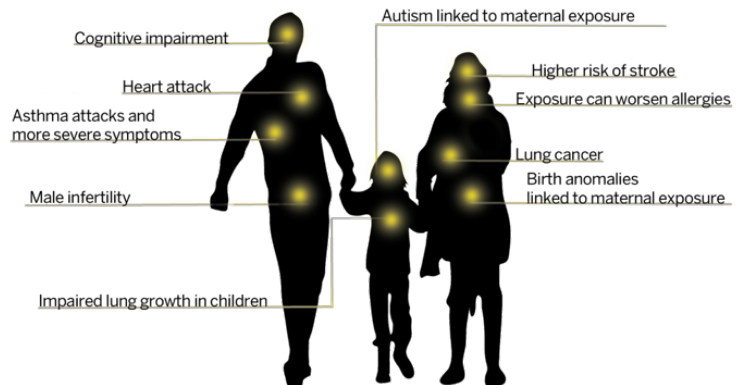
Occupational Risk: Certain occupations expose people to higher levels of diesel exhaust, increasing their risk of negative health effects. These jobs include railroad workers, truck drivers, loading dockworkers, diesel mechanics and those who work in and around construction equipment. In total, this accounts for over 29,000 members of the Oregon workforce.

WE CAN SOLVE THIS PROBLEM

Fortunately, there are solutions available. The majority of diesel emissions in Oregon come from construction equipment and heavy-duty trucks. Because of federal regulations, newer engines are fitted with pollution controls that reduce toxic emissions by 99 percent. However, because the federal rules only apply to new engines, states must address the thousands of older dirty diesel engines still in use. To address this issue the state must develop policies that both require the phase-out of dirty diesel engines, and also provide incentives for those engines to be retrofit or replaced.

Health effects of diesel exhaust

Diesel exhaust contains tiny sooty particles and more than 40 hazardous pollutants which can be inhaled deep into the lungs and absorbed into the blood stream. Children, and workers exposed to diesel at close range, are at highest risk of harm. Known and suspected health effects include:



Diesel in Oregon causes as many as **468 premature deaths** and **\$3.5 billion** in economic loss each year.

NON-ROAD ENGINES ARE THE PROBLEM

Without a policy driver, business has no incentive to adopt cleaner engines. On the other hand, for every \$1 invested in cleaning up dirty diesel engines there is a \$10 return in terms of public health. That is why Multnomah County and the City of Portland are harnessing the power of the market to drive the industry toward cleaner equipment.

CLEAN AIR CONSTRUCTION STANDARDS

Clean Air Construction Standards are a common set of procurement requirements that apply to City and County contracts. These standards require the phase-in of cleaner equipment on publicly-financed projects. Ultimately, all equipment on public contracts will have to meet the highest pollution control standards available. The Port of Portland, Metro, Clackamas County and Washington County are also evaluating the feasibility of implementing the same standards. Any jurisdiction or entity concerned about air quality and the impact of their construction practices on public health can adopt these standards.

VW SETTLEMENT MONEY IS KEY

The State of Oregon has a unique opportunity to invest in healthy air for all Oregonians by appropriating limited VW settlement money to dirty diesel engine replacement and retrofit. If the goal of these funds is to reduce exposure to toxic air emissions, retrofitting or replacing dirty diesel engines is the most cost-effective strategy available to the state, according to the U.S. Department of Transportation Federal Highway Administration.⁵ This is especially true for smaller contractors and disadvantaged businesses. Without financial support to make the transition to less polluting equipment, these businesses will struggle with the transition.

POLICY RECOMMENDATIONS

- Establish a statewide non-road diesel engine registration program that would provide information on engine age, horsepower, and emissions tier.
- Utilize 100% of VW settlement funds for diesel engine replacement or retrofit and prioritize COBID firms and areas with the worst impacts from diesel emissions.^{6,7}
- Have state agencies adopt Clean Air Construction Standards.
- Ban the sale of pre-2010 on-road heavy-duty trucks and non-road engines that do not meet tier-IV emission standards.
- Establish new fees that will raise revenue for dirty diesel engine retrofits.
- Put an expiration date on in-use dirty diesel engines.

¹Multnomah County Health Department. Report Card on racial and Ethnic Disparities 2011. Portland, OR.; 2011.

²State of Oregon. Department of Environmental Quality. The Concerns about Diesel Engine Exhaust. Operations Division. Portland. 2015.

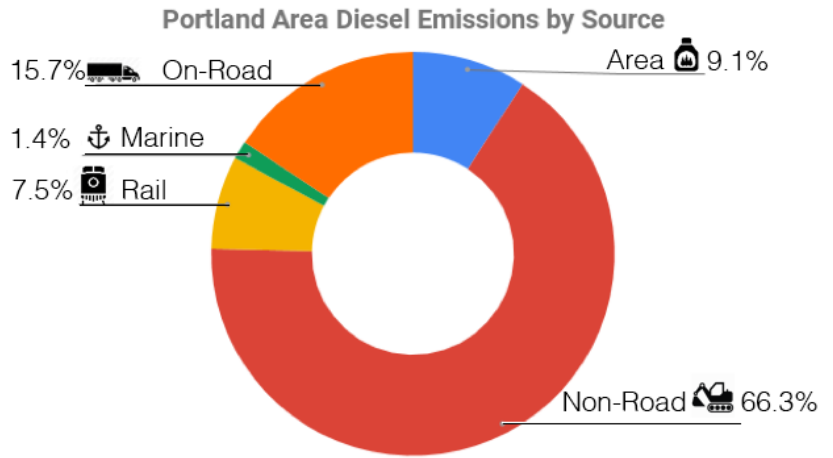
³2011 NATA: Assessment Results. Accessed on 2/1/18 at <https://www.epa.gov/national-air-toxics-assessment/2011-nata-assessment-result>

⁴State of Oregon. Department of Environmental Quality. The Concerns about Diesel Engine Exhaust. Operations Division. Portland. 2015

⁵United States. Department of Transportation. Federal Highway Administration. Air Quality Congestion Mitigation and Air Quality Improvement. Cost Effectiveness Tables and Summary. fhwa.dot.gov

⁶According to the National Renewable Energy Laboratory EVI-Pro Lite Tool Oregon already has all the EV charging infrastructure the State needs to support the Governors goal of 50,000 EVs

⁷The US Department of Transportation's Federal Highway Administration found that EV charging stations are the least cost effective method for reducing PM emissions.



Source: Oregon Department of Environmental Quality - Portland Air Toxics Solutions

NON-ROAD DIESEL EMISSION RATINGS (EPA)

ENGINE MODEL YEAR	HORSEPOWER RANGE							
	25-49	50-74	75-99	100-174	175-299	300-599	600-750	750+
1995	T0	T0	T0	T0	T0	T0	T0	T0
1996	T0	T0	T0	T0	T1	T1	T1	T0
1997	T0	T0	T0	T1	T1	T1	T1	T0
1998	T0	T1	T1	T1	T1	T1	T1	T0
1999	T1	T1	T1	T1	T1	T1	T1	T0
2000	T1	T1	T1	T1	T1	T1	T1	T1
2001	T1	T1	T1	T1	T1	T2	T1	T1
2002	T1	T1	T1	T1	T1	T2	T2	T1
2003	T1	T1	T1	T2	T2	T2	T2	T1
2004	T2	T2	T2	T2	T2	T2	T2	T1
2005	T2	T2	T2	T2	T2	T2	T2	T1
2006	T2	T2	T2	T2	T3	T3	T3	T2
2007	T2	T2	T2	T3	T3	T3	T3	T2
2008	T4a	T4a	T3	T3	T3	T3	T3	T2
2009	T4a	T4a	T3	T3	T3	T3	T3	T2
2010	T4a	T4a	T3	T3	T3	T3	T3	T2
2011	T4a	T4a	T3	T3	T4a	T4a	T4a	T4a
2012	T4a	T4a	T4a	T4a	T4a	T4a	T4a	T4a
2013	T4b	T4b	T4a	T4a	T4a	T4a	T4a	T4a
2014	T4b	T4b	T4a	T4a	T4b	T4b	T4b	T4a
2015	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b
2016	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b
2017	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b
2018	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b
2019	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b
2020	T4b	T4b	T4b	T4b	T4b	T4b	T4b	T4b

PHASE-IN SCHEDULE

All diesel-powered non-road construction equipment greater than 25 horsepower and all on-road diesel dump trucks and cement mixers used on construction projects must meet the following requirements:

EFFECTIVE DATE OF DIESEL ENGINE REQUIREMENT	NON-ROAD DIESEL (OVER 25hp)	ON-ROAD DIESEL (CEMENT MIXERS & DUMP TRUCKS)
January 1, 2020	No idling	
January 1, 2021	No tier 0 engines allowed ¹	
January 1, 2022	No tier 1 engines allowed ¹	
January 1, 2023	No tier 2 engines allowed ¹	
January 1, 2024	No tier 3 engines allowed ^{1,2}	No pre-2007 engines ^{1,2}
January 1, 2025	Tier 4 only ^{1,2}	
January 1, 2026	Tier 4 only ³	No pre-2007 engines ³

¹ Diesel engine retrofits (emission control devices) allowed on older equipment/vehicles following the Compliance Options Protocol provided herein.

² No new DOC emission control devices allowed. Equipment retrofitted with DOC emission control devices prior to 2024 are allowed.

³ No older equipment/vehicles allowed unless it was retrofitted with a DPF prior to 2026. Exemption: construction firms that are certified by the State of Oregon Certification Office for Business Inclusion and Diversity (COBID) may use equipment/vehicles retrofitted with a DPF or DOC prior to 2024 (for DOCs) and 2026 (for DPFs).

COMPLIANCE MATRIX

PROTOCOL STEP	QUESTION(S)	ANSWER	ACTION
1	Is the non-road equipment over 25hp?	Yes	Go to Step 2.
	Is the on-road vehicle a cement mixer or dump truck?	No	Register equipment and obtain compliance verification. No further action required other than anti-idling compliance on job-site.
2	Is the equipment/vehicle required for an emergency? (including for underground equipment operators)	Yes	Request exemption.
		No	Go to Step 3.
3	Is the equipment/vehicle powered by electricity or alternative (non-diesel) fuel?	Yes	Register equipment and obtain compliance verification. No further action required other than anti-idling compliance on job-site.
	Is the diesel cement mixer or dump truck 2007 or newer?	No	Go to Step 4.
	Does the diesel non-road equipment utilize only a Tier 4 engine(s)?		
4	Can the equipment/vehicle be repowered or retrofit with a CARB or EPA verified DPF or equivalent? ¹	Yes	Repower or retrofit equipment and obtain compliance verification.
		No	If 2023 or earlier, go to Step 5. If 2024 or later, go to Step 6.
5 (pre-2024)	Can the equipment/vehicle be retrofit with a CARB or EPA verified emissions control device other than DPF (or equivalent)? ¹	Yes	Retrofit equipment with an emission control device that maximizes diesel particulate matter emission reduction. Obtain compliance verification.
		No	Go to Step 6.
6	Is compliant rental equipment available within 100 miles of the job site?	Yes	Rent equipment and obtain compliance verification.
		No	Request exemption.

¹Equivalent is defined as achieving the same level (within 10%) of diesel particulate matter (PM) emissions reduction as a DPF.

TERMS/DEFINITIONS

- Diesel Particulate Matter: The solid or liquid particles found in the air released through the exhaust from diesel vehicles/equipment. Exposure to diesel particulate matter increases the risk of heart attack, stroke, cardiovascular disease, exacerbates asthma, and can lead to low-weight and pre-term births. Diesel particulate matter is also a known as a human carcinogen as determined by the International Agency for Research on Cancer.
- DOC: Diesel oxidation catalyst. A device designed to reduce harmful diesel emissions such as carbon monoxide, hydrocarbons and certain diesel particulate emissions.
- DPF: Diesel particulate filter. A device designed to trap all diesel particulate matter above a certain size.
- Emission Control Device: Technology added to equipment to reduce harmful emissions. These may include catalytic converters and particulate filters, among other technologies. For the purpose of this policy, all emission control technology must be verified by the EPA or CARB.
- Non-road: Construction equipment and vehicles that fall under the EPA non-road engine equipment category, which includes all diesel equipment not intended for highway use. For the purpose of this policy, these vehicles/equipment include only diesel construction vehicles/equipment with engines larger than 25 horsepower, which includes tractors, excavators, dozers, scrapers and other construction vehicles/equipment.