PUGET SOUND
Clean Air Agency

Lakewood Community-Led Air Monitoring Results

The Trailer for Researching Environmental Equity (TREE)

PROJECT GOAL

Provide the Lakewood community with the opportunity to monitor, understand, and advocate for improved air quality by self-directed air monitoring.

SUMMARY OF FINDINGS

1. Community engagement was at the heart of the project, shaping the study design and empowering youth to understand and interpret air quality data.
2. Transportation emissions remain a major contributor to air pollution in the area.
3. Fine particle pollution ($PM_{2.5}$) drives health risk for heart and lung impacts. Although levels are below the health-based national air quality standards, they still pose public health risks.
4. Diesel exhaust remains the leading source of potential cancer risk from air pollution across our region, accounting for 85% of the total risk.
5. Lakewood has an older population compared to the other study areas, which may make residents more vulnerable to air pollution.
6. In winter months, Lakewood is impacted by evening wood smoke from home heating.

Lakewood Community-Led Air Monitoring Results

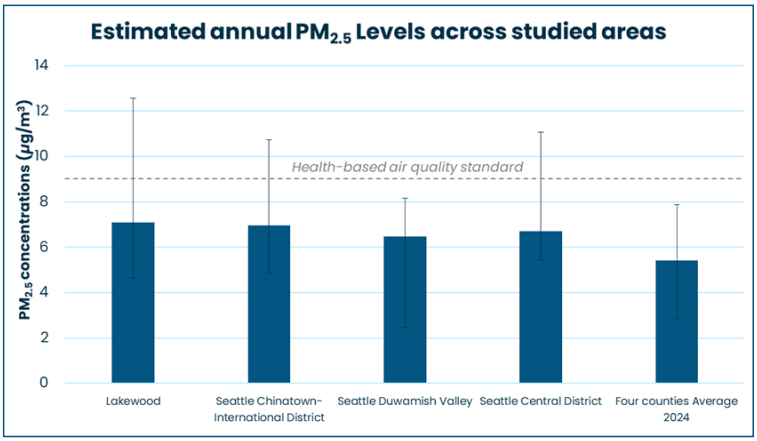
BACKGROUND AND PARTNERS

This project in Lakewood was developed by the Puget Sound Clean Air Agency alongside key community partners, the **Washington Build Back Black Alliance and Eco Infinity**, who guided engagement, identified youth groups, and ensured that monitoring activities reflected neighborhood priorities. We also partnered with the **Wa-Ya Outdoor Institute** to support community-led monitoring activities in Lakewood. Students collected handheld air-quality measurements, discussed results at weekly sessions, and shared their findings with younger students, helping build local capacity and expanding community awareness. The **University of Washington** performed technical analysis on the information to try to identify different sources of air pollution in the area.

LAKEWOOD MONITORING LOCATIONS

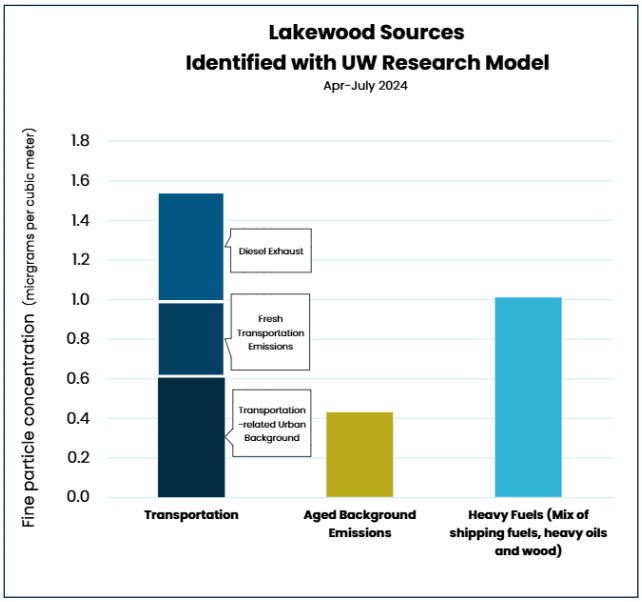
Through polls and a mapping exercise (see image), the community expressed interest in additional monitoring near freeways and residential neighborhoods. We identified a location to deploy a trailer near the freeway **in the Tillicum neighborhood of Lakewood**. The trailer was equipped with state-of-the-art air monitoring instruments. From this central location, a youth group participated in community-led monitoring, using handheld sensors during walking routes to map pollution levels in real time.

LAKEWOOD POLLUTION LEVELS



Fine particles, or $PM_{2.5}$, are tiny particles that are below 2.5 microns (µm) in diameter. They can penetrate deep into the lungs and account for about 90% of the cardiac and respiratory related health issues from air pollution. During the community input session, participants requested $PM_{2.5}$ comparisons between the study locations. Since the trailer sampled at different time periods, we created adjusted annual averages for better comparison. The graph below shows that these locations were similar (within the uncertainty marked by brackets), and below the health-based air quality standard. These areas were marginally higher than the average of all the air monitoring locations in the region.

LAKEWOOD SOURCES OF PARTICLE POLLUTION



During the study period, **transportation-related air pollution was the largest source**, accounting for more than 30% of the fine particles in the Tillicum neighborhood, with diesel exhaust making up 10% of the sources identified. **Diesel exhaust is especially harmful**, accounting for 85% of the potential cancer risk from air pollution in our region.[1] Other sources included heavier fuels such as wood, oil, or shipping fuels, as well as aged background emissions from all sources. About 34% of the particles could not be linked to a specific source due to limited data.

The community-led monitoring campaign occurred during the spring months. Nearby monitors and past studies show that wood smoke significantly contributes to fine particles in winter in Lakewood, mainly for home heating.

HEALTH IMPACTS

We estimated health impacts based on adjusted annual fine particle levels. The Tillicum location had an mortality rate from fine particles of 85 (50–155) cases per 100,000 adults and 180 (120–320) cases per 100,000 older adults (65+). For comparison, the other three neighborhoods in this study ranged from 65–85 cases per 100,000 for adults and 140–150 cases per 100,000 older adults. We found that **Lakewood has an older population** compared to the other study areas, **which may make residents more vulnerable to air pollution**.

WAYS YOU CAN REDUCE AIR POLLUTION AND PROTECT YOUR HEALTH

Transportation & Diesel Exhaust:

Transportation, and especially diesel exhaust, is the greatest contributor to potential cancer risk from air pollution. While most of us don't drive diesel trucks or buses, many everyday activities can increase or reduce the amount of pollution you and your family breathe. Steps that reduce tailpipe emissions also help lower exposure, particularly near roads and in traffic. Actions that can help reduce exposure include:

- Reduce time spent in traffic by carpooling, public transit, walking or biking if applicable and available to you.
- Combine errands to reduce the number of trips you take and time spent near vehicular exhaust.
- Turn off your engine while waiting at pick-ups/drop-offs, ferry lines, bridges, etc.
- Limit exposure when driving in heavy traffic by closing windows and putting air on "recirculate" to reduce the amount of air toxics you and your passengers breathe.

In and Around your Home:

In and around homes, certain everyday activities can increase or reduce the amount of air pollution you and your household breathe. Actions that can help reduce exposure include:

- If heating with wood, use only dry seasoned wood. Burning wood in old wood stoves is a substantial contributor to harmful fine particle ($PM_{2.5}$) pollution in our communities; and there is **$500 currently available to recycle these in our region**.

- Understand and follow burn bans to not pollute on stagnant days. Follow us on social media or **subscribe to receive burn ban alerts**.
- Understand **rules** and dispose of yard debris appropriately – burning it is prohibited in many areas.
- Upgrade gasoline yard equipment to electric.

Typically, it is healthy to let outdoor air into your home. If you live very close to large sources of air pollution (like a major highway), consider periodically shutting windows and doors and filtering your air to reduce the amount of pollution you breathe. There are many options available, including cheap and effective **DIY ones**. These options are also effective for poor air quality days (like wildfire smoke days).

While our Agency and this study focus on outdoor air, there are often sources of air pollution that can come from inside your home that you can avoid or minimize. Our state and local health departments have great information on how to reduce exposure to these air pollution sources. Find them here:

- Tacoma-Pierce County Health Department: https://tpchd.org/healthy-homes/
- Seattle King County: https://kingcounty.gov/en/legacy/depts/health/environmental-health/toxins-air-quality/indoor-air-quality.aspx
- Washington State: https://doh.wa.gov/community-and-environment/air-quality/indoor-air

FULL REPORT

We have compiled data for each community analyzed and provided background information for this project. You can find all the full analyses and data by scanning the QR code to the right. If you need any other information, please contact us.

www.pscleanair.gov/TREE

CONTACT INFORMATION

Isha Khanna
Air Resource Specialist
IshaK@pscleanair.gov
206-689-4005

Erik Saganić
Technical Analysis Manager
ErikS@pscleanair.gov
206-689-4003

Puget Sound Clean Air Agency
1904 Third Ave, Ste 105, Seattle, WA
www.pscleanair.gov
206-689-8800 | 888-552-3565

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement 0X-02J27901-0 to the Puget Sound Clean Air Agency. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.