2002 National Air Toxics Assessment

Overview

The US Environmental Protection Agency (EPA) estimates health risks from air toxics on a national level in its National Air Toxics Assessment (NATA). EPA uses a national emissions inventory to estimate ambient (outdoor) air toxics concentrations and population risk around the country.

To date, EPA has conducted three NATAs based on 1996, 1999, and 2002 emissions inventories. EPA made several changes between the 1996 and 1999 NATAs in an effort to improve estimates, making it difficult to compare the two. Results for the 2002 NATA are largely comparable with 1999 results, with some minor methodology changes. The results of the 2002 NATA again confirm the Puget Sound Clean Air Agency's dedication to reduce diesel emissions in our area.[i] Results for the Puget Sound region are provided in this information sheet.[ii]

Air toxics are a group of air pollutants known or suspected to cause serious health problems.

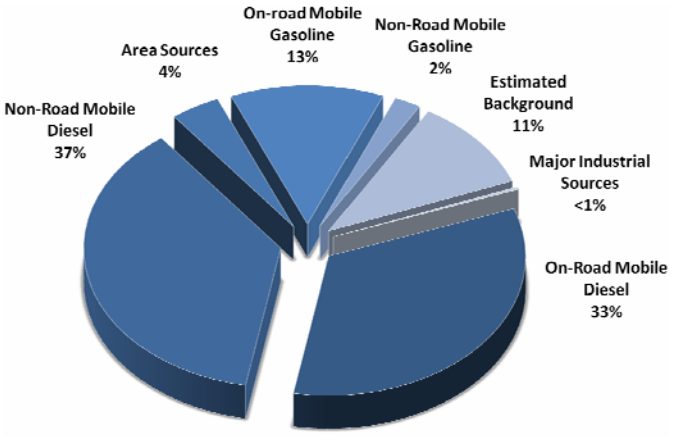
Potential health effects include cancer, birth defects, lung damage and nerve damage.[iii] Most of the discussion in this overview focuses on cancer risk, as it provides a basis of comparison.

Diesel particulate matter, as a subset of fine particulate matter, is linked with health effects in addition to the potential cancer risk described in following sections. These effects include heart problems, aggravated asthma, chronic bronchitis and premature death.[iv,v,vi,vii]

Diesel sources account for 70% of the potential air toxics cancer risk in our region.

And all mobile sources combined (cars, trucks, buses, ships, etc.) account for about 85% of the potential air toxics cancer risk.

Puget Sound Area Contributors to Average Potential Cancer Risk*



Major industrial Sources: large business and manufacturing plants.
Area sources: burning in woodstoves and fireplaces, outdoor burning as well as smaller businesses such as dry cleaners and gas stations.
On-road mobile gasoline: gasoline-powered cars, trucks and motorcycles.
Non-road mobile gasoline: primarily gasoline-powered marine vessels and yard equipment.
Estimated background: sources from neighboring areas and, to a lesser degree, natural sources.
On-road mobile diesel: diesel-powered trucks, buses and cars.
Non-road mobile diesel: diesel-powered marine vessels, construction equipment, trains and aircraft support equipment.

**Using California EPA toxicity for diesel particulate matter and EPA IRIS toxicity for formaldehyde. The Puget Sound area includes King, Kitsap, Pierce and Snohomish counties.*

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The Puget Sound area's potential cancer risk from air toxics is comparable to other major metropolitan areas.

Our region ranked in the highest 5th percentile of risk when compared to the entire country, which is typical for major metropolitan areas. Our urban areas have health risks higher than the four-county Puget Sound average (a mix of urban and rural), which amounts to approximately 250 potential cancer cases for every million people. This level of risk is 250 times the acceptable risk for individual air toxics cleanup levels at hazardous waste sites, and is consistent with findings from the Puget Sound Clean Air Agency's local 2003 air toxics evaluation.[viii]

In some areas, such as high traffic, industrial and/or port areas, estimated risks can exceed 1,000 potential cancer cases per million people (see map, which shows risk estimate by census tract).

While risk estimate are provided here, values should be used as a tool for comparison and prioritization of areas and pollutants for action, not interpreted as any individual's or community's absolute risk.

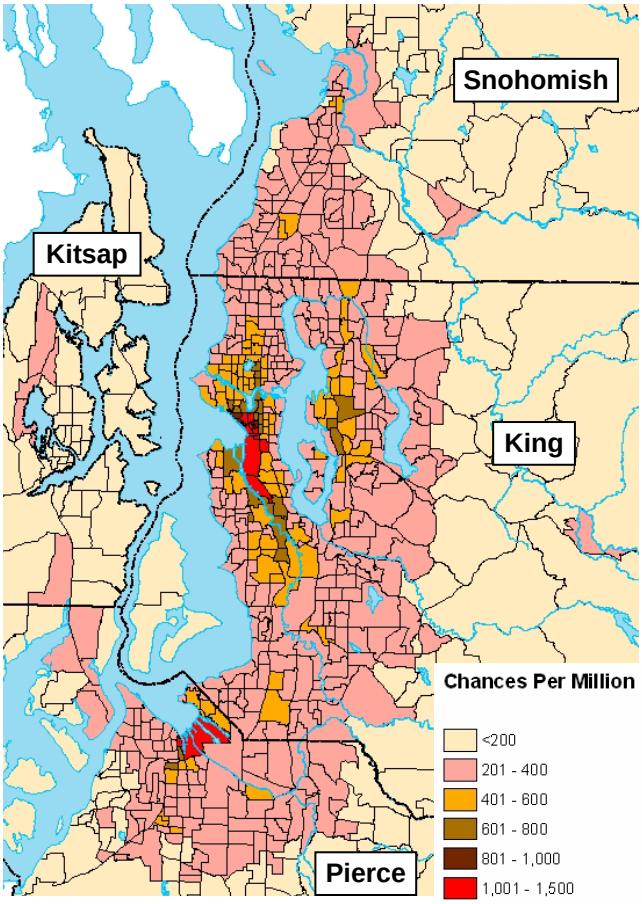
After diesel particulate matter, formaldehyde and benzene are the pollutants that pose the greatest potential cancer risk.

Diesel particulate matter, formaldehyde, and benzene combined present 90% of the potential cancer risk from air toxics. These are all associated with mobile sources; formaldehyde and benzene also come from wood burning and other combustion.

Acrolein is also an air toxic of concern in the Puget Sound region but is not shown because acrolein's primary health impact is respiratory irritation (not cancer). Acrolein is emitted primarily from mobile sources, wood burning and other combustion.

Potential Air Toxics Cancer Risk* in the Puget Sound Region

EPA's 2002 NATA, by Census Tract



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The Agency, along with local, regional, and national partners, has acted to reduce air toxics emissions since EPA gathered the 2002 NATA information.

- Through the agency's **Diesel Solutions program**, launched in 2001, we reduce diesel particulate matter emissions with partners by retrofitting vehicles with pollution control equipment, using cleaner fuels and promoting reduced idling. These efforts include the Washington School Bus Program, enacted and funded by the Washington State Legislature in 2003. Through this program, the agency has retrofit over 2,500 buses, reducing diesel particulate exposures to children, an especially vulnerable population. In addition, Puget Sound Clean Air Agency has partnered with transit agencies, public works departments, garbage haulers, as well as with area ports and other public and private partners to retrofit engines, switch to cleaner fuels and introduce cleaner technologies on over 1,600 vehicles. More info is available online at: www.dieselsolutions.org.

  Diesel Solutions.org
  Cleaner air for tomorrow, today

- The **Puget Sound Maritime Air Forum**, consisting of the Puget Sound Clean Air Agency and several other partners including the Ports of Seattle, Tacoma and Vancouver, developed the Northwest Clean Air Strategy. The Strategy outlines voluntary short-term and long-term measures that the ports will take over the next several years to voluntarily reduce air emissions. Diesel exhaust is one of the main pollutants targeted for emission reduction. The Ports of Seattle, Tacoma, and Vancouver adopted the strategy in December 2007. tinyurl.com/c6mxpk

  MARITIMEAIRFORUM.ORG
  Puget Sound Maritime Air Forum

- The agency works with the **hearth products industry and local communities** to reduce air pollution from wood burning. Through woodstove replacement programs funded largely through the Washington State Legislature, we have helped hundreds of homeowners to replace their old, polluting woodstove with a cleaner heat source. tinyurl.com/cw9sx4

  Northwest HPBA
  Hearth, Patio & Barbecue Association

- The agency works with **large and small industrial sources**, through compliance and voluntary actions, to reduce air toxics emitted from manufacturing. www.pscleanair.org/regulated/businesses.
- In 2005, the Washington Legislature adopted the **California Clean Car Standards**. This made Washington the ninth state to adopt strong state standards for air toxics and smog forming pollution. These standards will reduce mobile source air toxics emissions. Washington and at least 17 other states now await EPA's reconsideration of California's requested waiver to set tougher limits on tailpipe emissions. tinyurl.com/cg2sde ; tinyurl.com/cxjaue
- In 2006, the agency partnered with other **West Coast partners** to advocate for a strengthened mobile source air toxics rule. The result was a rule that will substantially lower the content of benzene – a harmful air toxic – in our gasoline. www.epa.gov/otaq/toxics.htm#mobile.
- Additional national **air toxics projects** are described at EPA's air toxics website. www.epa.gov/ttn/atw/allabout.html

You, too, can reduce air toxics emissions.

Small steps cumulatively make a difference. To see what you can do, visit www.pscleanair.org/actions.

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Related Resources

2003 Puget Sound Air Toxics Evaluation:

www.pscleanair.org/news/library/reports/psate_final.pdf.

Northwest Ports Clean Air Strategy:

www.maritimeairforum.org/news/NW_Ports_Clean-AirStrategy_Final-01_22_2008.pdf.

Diesel Solutions:

www.dieselsolutions.org

Contact information

Kathy Himes
Team Lead
Toxic and Criteria Pollutants
206.689.4095
kathyh@pscleanair.org

Puget Sound Clean Air Agency
206.343.8800 | 800.552.3565
Fax 206.343.7522
1904 3rd Ave - Suite 105
Seattle, WA 98101
www.pscleanair.org

[i] Regional results of the 1999 NATA are available here: http://www.pscleanair.org/airq/basics/NATA%20Overview%202006%20Feb%20Release.pdf.
[ii] Results shown here are risk estimates directly taken from the 2002 NATA, with two local calculations for diesel particulate matter and formaldehyde. Risks for these two air toxics were estimated using the HAPEM modeling concentrations from the 2002 NATA and the California and EPA IRIS unit risk estimates, respectively. Diesel: Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. California Environmental Protection Agency, June 1998. http://www.arb.ca.gov/regact/diesltac/diesltac.htm. Formaldehyde: EPA Integrated Risk Information System http://www.epa.gov/iris/subst/0419.htm.
[iii] Environmental Protection Agency. About Air toxics, Health, and Ecological Effects. http://www.epa.gov/air/toxicair/newtoxics.html.
[iv] Environmental Protection Agency. Health and Environmental Effects of Particulate Matter. http://www.epa.gov/ttn/oarpg/naaqsfin/pmhealth.html.
[v] California Environmental Protection Agency. Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution. January 2004. http://www.arb.ca.gov/research/health/fs/PM-03fs.pdf.
[vi] California Environmental Protection Agency and the American Lung Association of California. Health Effects of Diesel Exhaust. April 2002. http://www.oehha.ca.gov/public_info/facts/pdf/diesel4-02.pdf.
[vii] Washington State Department of Ecology. Concerns about Adverse Health Effects of Diesel Engine Emissions. December 2008. http://www.ecy.wa.gov/pubs/0802032.pdf.
[viii] 2003 Puget Sound Air Toxics Evaluation: www.pscleanair.org/news/library/reports/psate_final.pdf