National Air Toxics Assessment (NATA)

The National Air Toxics Assessment (NATA) is an EPA study of toxic air pollutants or air toxics. NATA's purpose is to estimate health risks from exposure to air toxics. This focus sheet explains NATA results in Washington, based on 2005 data.

What are air toxics?

"Air toxics" are hundreds of air pollutants that can seriously harm people who are exposed to them at high enough levels. Examples of air toxics include:

- benzene, which is found in gasoline and emitted when different fuels are burned;
- perchlorethlyene, which is emitted from some dry cleaning facilities; and
- methylene chloride, which is used as a solvent and paint stripper.

How NATA works

EPA uses information about air toxic emissions and weather to estimate the amount of air toxics in the outdoor (ambient) air. EPA then estimates the health risks of these amounts.

EPA conducted four NATAs for each U.S. census tract, county, and state. These four assessments were based on 1996, 1999, 2002, and 2005 emission data. EPA released the results of the 2005 NATA in March 2011.

Washington's results

Cancer Risk

The map of Washington (next page) shows the estimated cancer risk from air toxics in different geographic areas of the state. Risks shown in this focus sheet are higher than those reported by EPA. This is because EPA does not currently estimate cancer risk from diesel exhaust. Ecology adjusted EPA's NATA results to account for diesel exhaust risks.

In general, cancer risk is higher in densely populated areas of the state. Port areas of Seattle and Tacoma are the highest risk locations. **It is important to note that the cancer risks shown are only estimates. These estimates do not predict cancers.** Ecology uses them only to help set priorities and focus air toxics reduction work.

WHY IT MATTERS

Air toxics can cause serious health effects at high enough levels. Ecology and local clean air agencies use NATA as a tool to determine which air toxics are of greatest concern in different areas of Washington. This information helps air quality agencies focus their work on the sources with emissions contributing the most to health risk.

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Special accommodations:
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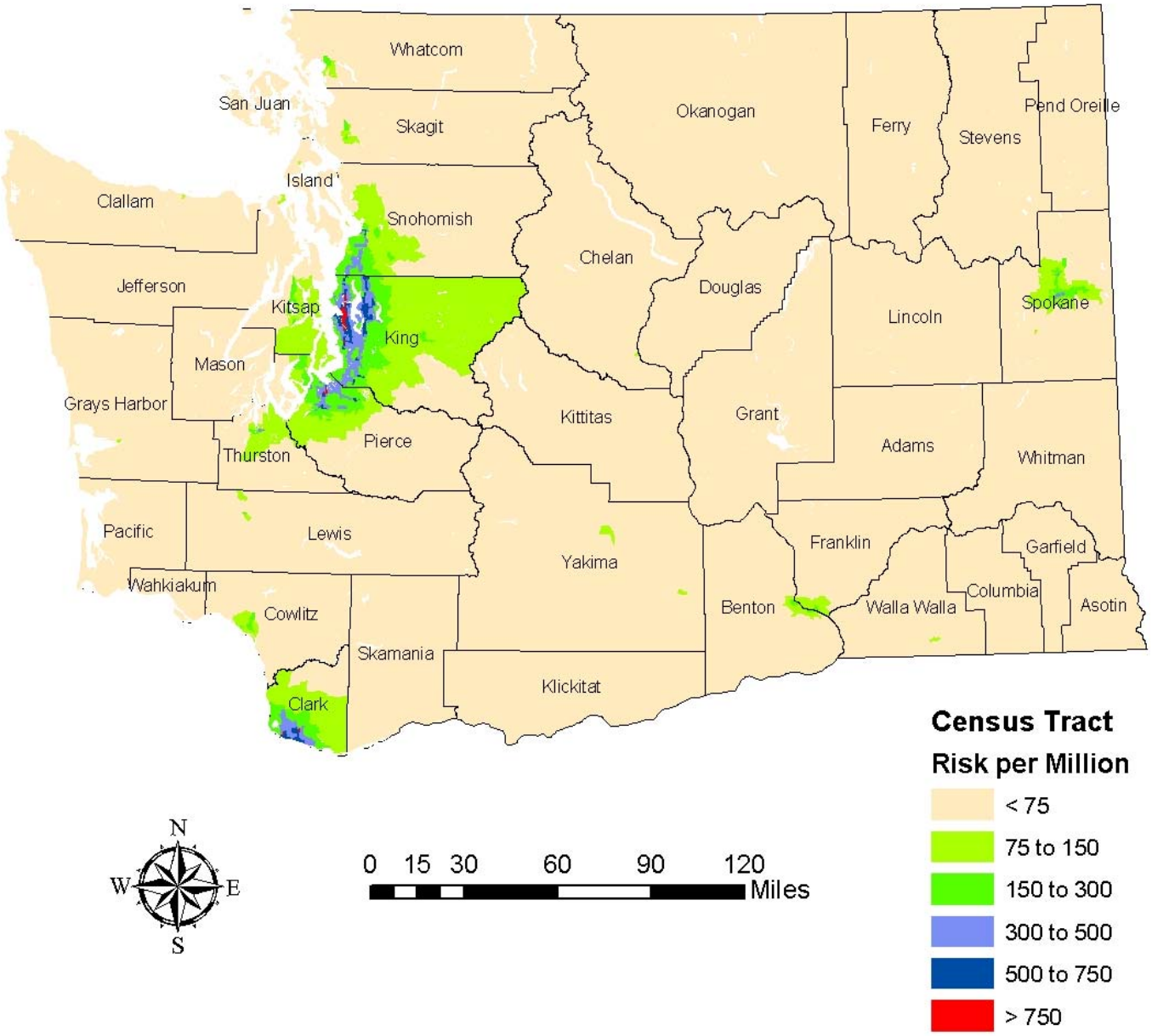
Estimated Cancer Risk from Air Toxic Exposures (Includes Diesel Exhaust) – NATA 2005

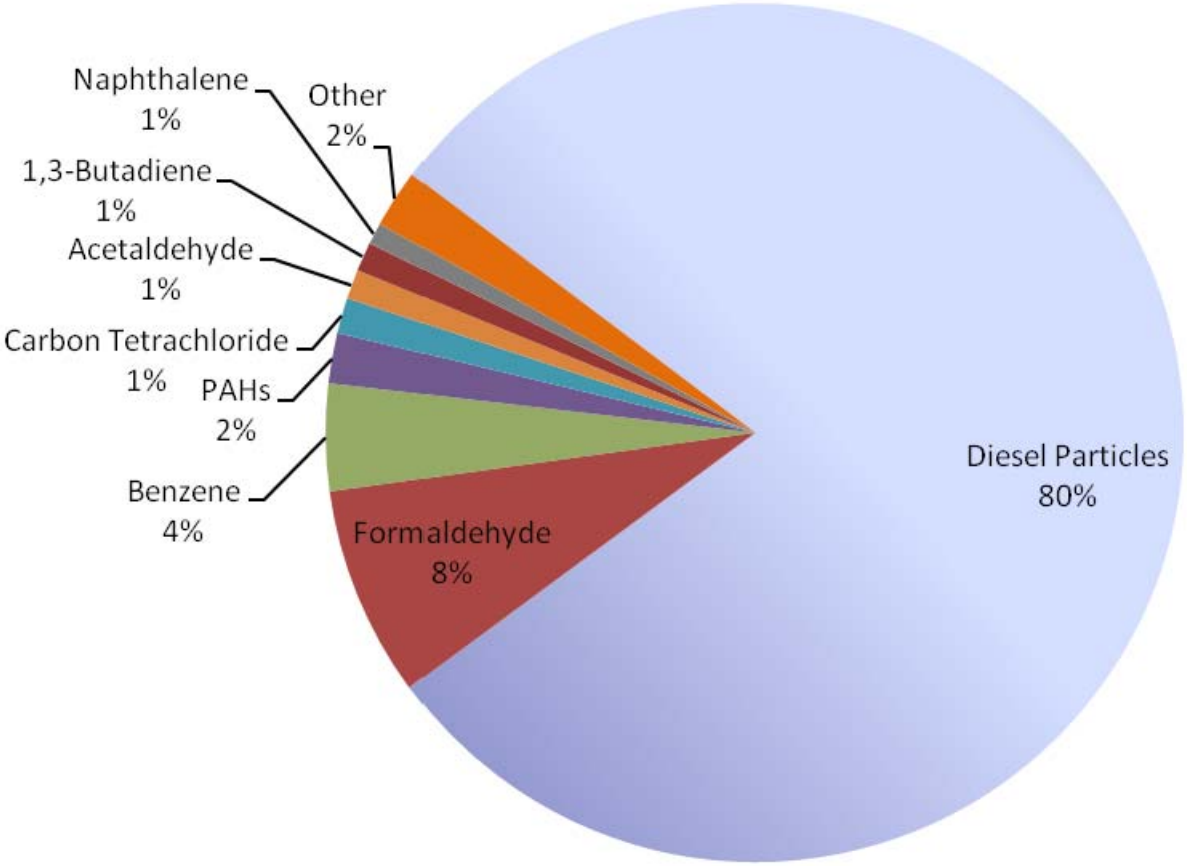


- "Risk per million" means the number of excess cancers that might result if one million people were continuously exposed over a 70-year lifetime. "Excess cancers" are the number of cancers that might result in addition to those normally expected in an unexposed population.

- Risks shown in this map are higher than those reported by EPA. This is because EPA does not currently estimate cancer risk from diesel exhaust. Ecology adjusted EPA's NATA results to account for diesel exhaust risks.

Key Air Toxics in Washington

The chart below shows the amount of cancer risk that different air toxics cause.

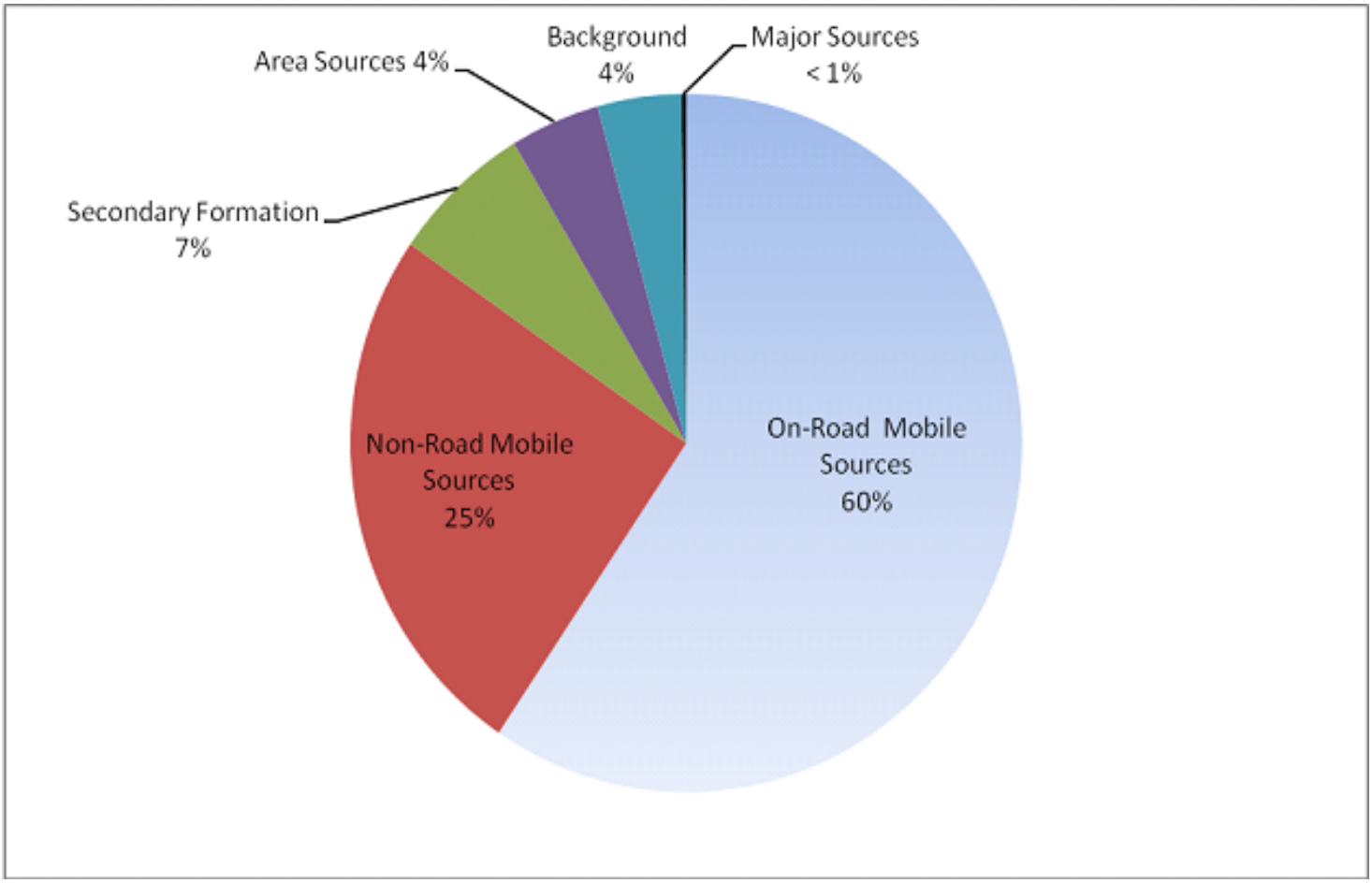


- Diesel particles cause more than 75 percent of the total cancer risk from air toxics. Formaldehyde and benzene make up a large portion of the remaining risk. Polycyclic aromatic hydrocarbons (PAHs) make up about 2 percent of the statewide risk. Banned for most uses in the 1970's, carbon tetrachloride still contributes about 1 percent of the statewide air toxics risk.

- Most diesel particles, formaldehyde, and benzene emissions come from vehicle emissions. A series of complex chemical reactions in the air also form formaldehyde and acetaldehyde. Wood stoves and outdoor burning are the largest sources of PAHs.

Key Air Toxic Sources in Washington

The chart below shows the amount of health risk that different air toxics sources contribute. According to NATA, mobile sources create the most health risk. Mobile sources include both on-road sources (such as cars and trucks) and non-road sources (such as trains, planes, and ships). Industrial sources make up only a small percentage of risk overall; however, industrial sources may have more impact in certain neighborhoods than NATA can determine. Even if this were the case, mobile sources are still the main contributor to health risk.



Key

Non-Road Mobile Sources – Trains, planes, ships, construction equipment

On-Road Mobile Sources – Cars and trucks

Secondary Formation – Pollutants formed in the atmosphere from a series of chemical reactions

Area Sources – Smaller businesses such as gas stations or dry cleaners, outdoor burning, woodstoves and fireplaces

Background - Estimated level of air pollutants from natural and distant sources

Major Sources -Large factories such as pulp mills and refineries

Non-cancer health effects

According to NATA, not many air toxics cause non-cancer health effects. However, Ecology is still concerned about non-cancer health effects from air pollution, such as:

- decreased lung function,
- headaches,
- heart problems, and
- suppressed immune system.

According to NATA estimates, acrolein is the only air toxic of concern in Washington for non-cancer health effects. It can irritate the eyes and respiratory tract (the parts of your body you use to breathe, from your nose to your lungs). Acrolein is a chemical produced during combustion. Vehicle exhaust and wood burning are the most common sources of acrolein.

Reducing Exposure to Air Toxics

Ecology uses information from NATA and other sources to determine the best ways to reduce exposure to air toxics. Based on the information we have, we are mainly focusing our efforts on diesel exhaust and burning, both indoor and outdoor. We also continue to work on reducing pollution from gasoline-powered motor vehicles and industrial sources.

Diesel exhaust reduction efforts

Retrofits and cleaner buses

Ecology's strategy for reducing diesel exhaust focuses on older existing diesel engines (generally pre-2007 model year engines). Although new diesel engines burn much cleaner, older existing engines have a long life span and can continue to harm public health for many years unless we clean them up, too.

Ecology and the state's local clean air agencies have provided funding to retrofit over 6,000 school buses with cleaner technology. Ecology has also provided funding to retrofit over 1,000 public fleet vehicles owned by cities, counties, ports, and transit authorities. The retrofits, combined with ultra-low sulfur diesel fuel, reduce emissions on individual vehicles by 40 to 90 percent. Ecology is also helping some school districts replace their aging school buses with new, clean-running buses.

Ecology has begun to focus on privately owned heavy-duty vehicles and equipment in densely populated areas, such as near urban seaports and in urban neighborhoods. This involves providing funding to retrofit cargo handling equipment, locomotives, and garbage trucks. The private sector makes up 90 percent of the diesel vehicles and equipment in Washington. Reducing the harm from these vehicles will require much more work.

Stricter emission standards

In addition to efforts by your state and local governments, EPA is requiring much stricter diesel exhaust emission standards for new on-road trucks, off- road equipment, locomotives, and some marine vessels. Trucks must meet these standards starting with 2007 models. EPA will phase in these requirements over the next several years for the other categories.

Cleaner fuels

EPA has required the use of Ultra-Low Sulfur Diesel fuel (ULSD) since 2006 for on-road trucks. EPA will begin phasing in this requirement later for other types of diesel equipment. Lowering the sulfur content in the fuel reduces fine particles and other toxic emissions, even without any additional pollution controls. Using ULSD also makes emission-reducing retrofit technologies work better.
For a more complete list of projects that reduce diesel exhaust, please see the table of major projects at: http://www.ecy.wa.gov/programs/air/cars/diesel_exhaust_information.htm

Indoor and outdoor burning reduction efforts

Indoor and outdoor burning are the main sources of smoke in Washington. People burn to heat their homes, clear brush from land and forests, and eliminate crop residue from fields and orchards. Ecology and local air quality agencies call burn bans when smoke and other pollutants reach unhealthy levels in certain areas.

Burning for home heat

Washington has some of the nation's strictest emission standards for wood stoves sold in the state. These standards are stricter than EPA's standards. Ecology has also contributed more than $2 million to programs that change out the oldest, most polluting wood stoves with cleaner burning options in communities where smoke poses a high health risk. Ecology and local air quality agencies are working together on a campaign to educate people about how to reduce the amount of smoke from their wood stoves and fireplaces.

Burning vegetation

Outdoor burning is banned in all urban growth areas in Washington. In areas where burning is allowed, it is only legal to burn natural vegetation. Ecology and local air quality agencies encourage people to consider alternatives to burning such as chipping, composting, and mulching.

Garbage burning and burn barrels are illegal everywhere in Washington, and has been for many years.

Motor vehicles

Clean car standards

Over the past several years, cleaner fuels and better vehicle design have reduced emissions of air toxics from automobiles. This has helped reduce some air toxics levels in air. For example, benzene levels at Beacon Hill in Seattle have dropped since air monitoring began in 2000.

New vehicles in Washington now must have even stricter pollution controls. Washington is one of several states that have adopted California clean car standards. These standards apply to 2009 and later model year passenger cars, light-duty trucks, and medium-duty passenger vehicles (such as most vans and SUVs). Clean car standards reduce emissions of air toxics such as benzene, formaldehyde, and the pollutants that form ozone (such as volatile organic compounds and nitrogen oxides).

Industrial/commercial facilities

Pollution control technologies
EPA requires pollution control technology to reduce air toxics emissions from industry. These standards usually apply to larger industrial sources, but EPA is also developing similar rules to reduce air toxics from smaller commercial sources.

Ecology and local air quality agencies ensure that facilities in Washington comply with the federal and state Clean Air Acts and rules, and the conditions of their air permit. New or modified sources must use the best available control technology (BACT). Sources must also show that their projects will not result in unacceptable health risks.

For more Information

- For more information about NATA and other air toxics issues, please contact:

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- Learn more about efforts to reduce diesel emissions in Washington: http://www.ecy.wa.gov/programs/air/cars/diesel_exhaust_information.htm
- For more information about Washington's efforts to reduce smoke from wood stoves and outdoor burning:

  http://www.ecy.wa.gov/programs/air/indoor_woodsmoke/wood_smoke_page.htm

  http://www.ecy.wa.gov/programs/air/outdoor_woodsmoke/Burn_Ban.htm

  http://www.ecy.wa.gov/programs/air/aginfo/agricultural_homepage.htm

- Find out more about clean cars: http://www.ecy.wa.gov/programs/air/cleancars.htm

- Learn more about controlling emission from new sources of air toxics at http://www.ecy.wa.gov/biblio/wac173460.html