2011 Puget Sound Maritime Air Emissions Inventory



Air Emissions Update

The inventory was funded by the Puget Sound Maritime Air Forum, a voluntary association of private and public maritime organizations, ports, air agencies, environmental and public health advocacy groups, and other parties with operational or regulatory responsibilities related to the maritime industry. The Forum is committed to accurately quantifying and voluntarily reducing air emissions associated with maritime related freight, vehicles and passengers in the Puget Sound airshed.



Members of the Puget Sound Maritime Air Forum

American Lung Association of the Mountain Pacific • BNSF Railway Company • United States Environmental Protection Agency Northwest Clean Air Agency • Northwest and Canada Cruise Ship Association • Pacific Merchant Shipping Association Port of Anacortes • Port of Everett • Port of Olympia • Port of Seattle • Port of Tacoma • Puget Sound Clean Air Agency Washington State Department of Ecology • Washington State Department of Transportation-Ferries • Western States Petroleum Association

► For more details: www.pugetsoundmaritimeairforum.org

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COCarbon Monoxide, an EPA pollutant

CO₂e.....Carbon dioxide equivalents, a greenhouse gas

DPM.....Diesel Particulate Matter, a particulate component of combustion that is directly emitted from diesel engines.

NOx......Oxides of Nitrogen, an EPA pollutant

SO₂......Sulfur Dioxide, an EPA pollutant

VOCVolatile Organic Compound, a very broad term used to describe the entire set of vapor-phase atmospheric organic chemicals

Emission Sources

OGVOcean-Going Vessel that can operate in the open oceanic waters - cargo and cruise ships, tankers

CHV......Commercial harbor vessels, government (non-military) vessels

CHECargo-Handing Equipment: cranes, straddle carriers, yard trucks, forklifts

Trucks...On-road heavy duty trucks that move in and out of terminals

Locomotives......Train operations

Ocean Going Vessel

Pollutant	CY 2005-2011			
Tollutalit	%	tons/yr		
DPM	-16%	-131		
SO ₂	-9%	-1,215		
CO ₂ e	-9%	-74,751		

Commercial Harbor Vessel

Dollutant	CY 2005-2011			
Pollutant	%	tons/yr		
DPM	+7%	+18		
SO ₂	-99%	-375		
CO ₂ e	+7%	+30,989		

Locomotives

Pollutant	CY 2005-2011			
ronulani	%	tons/yr		
DPM	-24%	-14		
SO ₂	-94%	-158		
CO ₂ e	-24%	-23,206		

Cargo-Handling Equipment

Pollutant	CY 2005-2011			
Tollutalit	%	tons/yr		
DPM	-40%	-22		
SO ₂	-99%	-61		
CO ₂ e	-19%	-15,306		

Trucks

Pollutant	CY 2005-2011			
Tollutulit	%	tons/yr		
DPM	-52%	-59		
SO ₂	-96%	-83		
CO ₂ e	-3%	-12,775		



The 2011 Puget Sound Maritime Air Emissions Inventory shows significant reductions in pollutant emissions from the Port of Tacoma.

Emission Changes 2005 - 2011









■2005

■2011

35% 18

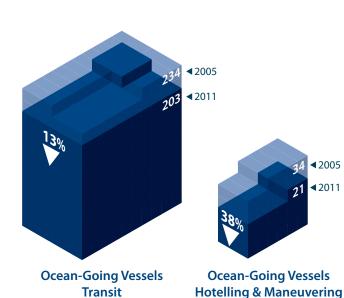


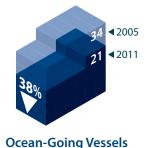


Pollutant	OGV Hotelling	OGV Transit	CHV	Locomotives	CHE	Trucks	Overall	Normalized*
СО	-41%	-15%	+17%	-37%	-45%	-39%	-30%	-18%
CO ₂ e	-36%	-8%	+11%	-35%	-42%	-16%	-18%	-3%
DPM	-38%	-13%	-3%	-35%	-57%	-63%	-26%	-12%
N0x	-42%	-20%	4%	-50%	-44%	-32%	-28%	-15%
SO ₂	-39%	-6%	-99%	-95%	-96%	-97%	-16%	-1%
VOC	-41%	-15%	+64%	-36%	-51%	-20%	-23%	-9%

*per 10,000 tonnes of cargo





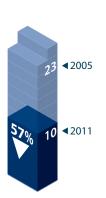




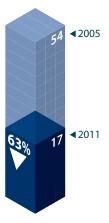


Harbor Vessels









Trucks