Source Category: Commercial Marine Vessels
SCC Code: 2280002100 Marine Vessels, Commercial – Diesel – port emissions
2280002200 Marine Vessels, Commercial – Diesel – underway emissions
2280003100 Marine Vessels, Commercial – Residual – port emissions 2280002010 Commercial Marine Vessels - Diesel
2280003200 Marine Vessels, Commercial – Residual – underway emissions
Pollutants of Concern: PM10, PM2.5, VOC, NOx, CO, SOx, 22 HAPs

How is the PM National Emission Inventory developed for this category?
Current Methodology (see also the link to the NEI Methodology Description):

Diesel powered vessels:
• National emissions/activity forward/back cast to appropriate year based on EPA background document for diesel CMV.
• National emissions split into port and underway components. 75% assumed to be port emissions, 25% assumed to be underway emissions.
• PM10 assumed equal to PM from background document and PM2.5 assumed equal to 0.92*PM10

Residual or steam-powered vessels:
• National activity data used is national residual oil sales of vessel-bunkered fuel.
• National emissions split into port and underway components. 75% assumed to be underway emissions, 25% assumed to be port emissions
• PM emission factors for steam-powered vessels:
  PM10: 25.8 lbs/10^3 gallons
  PM2.5: 23.7 lbs/10^3 gallons (0.92 * PM10)

County allocation:
• County allocation of national port diesel and steam-powered engine emissions distributed to the top 150 ports in US based on the amount of freight handled.
• County underway emissions were allocated by applying county-specific waterway activity factors to the national emissions. Using GIS software, county borders were overlaid with U.S. waterway network to determine waterway length in each county. Each county was assigned a weighting factor by summing the product of
the waterway length (miles) and the waterway-cargo traffic (tons) for each segment of the waterway, and then dividing the county portion by the national total.

**Current Variables/Assumptions Used:**

- National fuel use data used for all vessel types.
- Assumptions for in-port and underway fractions for different types of vessels.
- National value for ratio of PM2.5/PM10.
- County port allocation to 150 largest ports.

**Uncertainties / Shortcomings of Current Methods:**

- National activity data used rather than State/local/tribal.
- National estimate for mix of operations used rather than location specific value.

**How can State, Local, and Tribal agencies improve upon this methodology?**

- Review emission estimates to ensure that they are representative.
- Develop county-level allocation based on reasonable data (GIS-based ton miles and waterway mileage data). [State Department of Transportation, Port Authority]
- Obtain more representative activity estimates at the local or State-level including data on fuel consumption, categories of vessels, number of vessels in each category, and the number of hours at each time-in-mode (cruising, reduced speed, maneuvering, and hotelling). [State Department of Transportation, Port Authority]
- Allocate port emissions within counties (to ports other than 150 largest).

**Where can I find Additional Information and Guidance?**

**EPA Contact:**

Laurel M Driver  
Emission Factor and Inventory Group  
U.S. Environmental Protection Agency  
D205-01  
USEPA Mailroom  
Research Triangle Park, NC 27711  
Telephone: 919 541-2859  
E-mail: driver.laurel@epa.gov

Additional Information on Emissions from Commercial Marine Sources: [http://www.epa.gov/otaq/marine.htm](http://www.epa.gov/otaq/marine.htm)
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