Air Quality Monitoring of Commercial Passenger Vessels Operating In Alaska Waters

Opacity Monitoring

All marine vessels including vessels covered under the State of Alaska's Department of Environmental Conservation (ADEC) Commercial Passenger Vessel Environmental Compliance (CPVEC) Program must comply with Alaska's s marine vessel emission standard (listed in 18 ACC 50.070). The standard requires visible emissions (opacity) from vessel smoke stacks be no greater than 20% opacity. There are limited exemptions while maneuvering to/from anchor or port.

The ADEC staff and contractors monitor the visible emissions (opacity) from vessel smoke stacks each season and performed over 260 opacity readings during 2004. DEC staff (and contractors) are trained and certified to measure the level of visible emissions (opacity) from vessel stacks according to EPA-approved protocols (Method 9).

ADEC issued one Notice of Violation (NOV) in 2004. Past enforcements were two NOVs in 2003, one NOV in 2002, 11 NOVs in 2001, and 15 NOVs in 2000. The number of violations decreased in the past five years even as the State increased visible emissions monitoring.

In addition to ADEC staff monitoring, an independent contractor does opacity readings on large vessels in Southeast Alaska every week during the cruise ship season and immediately reports to ADEC any reading that may be a potential violation.

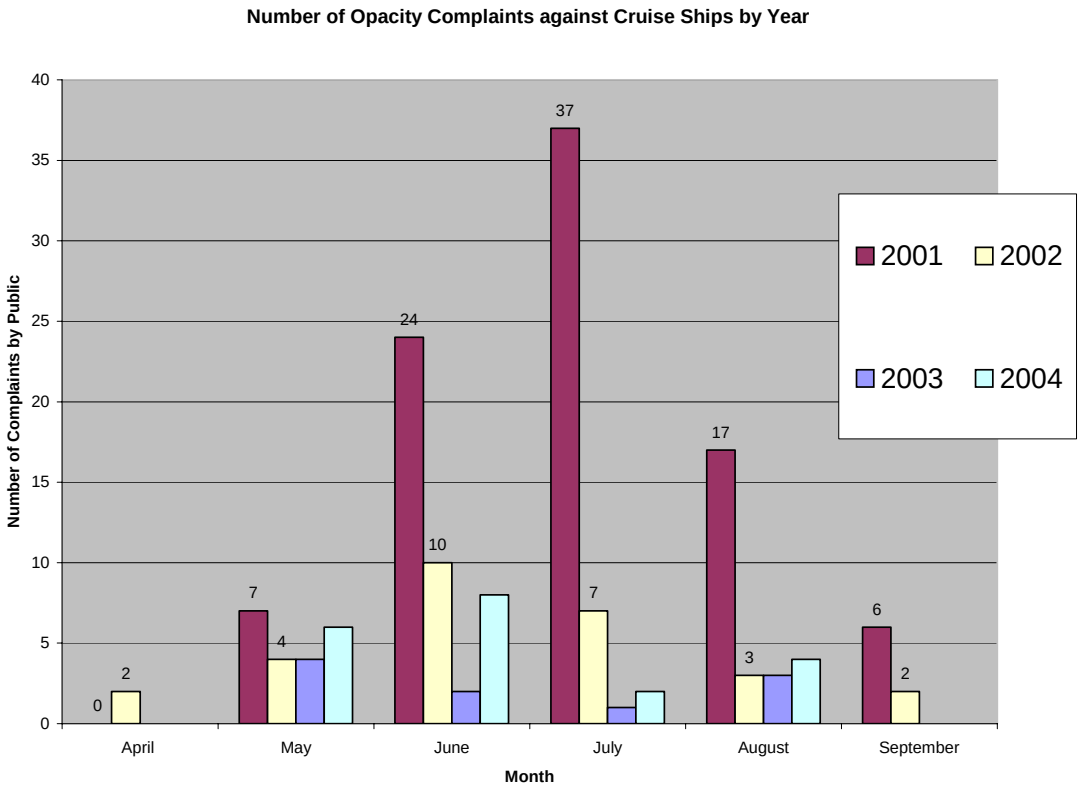
From 2000 through 2004, the contractor performed a minimum of 220 readings in Juneau per season and 30 readings per year in other southeast ports (Ketchikan, Sitka, Haines, or Skagway)

Since 5% of the ships visit Southcentral Alaska ports, DEC hired another contractor in 2002 -2004 to conduct opacity readings on small and large vessels in that area of coastal Alaska.

DEC also joined forces in 2002 with the U.S. Forest Service to enable DEC to enforce opacity readings done by forest rangers in Tracy Arm, a popular fiord 30 miles south of Juneau.

Complaints by the Public

Over the past several years, the ADEC received public complaints about cruise ship smokestack visible emissions. Staff responds to these public complaints by doing opacity readings in accordance with EPA approved protocols (Method 9). The number of cruise ship visible emissions complaints received from the public have declined since 2001 (Figure 1).



Ambient Air Monitoring in Juneau

Juneau receives the highest volume of cruise ship traffic of any Alaska port. Due to concerns about the air quality in downtown Juneau, an ADEC contractor set up ambient air monitors during 2000 and 2001 to measure the level of selected air pollutants that can be harmful to public health and the environment (sulfur dioxide, nitrogen dioxide, and microscopic particles-PM 2.5). A committee of ADEC employees, citizens, industry representatives, and U.S. Coast Guard employees selected the air monitor locations. The contractor installed three downtown ambient air monitoring stations in 2000 (Baranof Hotel, Capital Park, and Marine Way) and three monitoring stations during 2001 (Wickersham House, Highlands, and Marine Way).

Data from these monitors indicate that concentrations of measured air pollutants were appreciably below the State and national air quality standards in both 2000 and 2001. Since these standards are developed to protect health and welfare, ADEC concluded that current air pollutant concentrations in Juneau would not result in adverse effects on health and welfare.

Because ambient pollutant levels were low during 2000 and 2001, ADEC decided not to continue the ambient air monitoring during the 2002 through 2004 season. However, ADEC is looking into haze concerns expressed by local residents which may include additional ambient monitoring in 2005.