

# **NOACA Air Quality Public Advisory Task Force**

## **Area Source Work Group Second Preliminary Report October 27, 2005**

### **Introduction**

The NOACA Air Quality Public Advisory Task Force established Work Groups for Mobile Sources, Point Sources, Area Sources, Long-Term Planning Strategies, and a Public Health Forum on air pollution. Together, these Work Groups will assist the Task Force in creating recommendations to the Ohio Environmental Protection Agency (OEPA) for inclusion in the State Implementation Plans (SIPs) for both ozone and fine particulates (PM<sub>2.5</sub>), thus helping Northeast Ohio to come into attainment for these criteria air pollutants.

The Task Force and the Work Groups together will enable NOACA to assist the region to plan for future growth, to protect the public health, and to comply with federal law.

### **Meetings**

The Area Source Work Group met on September 19, 2005, and on October 11, 2005, each time from 1:30 – 4:00 PM at NOACA's offices.

### **Scope of Work**

The Area Source Work Group is exploring potential emission reduction strategies for sources of air pollution associated with airplanes, airports, their ground support vehicles and their passenger traffic, railroads, their traffic, their switchyards and their loading equipment, commercial marine vessels, their truck traffic and their loading equipment, plus recreational boats, jet skis, snowmobiles, and other recreational vehicles. Lawnmowers and landscaping equipment will also be studied.

Sources of air pollution that belong to small industrial sources, although commonly referred to as "area sources" will be covered by the Point Source Work Group, as will miscellaneous sources of air pollution resulting from residences and consumer activity.

### **Emissions Inventory - Shipping**

The Work Group reviewed the 2002 Ohio EPA Emissions Inventory as it related to Marine Vessels. Information had been provided by US EPA Region 5, which revealed the process by which US EPA estimated commercial shipping air emissions. The Work Group learned that detailed emissions inventories for nine ports (including Cleveland) were composed using 1996 data. These nine ports represented different types of ports (e.g., Atlantic, Great Lakes). Each port in the country was designated as one of these typical port types. The emissions for each port

were then determined by scaling the appropriate "typical" port's emissions based on activity. For example, if a port had half the activity of the "typical" port, it had half the emissions. The national total of ports' emissions was calculated as the sum of the emissions at each port. The emissions at the largest 150 ports in the nation were determined by multiplying the national total port emissions by the percentage of national port traffic at each port. The 1996 numbers were adjusted to reflect activity in later years. Vessel age and internationally negotiated NOx standards were among the factors included in these calculations.

Therefore, although a detailed emissions inventory was developed for Cleveland, the results of this inventory did **not** exactly match the National Emissions Inventory (NEI) data for that port. The Cleveland data may have been aggregated with data from other ports and adjusted to reflect changes in engine standards and age with time in addition to increased activity at ports.

The Work Group noted that the average age of international ships in 2002 was 15 years, but the average age in 2005 was only 8 years. Improvements in the form of new engine design had been made. However, the base data for the NEI were from 1996 and were projected forward based on several factors including internationally negotiated NOx limits. All Category 3 vessels constructed after 2000 were assumed to comply with the international limits. The turnover rate for vessels of all nationalities was assumed to be equal to the American turnover rate.

The Lake Carriers' Association noted that the Great Lakes ships (lakers), which make up 900 port calls in Cleveland (vs. the 100 "salties" or international ships) have basic railroad train engines installed (EMD 645's) and can burn only #2 diesel fuel. These engines are **not** Category 3 engines, although Category 3 engines appeared to be the basis for the emissions inventory work. The Work Group requested that USEPA provide information and data on railroad engine emissions and the inventory used in Cleveland for comparison. The Work Group would like USEPA to state whether emissions were over-reported for Northeast Ohio's marine vessels because of the use of the Category 3 assumption for all commercial marine engines in Cleveland.

The Work Group concluded that the emissions data reported for marine vessels appears high relative to other sources. Further study will be performed by the Cleveland-Cuyahoga County Port Authority and the Lake Carriers' Association in conjunction with USEPA.

### **Emission Reduction Strategies - Shipping**

Staff reported on the Port of Ashtabula, which has significant shipping traffic but little opportunity for improvements to loading equipment. The loading equipment does not include forklifts, but instead uses equipment that deposits cargo directly into rail cars.

The Cleveland-Cuyahoga County Port Authority, however, reported retrofitting 26 diesel forklifts with particulate matter filters manufactured by Caterpillar. The Port also intends to investigate retrofitting its four diesel cranes.

## **Emissions Inventory and Reduction Strategies – Airplanes and Airports**

The Work Group noted that the emissions associated with jet aircraft were probably correct in that jet fuel burns more efficiently than other fuels. However, there are 26 airfields of various sizes in the Northeast Ohio nonattainment area. Of those, only 2 were accounted for in the 2002 emissions inventory provided by Ohio EPA. The remaining 24 small airfields and their aircraft were not included.

Staff noted that there were significant numbers of take-offs and landings at the other 24 airfields. However, many of the smaller aircraft burn AvGas, which is 100-octane gasoline approved by the Federal Aviation Administration. It was unlikely that such aircraft could burn the alternative summertime fuel (low-RVP 7.8 psi) that would be recommended for cars by the Mobile Source Work Group.

The Work Group determined that there might be some benefit to adopting the Florida approach of establishing a fine for dumping gasoline on the ground at an airfield. Because a 2-ounce sample must be taken from the tank before each flight, some pilots may be spilling it onto the ground after examining it for water. Gasoline collection containers would have to be provided.

At Cleveland-Hopkins Airport, a very large number of ground support vehicles were reported. Some of those run on gasoline and some on diesel. There could be as many as 300 that are municipally owned that would make possible candidates for substitution with electric vehicles, if a funding source such as CMAQ dollars were identified.

The topic of idling reductions at the large airports was also discussed. Anti-idling practices appeared to have some benefit for ground support vehicles. Further study was needed on whether jets were actually using the “single-engine taxi” that was the recommended practice.

Staff and Ohio EPA reported on practices at the Akron-Canton Regional Airport, where cars performing pick-up and drop-off of passengers are allowed an area of free parking where the cars do not idle.

## **Emission Reduction Strategies – Railroads**

The Work Group has not yet had a response from Norfolk Southern or CSX as to the number of switching yards in the nonattainment area or as to the types of loading equipment used at railroads. That data will be pursued.

The railroad grade separation projects in NOACA’s TIP are being quantified for emissions reduction purposes by staff.

## **Emission Reduction Strategies – Recreational Boating**

The Work Group requested that Ohio EPA provide the breakdown for “non-road” sources of air pollution, including recreational boats and jet skis.

Information was provided on “Clean Marina” programs fostered by the State of Ohio to encourage good fueling practices.

A conflict in information appeared during the discussion of whether “Stage II Vapor Recovery Nozzles” were required on gasoline pumps at marinas. Further investigation is needed. If none are currently required, adding such controls would create an air pollution benefit.

As to fuels, it was reported that Michigan will require recreational boats and jet skis to use the alternative summertime gasoline (for Detroit, low-RVP 7.0 psi gasoline) that cars will use, beginning in the summer of 2006. The Work Group asked for data regarding an alternative gasoline for boats in the Northeast Ohio nonattainment area.

### **Emission Reduction Strategies – Trees and Vegetation**

The Work Group considered the various reports on trees and their biogenic contribution to VOC emissions. It was reported that planting more trees often reduces ozone formation in urban areas by reducing the total heat of the city. Ozone formation in rural areas was increased.

Staff agreed to provide a list of the species of trees that foster ozone reduction rather than ozone formation, to see whether a benefit could be obtained by planting certain varieties of trees as part of municipal landscaping.

### **Emissions Reduction Strategies – Portable Fuel Containers**

The Work Group learned that the Ohio EPA has already begun a rulemaking to require new gas cans to conform to standards set by the California Air Resources Board (CARB), beginning in 2007. Questions were raised as to cost and as to consumer education. However, it was agreed that the gas cans would create an air pollution benefit once a large number of old cans were retired.

### **Next Steps**

The Area Source Work Group will continue to study the possible controls raised at the first two meetings and will continue to study and refine the emissions inventory data.

The Work Group will also study other topics including lawnmowers and landscaping equipment, plus agriculture including megafarms and manure lagoons.

### **Appendices**

October 11, 2005 Meeting Summary