**State Environmental and Public Health Response and Continuing Actions**
**Re: EQ Facility - Apex**
**Oct. 19, 2006**

## AIR QUALITY

### Immediate Response and Initial Monitoring

A seven-member Division of Air Quality Air Toxics team arrived at the Apex site about 1:50 a.m., Friday, Oct. 6. The team began actual air quality testing around 6 a.m. when the HAZMAT teams allowed them to enter the area near the fire to set up the monitoring equipment.

DAQ monitored the air near the site using its mobile lab and other equipment from Friday morning (10/6) through Saturday afternoon (10/7). Using five continuous air monitors, the team tested for a range of air pollutants, including typical combustion products such as nitrogen oxides, sulfur dioxide, carbon monoxide and various air toxics. Some of those air toxics included chlorine, ammonia, phosphine and hydrogen sulfide. Monitoring locations changed during the course of the testing and included a number of locations along N.C. Highway 55, Salem Street and Hughes Street west and northwest of the EQ site. Air toxics staff used meteorological equipment on the mobile air lab to determine wind directions and position monitors downwind from the fire when possible. Sampling locations also were tied to the evacuation efforts, with monitoring used to determine whether it was safe for residents to reoccupy the area.

The air toxics team also collected grab samples at seven locations near the site for more in-depth laboratory analysis. The laboratory analysis tested for a range of air toxics, including 40-60 types of volatile organic compounds, using standard EPA-approved methods. In-depth analysis detected several chemicals in very small concentrations; all of the chemicals tested below levels considered to be a health concern. The chemicals detected included several Freon compounds, carbon disulfide, acetone and benzene; most of the chemicals are commonly found in urban air and can come from a number of different sources.

DAQ did not monitor the air or test for metals (such as mercury) because it did not have the mobile particulate monitoring equipment required for those tests. The Division is in the process of acquiring a mobile particulate monitor that could be used to monitor for metals in the future.

No hazards were detected in the air from the mobile continuous air monitors or grab samples collected during the test period. However, most of the air pollution occurred during the initial explosions and fire when DAQ staff were unable to monitor the air or collect samples. The intense heat from the fire probably carried most of that pollution high into the air, where it could dissipate more broadly at lower concentrations and rain Friday morning helped wash or scrub those pollutants from the air. By late Saturday morning, analysis of samples was complete with no significant contaminants found during testing. Air testing was suspended at that time.

**Ongoing Air Quality monitoring**

Starting Thursday (10/19), the Division of Air Quality plans to begin enlisting volunteers in a plan to take exterior wipe samples from about 30 locations (homes and buildings), working from the fire site outward in the predominant wind direction at the time of the fire. Collection of samples is expected to begin on Friday, Oct. 20. Some of the samples will be taken from locations that were upwind of the EQ facility to provide control samples. Although none of the air quality samples collected so far have detected harmful levels of contaminants, the wipe samples will be used as a screening tool to determine whether deposition is a concern. DAQ expects to send these wipe samples to an area lab for analysis, and hopes to have sample results by the middle of next week.

Under the approved site remediation plan, EQ Services is responsible for monitoring the air at the site during cleanup activities. However, the Division of Air Quality also is setting up two air monitors near the perimeter of the EQ facility (one upwind, and one downwind) to monitor for possible contaminants during the clean-up or remediation of the EQ facility.

DAQ's toxics team activated its mobile monitoring team as soon as it heard reports of an explosion at the site during remediation activities on Wednesday (10/18) afternoon. Air monitoring following the 10/18 incident showed no signs of any toxic materials in the air. Constituents monitored for included as ammonia, carbon monoxide, volatile organic compounds and chlorine.

**WATER QUALITY**

**Immediate Response and Initial Monitoring**

Shortly after being informed of the fire early on the morning of Oct. 6, the N.C. Division of Water Quality had staff standing by at the site to collect information and advise on proper procedures to protect water quality.

On the afternoon of Oct. 6 and on the morning of Oct. 7, DWQ collected water quality samples on Middle Creek at the Sunset Lake Road crossing, downstream of the Environmental Quality facility. Samples were tested for metals (i.e. arsenic, cadmium, chromium, cobalt, copper, iron, lead, mercury, nickel, selenium, zinc), volatile organics, semi-volatile organics and pesticides. DWQ also collected samples to be used in acute toxicity tests; these tests measure the ability of specific aquatic organisms to survive in the water.

Tests for metals, volatiles, semi-volatiles, pesticides, cyanide, oil and grease and acute toxicity were also done for samples collected on Oct. 12 from Middle Creek upstream of the Environmental Quality facility and in a tributary of Middle Creek that is adjacent to and downstream of the facility.

On Oct. 6-9 and Oct. 12, DWQ also tested physical water quality conditions - dissolved oxygen, the percent saturation of oxygen, pH, conductivity, temperature and salinity.

Physical conditions in the water reveal an instant snapshot of water quality; significant contamination would alter one or more of the physical parameters.

**Results from the Water Quality Tests**

- Physical water quality conditions were normal at the Sunset Lake Road crossing, Middle Creek upstream and downstream of the site and at the tributary adjacent to the EQ facility.
- Metals: tests revealed the presence of several metals – aluminum, barium, calcium, copper, iron, potassium, magnesium, manganese, sodium and zinc – both upstream and downstream of the EQ site. These are metals commonly found in North Carolina waterways; none of the levels were above water quality standards.
- Volatiles and semi-volatiles: No volatiles or semi-volatiles were detected either upstream or downstream of the site.
- Pesticides: One pesticide, Tecnazene, was detected at very low levels downstream of the site on Oct. 6 and 7 but was not present in either of the samples, upstream or downstream, collected Oct. 12. Tecnazene is a common fungicide and is used to keep potatoes from sprouting.
- Acute Toxicity: The Division of Water Quality tested for acute toxicity by exposing the aquatic animal Ceriodaphnia to several concentrations of the water sampled and counting how many of the animals died. No Ceriodaphnia died. Results indicate that the ambient water tested would be predicted to have no acute water quality impacts.

**Ongoing Water Quality Monitoring**

The Division of Water Quality will conduct surface water sampling for metals and take physical measurements (dissolved oxygen, pH, conductivity, etc.) on a weekly basis for the next month on the unnamed tributary to Middle Creek adjacent to the Environmental Quality facility and upstream of the site. Should indications from the measurements suggest other impacts, additional analysis will be conducted for volatiles, semi-volatiles, pesticides and herbicides.

In addition, EQ will be required to do appropriate sampling to ensure that water quality is protected as the clean-up of the site continues. This will include regular monitoring by EQ of the condition of berms constructed around the facility and around area storm drains, and additional surface water sampling if there is any off-site runoff.

**DIVISION OF WASTE MANAGEMENT**

The Division of Waste Management is the lead agency overseeing the clean-up and remediation of the EQ facility. DWM staff, with advice and input from the divisions of Water Quality and Air Quality, as well as town of Apex and other local officials, has approved a cleanup plan for on-site waste material, put together by EQ. The main goal of the cleanup plan is to ensure that all hazardous material constituents are removed from the site and that there are no remaining environmental hazards. The main tasks to be completed include categorizing all material and determining how it will be disposed.

Samples have been taken of the building carcass, residues from the fire, and collected rain and fire suppression water; all of which will help determine handling and disposal methods.

Cleanup of the site began on Oct. 17 and should last less than two weeks. EQ is in charge of cleaning up the site. DENR officials will supervise the cleanup to ensure that it is done according to the DENR-approved plan. Split samples will be taken, and EQ and DENR will have these samples analyzed at separate state-certified labs for quality assurance purposes.

DWM suspended cleanup at the site following the explosion of a 55-gallon barrel of sodium shortly after noon on Wednesday, Oct. 18. All indications are that the incident was caused by the reaction of the sodium with recent rains. Cleanup was reauthorized to begin late on Thursday, Oct. 19, after DWM thoroughly reviewed a written description (requested and provided by EQ) of the event and the cause of the reaction, and was assured that EQ will continue to take all appropriate steps, as detailed in their cleanup plan, to protect public health and safety.

DWM will be collecting surfacial soil samples from residences, schools and businesses previously identified by the Division of Air Quality's wipe sampling project. Samples will be collected in areas around these sites. Samples will be analyzed for volatile organic compounds, semi-volatile organic compounds, PCBs and several inorganic compounds, including beryllium, manganese and cyanide. Sampling is planned to take place on Monday, Oct. 23, with sampling results expected back within one week.

Samples were taken from groundwater monitoring wells on-site on Oct. 17 as a baseline measurement; historical monitoring information from these wells is also available. After the remaining waste is removed, EQ will be required to check the condition of the concrete bays; if there are cracks or other breaches of the bays, EQ will need to do testing under the bays to ensure no contaminants have leached into the ground, endangering any area groundwater supplies. During site cleanup, air monitoring will be conducted around the perimeter of the site to ensure no off-site impacts from cleanup operations.

**DIVISION OF PUBLIC HEALTH**

The Division of Public Health will sample inside the same areas identified by the Division of Air Quality. Indoor sampling will consist of wiping horizontal surfaces and testing those wipes for contaminants that could indicate exposure to the fire. Only surfaces that have not been cleaned since the fire will be tested. Public health experts will also do air testing for mercury vapors. As part of the indoor testing, other potential sources of indoor air pollution like tobacco smoke, fireplaces, space heaters, gas logs and candles will be identified.