

Fenimore Landfill Fact Sheet
Thermal Oxidizer Test

Current Status

- The Department of Environmental Protection (DEP) began emergency actions at the Fenimore Landfill on June 26, 2013 to address the release of hydrogen sulfide (H₂S) gas. DEP's action involved applying a temporary "cap" using a proprietary mineral-based material and installing flares to burn off the H₂S. While the temporary cap is providing protection against further deterioration at the site that could result from weather impacts, the operation of the flares proved problematic due to various landfill conditions encountered.
- In response, DEP, with the assistance of the engineering firm Handex, has been working around the clock at the landfill to construct a comprehensive piping system as a critical component of the long-term, permanent capping of the site. The piping system also will be used to test the safety and effectiveness of a potential remedial technique using a thermal oxidizer to burn off H₂S and improve current site conditions. A thermal oxidizer is a processing unit for air pollution control that decomposes gases, such as H₂S, at a high temperature.

Next Steps

- Testing of the thermal oxidizer will occur over five days beginning Saturday, September 7, 2013. In close consultation with the New Jersey Department of Health (DOH), DEP will carefully monitor emissions that result from operating the system. It should be noted that during the testing period, H₂S odors may still be present due to the limited scope of the test operations.
- Once testing has commenced, H₂S is drawn into the oxidizer which burns the gas and releases it into the atmosphere. When the oxidizer burns the H₂S, the H₂S converts to sulfur dioxide (SO₂).
- In the event SO₂ emissions reach a level that requires the thermal oxidizer to be shut down, a treatment system called a "scrubber" will be installed at the site before the oxidizer is re-started. Scrubbers are highly customized pieces of equipment, and are typically manufactured to specifications for particular uses. DEP is in the process of obtaining a scrubber built to the required specifications incorporating results of the testing.
- Use of the thermal oxidizer without the scrubber means that SO₂ will be released with the exhaust air but will be carefully monitored and controlled to ensure that any emissions released are within federal air quality standards and do not pose a health risk.

Monitoring

- Rigorous safety protocols, established by Handex and DEP, and monitored by DOH, will be followed during the testing of the thermal oxidizer. These protocols provide for precautions such as constant monitoring of emissions to closely control, limit or shut down SO₂ releases.

- DEP will run the oxidizer during daylight hours only in intervals of four or eight hours per test day. Highly trained personnel will be present onsite during all hours of testing operations.
 - SO₂ emissions will be mitigated by the increased height of the stack from 20 to 45 feet. The taller the stack, the greater the dilution of SO₂.
 - The testing time period is planned for five days, but will be shortened if concerns arise.
- During the testing period, DEP, in consultation with DOH, will monitor SO₂ and H₂S levels at two locations downwind of the site to ensure that SO₂ levels are within federal air quality standards.
 - Each day, wind direction will be determined and the mobile units placed in the optimal downwind location before testing begins. Highly variable winds could cause the testing to be suspended. When testing is suspended the oxidizer will be turned off.
- There are two federal standards that will be monitored as part of the testing. DOH uses the Minimal Risk Levels (MRLs) developed by the federal Agency for Toxic Substances and Disease Registry to assess the possibility of adverse health effects. An MRL is an estimate of the daily human exposure to a hazardous substance, at or below which, that substance is unlikely to pose a measurable risk of adverse, non-cancer health effects. The MRL for SO₂ for short-term exposures is 10 parts of sulfur dioxide per billion parts of air (ppb). In addition, for sulfur dioxide, the US Environmental Protection Agency (EPA) determined that 99 percent of hourly readings over a year should be less than 75 ppb. Both of these levels were established based on federal agency experimental studies involving asthmatic individuals.
- At the end of the testing, the data will be evaluated to determine whether it is feasible to continue operating the oxidizer under controlled safety protocols or if it is necessary to wait for the customized scrubber. Once the scrubber is constructed, the SO₂ emissions resulting from the oxidizer will be effectively treated on an ongoing basis to be well below federal air quality standards, allowing the oxidizer to become fully operational to safely reduce H₂S emissions at an accelerated rate.

Sulfur Dioxide (SO₂)

- SO₂ is a colorless gas with a strong odor at very high levels, but is unlikely to be smelled in the community at the controlled levels generated by the pilot test. It is produced from the burning of fossil fuels (coal and oil) and the smelting of mineral ores (aluminum, copper, zinc, lead and iron) that contain sulfur. As noted above, it is also created when oxygen is added to hydrogen sulfide gas.
- SO₂ levels tend to be higher in colder weather than in warmer weather due to increased emissions from heating sources. Levels across New Jersey in warmer weather tend to be close to zero. Levels commonly range from 2 ppb in rural areas up to 50 ppb in urbanized areas.
- Exposures to sulfur dioxide may cause a burning sensation in the nose and throat. Also, sulfur dioxide exposure may for some individuals cause difficulty breathing, especially in people with breathing problems, such as asthmatics or people with Chronic Obstructive Pulmonary

Disease (COPD). Children with asthma may be especially sensitive even to low concentrations of sulfur dioxide, but it is not known whether asthmatic children are more sensitive than asthmatic adults.

- The U.S. Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA do not classify SO₂ as a cancer causing agent.
- Any concerns should be discussed with your physician or your child's pediatrician. There are clinics that specialize in environmental health problems that your primary care provider may want to contact.
 - For adults: The Environmental and Occupational Health Clinical Center in Piscataway, NJ sees adults who have been exposed to contaminants occupationally or environmentally. They can be reached at (848) 445-0123.
 - For children: Pediatricians can contact the Mt. Sinai Medical Center's Pediatric Environmental Health Specialty Unit at (866) 265-6201.

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