

# 2013 Air Emissions: Frequently Asked Questions

## **Q: What is the purpose of annual air emissions stack testing?**

A: **Stack testing is an important tool that measures the amount of regulated pollutants being emitted from a facility.** Stack testing consists of a series of sampling events, in which a probe is inserted into the stack to collect a representative sample of the gases released, over a defined amount of time. Sampling and laboratory analysis must be conducted in accordance with New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) protocols. **NYSDEC oversees, and is generally onsite during stack testing at the Onondaga County Waste-to-Energy (WTE) Facility.**

## **Q: Does the Facility conduct any other air emissions testing besides the annual stack testing?**

A: Yes. **The Facility has a continuous emission monitoring system (CEMS) that measures combustion efficiency, air pollution equipment performance and stack emissions.** The CEMS monitors carbon monoxide, carbon dioxide, oxygen, sulfur dioxide, and nitrogen oxides (NOx) as well as opacity and combustion temperatures.

## **Q: How do the 2013 stack test results look?**

A: The results from **the 2013 stack testing indicate that the Facility is operating acceptably and that the air pollution control devices are functioning properly.** As shown by the following graph, many of the tested constituents were considerably below the permit limit. For boiler Unit #1, one tested constituent had a result above the permit limit, as indicated by the “fail” for PAHs (polycyclic aromatic hydrocarbons).

## **Q: Can you explain the PAHs result in more detail?**

A: The PAHs result for boiler Unit #1 was slightly above the permit limit; however the results for boiler Units #2 and #3 were below the permit limit. Historically, the WTE Facility has never had a PAHs result above the permit limit. The Facility’s continuous emission monitoring system, as well as the results for other simultaneously tested constituents, indicate the air pollution control equipment was functioning properly and that the boiler was combusting waste efficiently. As a result, it is unclear why Unit #1’s PAHs levels were slightly above the permit limit. **To gain a better understanding, PAHs will now be tested annually rather than every five years as required by the Facility’s air permit.**

## **Q: What causes PAHs emissions?**

A: PAHs are a large family of structurally and chemically related compounds. PAHs emissions are generally the result of the incomplete and low-temperature combustion of organic material. Automobile exhaust, cigarette smoke, and fireplaces emit PAHs. High temperature furnaces, like those at the WTE Facility, produce significantly fewer PAHs. Having thoroughly reviewed the Facility’s operational data, there are no indications of incomplete combustion. For example, carbon monoxide emissions are a strong indicator of incomplete combustion; the carbon monoxide results were consistent with normal Facility operations and they do not suggest any operational problems.

## **Q: Should I be concerned about the PAHs result?**

A: No. While some individual PAHs are of great concern to human health, the levels reported for Unit #1 are less than 10% of the level determined to be acceptable in the Facility’s Health Risk Assessment, which was part of the detailed permitting process required prior to building the WTE Facility.

## **Q: What is the basis for the current PAHs permit limit?**

A: **The current permit limit for PAHs is not a health-based limit.** It is based on very limited information available during the early 1990s from other out-of-state WTE facilities. The initial operating permit required that a Facility-specific permit limit be developed based on data collected over the first four years of the Facility’s operation. Once Facility-specific data was available, it indicated that the PAHs permit limit should be increased. However, there was a provision in the permit that did not allow an

increase in the permit limit. As such, the limit was never revised, despite the fact that data indicated future testing would likely result in a permit exceedance. **In retrospect, it is evident that a higher Facility-specific permit limit should have been established. OCRRA is appropriately requesting that the current permit limit be revised to reflect Facility-specific data, but at a level well below the Health Risk Assessment level.**

**Q: What are the permit limits for PAHs at other WTE facilities in New York?**

A: The Onondaga County WTE Facility's permit limits tend to be far stricter than other facilities across the state, and the PAHs permit limit is no exception. There are ten WTE facilities in New York State. **Six of the ten facilities do not even have a permit limit for PAHs.** Two other facilities have a permit limit much higher than the Onondaga County WTE Facility's permit limit and one other facility has a fairly comparable permit limit.

**UPDATE:**

**Q: What has NYSDEC concluded about the PAH result?**

A: In a letter dated December 10, 2013, the NYSDEC concluded that, based on the fact that there were no indications of operational issues, the possibility of a sampling error cannot be ruled out for the single test run with the elevated result. Given the uncertainty associated with this single test run, NYSDEC agrees with annual testing for PAHs for the next four years. NYSDEC does not feel that a permit increase is warranted at this time.

**Q: Who can I contact for more information?**

A: For more detailed information on the test results please contact OCRRA's Agency Engineer, Amy Miller, at 315.295.0743 or [amiller@ocrra.org](mailto:amiller@ocrra.org). For additional questions of OCRRA's Public Information Officer, please contact Kristen Lawton at 315.295.0733 or [klawton@ocrra.org](mailto:klawton@ocrra.org).

## 2013 ANNUAL STACK TEST RESULTS

	Constituent	Average Measured Emissions <sup>1</sup>			Permit Limit <sup>c</sup>	Pass/Fail? P/F	
		Unit 1	Unit 2	Unit 3			
TESTED ANNUALLY	FEDERAL	Cadmium (mg/dscm @ 7% O <sub>2</sub> ) <sup>3</sup>	< 2.0E-04	< 1.8E-04	< 1.8E-04	3.5E-02	P
		Cadmium (lb/hr) <sup>3</sup>	< 3.1E-05	< 2.9E-05	< 2.9E-05	1.9E-03	P
		Carbon Monoxide (lb/hr)	1.33E+00	1.08E+00	1.29E+00	8.04E+00	P
		Dioxins/Furans (ng/dscm @ 7% O <sub>2</sub> )	1.3E+00	2.2E+00	6.8E-01	3.0E+01	P
		Hydrogen Chloride (ppmdv @ 7% O <sub>2</sub> )	2.9E+00	3.7E+00	3.7E+00	2.5E+01	P
		Hydrogen Chloride (lb/hr)	6.73E-01	8.69E-01	9.23E-01	5.24E+00	P
		Hydrogen Chloride Removal Efficiency (%)	99.6	99.5	99.4	>=95	P
		Lead (mg/dscm @ 7% O <sub>2</sub> ) <sup>3</sup>	2.30E-03	2.63E-03	1.79E-03	4.00E-01	P
		Lead (lb/hr) <sup>3</sup>	3.51E-04	4.10E-04	2.93E-04	3.81E-02	P
		Mercury (lb/hr)	5E-04	5E-04	3E-04	4E-03	P
		Nitrogen Oxides (lb/hr)	4.6E+01	5.0E+01	4.9E+01	5.8E+01	P
		Particulates (gr/dscf @ 7% O <sub>2</sub> )	< 2.2E-04	2.6E-04	3.0E-04	1.0E-02	P
		PM <sub>10</sub> (gr/dscf @ 7% O <sub>2</sub> )	3.6E-04	2.5E-04	2.8E-04	1.0E-02	P
		PM <sub>10</sub> (lb/hr)	1.23E-01	< 9.10E-02	1.04E-01	3.16E+00	P
		Sulfur Dioxide (lb/hr)	5.46E+00	3.99E+00	1.90E+00	1.62E+01	P
STATE	Ammonia (ppmdv @ 7% O <sub>2</sub> )	2.5E+00	2.2E+00	1.3E+00	5.0E+01	P	
	Ammonia (lb/hr)	2.72E-01	2.43E-01	1.48E-01	4.88E+00	P	
	Dioxins/Furans-2,3,7,8 TCDD TEQ (ng/dscm @ 7% O <sub>2</sub> )	2E-02	3E-02	1E-02	4E-01	P	
	Dioxins/Furans-2,3,7,8 TCDD TEQ (lb/hr)	2.62E-09	5.42E-09	1.69E-09	1.29E-07	P	
	Mercury (µg/dscm @ 7% O <sub>2</sub> )	3.0E+00	3.5E+00	1.9E+00	2.8E+01	P	
	Mercury Removal Efficiency (%)	95	93	97	>=85	P	
TESTED EVERY 5 YEARS	FEDERAL	Arsenic (lb/hr)	< 2.8E-05	< 2.9E-05	< 2.9E-05	7.8E-04	P
		Beryllium (lb/hr)	< 7.02E-06	< 7.14E-06	< 7.26E-06	1.15E-05	P
		Hydrogen Fluoride <sup>4</sup> (lb/hr)	< 2.85E-02	< 2.86E-02	< 2.85E-02	1.65E-01	P
		VOCs - Total Hydrocarbons (ppmdv @ 7% O <sub>2</sub> )	1.3E+01	3.3E+00	3.8E+00	3.0E+01	P
		VOCs - Total Hydrocarbons (lb/hr)	1.34E+00	3.44E-01	4.02E-01	2.76E+00	P
	STATE	Chromium (lb/hr)	4.57E-04	3.11E-04	3.57E-04	1.93E-03	P
		Copper (lb/hr)	4E-04	4E-04	3E-04	4E-03	P
		Formaldehyde (µg/dscm @ 7% O <sub>2</sub> )	< 1.7E+01	< 1.7E+01	< 1.4E+01	5.0E+01	P
		Hexavalent Chromium - Cr <sup>+6</sup> (lb/hr)	3E-04	1E-04	2E-04	3E-04	P
		Manganese (lb/hr)	2.2E-04	2.6E-04	3.6E-04	2.3E-02	P
		Nickel (lb/hr)	6E-04	6E-04	5E-04	4E-03	P
		PAHs (µg/dscm @ 7% O <sub>2</sub> )	< 1.1E+00	< 2.7E-01	2.3E-01	1.0E+00	F
		PCBs (µg/dscm @ 7% O <sub>2</sub> )	< 1.1E-02	< 2.4E-02	< 1.2E-02	5.3E-02	P
		Vanadium (lb/hr)	< 3E-05	< 3E-05	< 3E-05	6E-04	P
Zinc (lb/hr)	4.97E-03	4.06E-03	3.88E-03	6.45E-02	P		

**NOTES:**

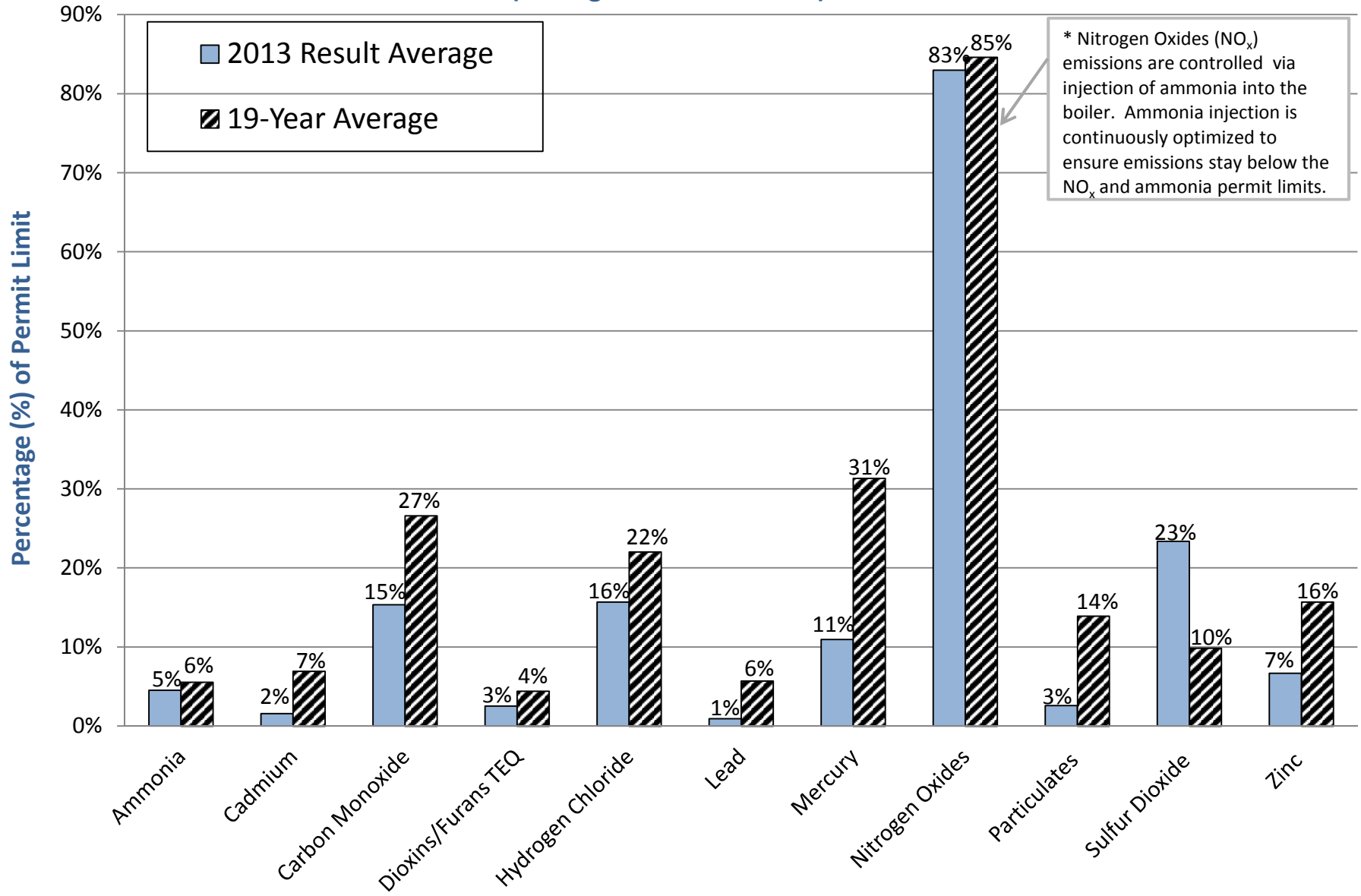
<sup>1</sup> Based on three test runs

<sup>2</sup> NYSDEC Title V Permit #7-3142-00028

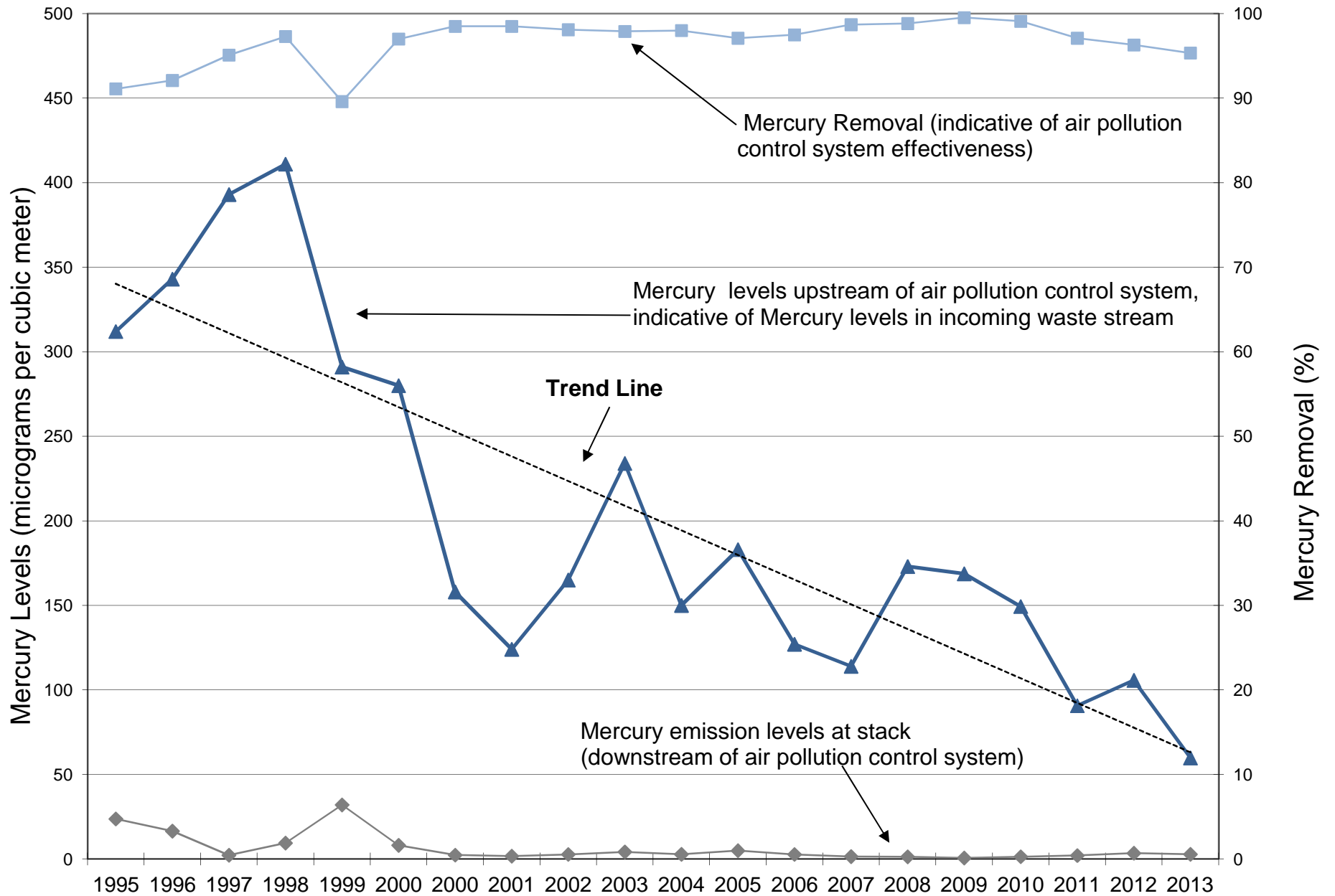
**UNITS:**

@ 7% O<sub>2</sub> = concentration corrected to 7% oxygen  
 gr/dscf = grains per dry standard cubic foot  
 ppmdv = parts per million dry volume  
 lb/hr = pounds per hour  
 dscm = dry standard cubic meter  
 ng = nanograms  
 µg = micrograms  
 mg = milligrams

### Comparison of Long-Term Facility Average to 2013 Test Results (Average of 3 Boiler Units)



# Facility Mercury Emissions & Air Pollution Control System Effectiveness



# 2013 Ash Testing FAQs

**Q: What is the purpose of the semi-annual ash testing and how do the 2013 results look?**

A: A representative sample of combined bottom and fly ash is collected according to NYSDEC protocols. This sample is then analyzed by an independent laboratory for leachable metals, according to EPA's Toxicity Characteristic Leaching Procedure (TCLP). TCLP analysis simulates landfill conditions (the final disposal site for the ash) and determines whether the ash exhibits hazardous characteristics. **Over the life of the facility (including the most recent 2013 results), TCLP analysis has always indicated that the ash is non-hazardous.**

**Q: Who can I contact for more information?**

A: For more detailed information on the test results please contact OCRRA's Agency Engineer, Amy Miller, at **453.2866** or [amiller@ocrra.org](mailto:amiller@ocrra.org). For additional questions of OCRRA's Public Information Officer, please contact Kristen Lawton at **295.0733** or [klawton@ocrra.org](mailto:klawton@ocrra.org).

<b>2013 ASH RESIDUE CHARACTERIZATION TEST RESULTS</b>			
<b>Semi-Annual Test Results - <a href="#">June 2013</a></b>			
<b>Constituent</b>	<b>Test Result</b>	<b>Permit Limit</b>	<b>Pass or Fail</b>
Cadmium	0.20 mg/L	1 mg/L	Pass
Lead	0.25 mg/L	5 mg/L	Pass
<b>Semi-Annual Test Results - <a href="#">November 2013</a></b>			
<b>Constituent</b>	<b>Test Result</b>	<b>Permit Limit</b>	<b>Pass or Fail</b>
Cadmium	0.28 mg/L	1 mg/L	Pass
Lead	0.33 mg/L	5 mg/L	Pass
<b><u>CONCLUSION</u></b>			
<i>Ash residue does NOT exhibit a hazardous characteristic. As such, it should continue to be managed as a non-hazardous solid waste.</i>			