

## 2022 Test Results



# Performance Test Results

## Ross Incineration Emissions Well Below Requirements In EPA Regulation

Ross Incineration Services, Inc. is committed to protecting the environment by incorporating the best available waste management technology at its facility.

The company must meet stringent standards set by both the United States and the Ohio Environmental Protection Agencies (EPA). In fact, hazardous waste incinerators are the most stringently regulated combustion sources in the world, with standards more stringent than power plants and most manufacturing facilities.

The company is required to receive and renew several different operating permits from these agencies. Those permits require Ross Incineration to conduct periodic testing, called a Comprehensive Performance Test, of its incineration and air pollution control system. The testing is conducted to demonstrate that the system is operating in compliance with its permits and within regulatory emission standards.

Ross Incineration has safely conducted emission tests many times in its history. This testing has demonstrated how emissions from the facility have been reduced as the company has invested in new, more advanced equipment.

During 1999, the U.S. EPA established the Maximum Achievable Control

Technology (MACT) rule for hazardous waste combustors. Hazardous waste combustors include incinerators, cement kilns and lightweight aggregate kilns.

The MACT rule was amended, and when implemented in 2008, required facilities to comply with new, lower emissions standards that are even more protective of human health and the environment.

To ensure compliance with the MACT rule well ahead of the regulatory deadline, Ross Incineration replaced its air pollution control system and a portion of its incinerator. Ross completed construction of this \$12 million system in the summer of 2002.

During 2006, Ross Incineration conducted a comprehensive performance test which demonstrated that the facility is in compliance with the MACT standards.

Since the initial test in 2006, Ross Incineration has conducted testing every 2.5 years. Most recently, in 2022, Ross Incineration again conducted performance tests which demonstrated that the company remains in compliance with these stringent standards.

This factsheet provides the results of the tests conducted in 2022 testing.

## How The Testing Was Conducted

The performance test was conducted following methods approved by the U.S. and Ohio EPA. The test was designed to demonstrate that the incineration system meets regulatory emission standards while operating at maximum feed rates and worst case conditions while burning waste received from Ross Incineration customers.

During the testing, an independent testing firm took samples from the gasses

in the stack while the incinerator was operating. These samples were then sent to an EPA-approved laboratory for analysis. The results were then submitted to the EPA for their review.

Ohio and U.S. EPA representatives were at the site to monitor and evaluate the process during the testing.

### Inside:

Testing Shows Safety of Facility	2
Particulate Emissions	2
Dioxin & Furan Emissions	3
Chloride Results	3
Carbon Monoxide	3
System Removes Metals	4
Hydrocarbon Results	4

### Special points of interest:

- *Ross Incineration has routinely conducted emissions testing since 1982.*
- *Test results show that the facility complies with emission standards established by the U.S. and Ohio Environmental Protection Agencies.*
- *Testing shows that the system complies with the standards established in the Maximum Achievable Control Technologies (MACT) Rule.*

# Testing Shows Safety of Facility

During the tests, Ross Incineration had to demonstrate the performance of the incineration system and the air pollution control system. Commercial incinerators must periodically conduct testing to demonstrate their removal of certain air pollutants.

Incineration companies must meet rigid emissions standards established in the U.S. EPA's MACT rule. Ross Incineration must also comply with standards established in its RCRA operating permit and Ohio EPA Air Division Permit to Install and Title V Permit.

The standards in the MACT rule and in Ross Incineration's RCRA operating permits were established by the EPA to protect human health and the environment.

Gasses coming out of the incineration system are treated in a highly sophisticated air pollution control system to meet these strict standards. Installed during

2001 and 2002, the air pollution control system at the Ross Incineration facility is one of the most advanced



systems in the world.

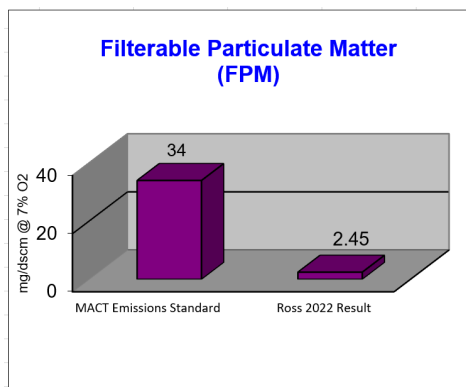
The results of the 2022 testing show that the incinerator can perform far better than what is required to meet all

standards established in the MACT rule. They also show that the facility complies with standards in its RCRA operating permits from U.S. and Ohio EPA.

Knowing that these standards are stringent and that the facility's actual emissions are lower than these limits, further assures the community of the safety of Ross Incineration's operations.

## Particulate Emissions Were Below Regulatory Standards

One of the substances that Ross Incineration's air pollution control system must remove is particulate (tiny bits of ash).



Ross Incineration's performance test results for particulate show that emissions are only 10% of what is allowed under the U.S. EPA's MACT rule for hazardous waste combustors.

The U.S. EPA measures particulate by the number of grains that are present in each dry standard cubic foot of gas emitted (mg/dscfm). The MACT standard for particulate emissions is 34 mg/dscm.

The 2022 average performance test result for particulate was 2.45 mg/dscm. This is well below standards established in EPA regulations.

The testing also shows that emissions of particulate have been reduced over time as the company has reinvested in its facility.

Ross Incineration testing demonstrates its compliance with regulations for more than 30 years. As emissions standards have become more stringent, Ross Incineration has reinvested in its facility to ensure that the system remains in compliance.

## Dioxin And Furan Emissions Results

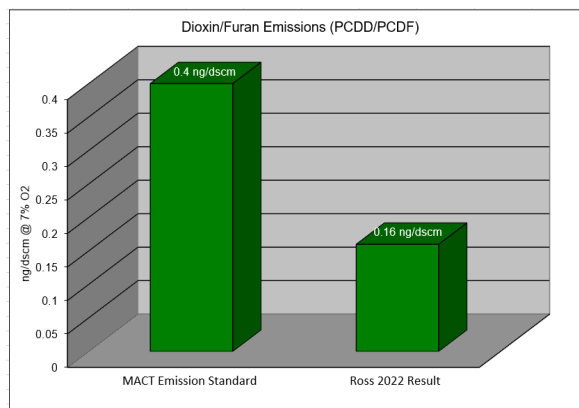
Any combustion process may produce dioxins and furans, including manufacturing plants, cigarettes, matches, barbecue grills, home fireplaces, cement kilns, and even home and industrial furnaces.

Ross Incineration's combustion process and air pollution control equipment is designed to prevent the formation and emission of dioxins and furans. Previous testing has shown that the system is operating extremely well. During 2011, a portion of the air pollution control system was redesigned in order to improve the performance of the system and to further reduce the emissions of dioxins and furans.

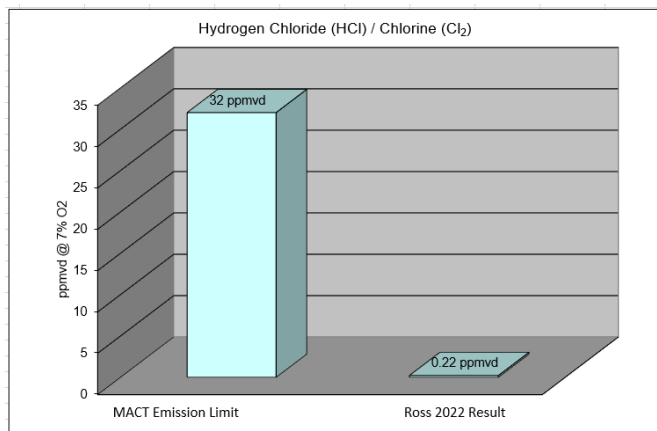
The U.S. EPA established standards for dioxin and furan emissions in the MACT rule. The MACT standard measures these substances by counting the number of nanograms (which is one-billionth of a gram) of these substances contained in each cubic meter of gas (ng/dscm).

The MACT standard for dioxin & furan emissions is 0.40 ng/dscm.

The 2022 Confirmatory Performance Test showed that the emissions are well below the standard. The average of the tests for dioxin & furan emissions was 0.16 ng/dscm.



## Chloride Results Were Far Below Allowable Rates



During the performance test, Ross Incineration also tested for emissions of chloride.

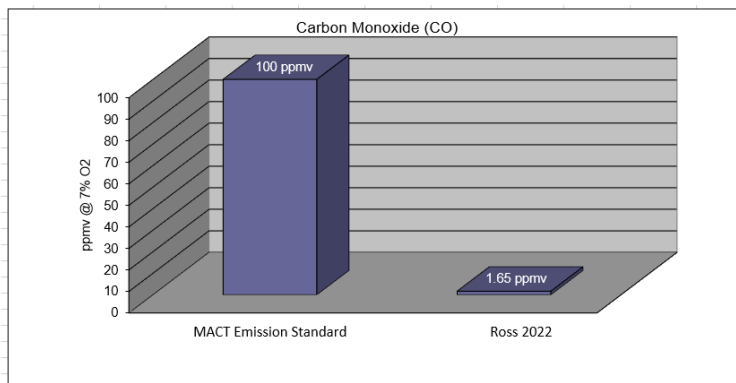
The MACT rule standard for chloride emissions is 32 ppmv (parts per million by volume). Once again, Ross Incineration's emissions rates, as demonstrated in the 2022 performance test, were well below the allowable standard.

The average of the testing for chloride emissions was 0.22 ppmv. This is 0.06% of the MACT allowable emission standard.

## Carbon Monoxide Emission Levels Below EPA Limits

Carbon monoxide emissions are also regulated under the MACT rule. Under the rule, carbon monoxide is measured in parts per million volume (ppmv).

The MACT standard for carbon monoxide emissions is 100 ppmv. Ross Incineration's average performance test results found that emissions were only 1.65 ppmv. This is 1.6% of the allowable limit.



# Metals Removed By Incinerator And Air Pollution Control System

In the incineration process, metals are not created or destroyed, but rather, end up in the ash or are removed by the air pollution control system.

U.S. EPA established stringent MACT emission standards for these metals. Metals emission are achieved by controlling how much of each metal can be fed into the incinerator. These metal feed limits ensure that Ross Incineration system operates safely and does not pose a health risk.

Ross Incineration tested for emissions of semi-volatile metals and low-volatility metals in the 2022 test. Results show that Ross Incineration is far below the stringent emission standards for these metals established by U.S. EPA.

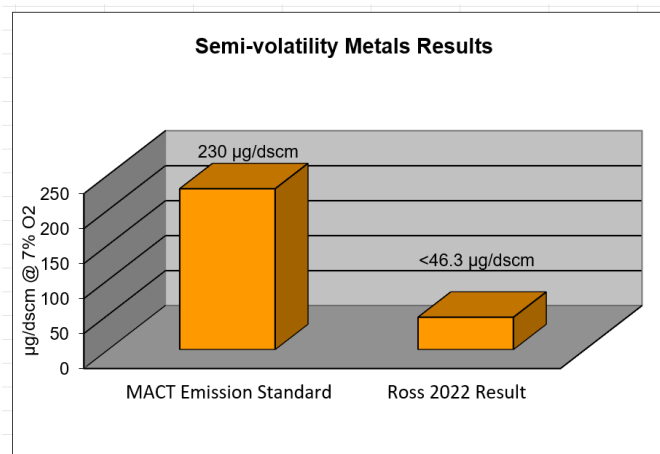
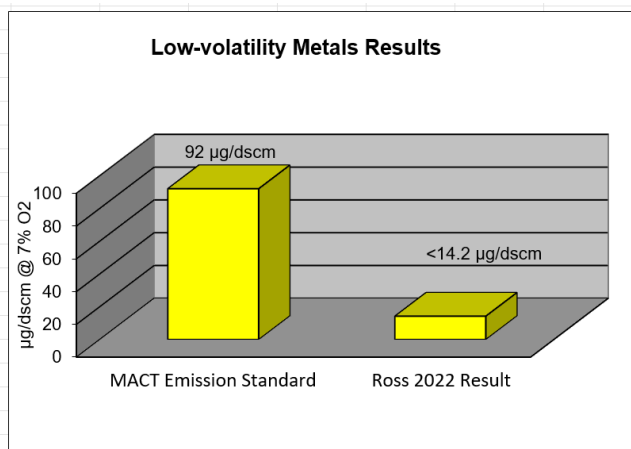
The MACT standard measures these substances by counting the number of micrograms (which is one-

millionth of a gram) of metals contained in each cubic meter of gas ( $\mu\text{g}/\text{dscm}$ ).

Semi-volatile metals include lead and cadmium. In the testing, Ross Incineration's system demonstrated that its emissions are well below the standards set in the MACT rule. The MACT rule standard for semi-volatile metals is  $230 \mu\text{g}/\text{dscm}$  and Ross Incineration's 2022 testing averaged  $<46.3 \mu\text{g}/\text{dscm}$ , or 20% of the allowable emissions.

RIS also tested to ensure that the system met the standards established in the MACT rule for low-volatility metals. These include chromium, arsenic and beryllium.

The MACT rule standard for low-volatility metals is  $92 \mu\text{g}/\text{dscm}$ . During the 2022 performance test, RIS demonstrated an emissions average of  $<14.2 \mu\text{g}/\text{dscm}$ . This is 15% of the allowable emissions.

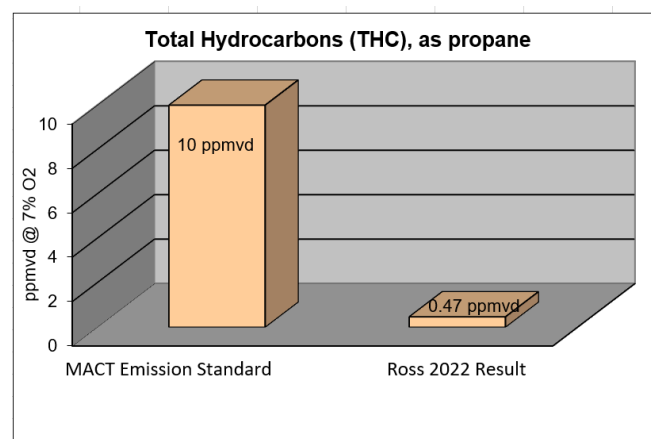


## Hydrocarbon Levels Below Regulatory Limits

Hydrocarbon emissions are also regulated under the MACT rule. Under the rule, hydrocarbons are measured in parts per million by volume (ppmv).

Hydrocarbons are very stable organic molecules made up of only carbon and hydrogen. They are a standard product of combustion. Some common hydrocarbons include propane, ethanol and octane.

The MACT rule standard for hydrocarbon emissions is 10 ppmv. During the 2022 testing, Ross Incineration showed that its system meets this stringent standard. In fact, hydrocarbon emissions averaged 0.47 ppmv in the testing. This is less than 4.7% of the allowable emission standard.



For more information, contact:  
Corporate Communications Department  
Ross Environmental Services, Inc.  
150 Innovation Drive Elyria, OH 44035-1672  
Phone: (440) 366-2076  
[community@rossenvironmental.com](mailto:community@rossenvironmental.com)  
[www.rossenvironmental.com](http://www.rossenvironmental.com)