



Trash to Treasure

Climate & Community Benefits

From Sustainable Resource Recovery in Upstate NY

Dereth Glance, Executive Director
Onondaga County Resource Recovery Agency
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The DRAWDOWN

- **#3 Reduce Food Waste**

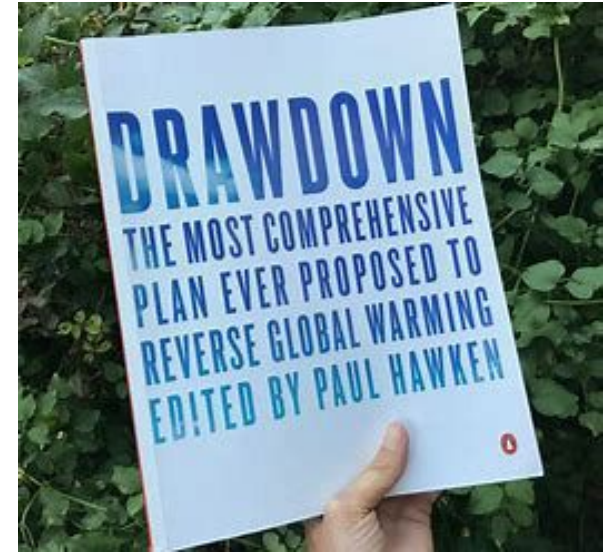
70.53 gigatons avoided if 50%
global food waste reduced by 2050

- **#55 Household Recycling**

2.77 gigatons avoided if average
global recycling rate is 65% by 2050

- **#68 Waste-to-Energy**

1.1 gigatons avoided if 62.6 GW of
WTE facilities installed globally by 2050



Source: *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, Edited by Paul Hawken, 2017



OCRRA serves our community by providing a comprehensive solid waste management system that is environmentally, socially and fiscally sustainable



Engagement

- **Events**
- **Email Blasts**
 - ✓ 20,000+ subscribers
 - ✓ 39% average open rate (industry average = 23%)
- **Social Media**
 - ✓ 10,000+ Facebook followers
- **Printed Newsletter - Quarterly**
 - ✓ Reaches 85,000 residents
- **Media**
 - ✓ Paid (ad agency)
 - ✓ “Free” (PR appearances)



System Structure & Features

- OCRRA does not handle waste **collection**. We facilitate proper waste management.
- Waste flow control, a local recycling law, and contractual arrangements make the OCRRA system possible.



Compost



Recycle

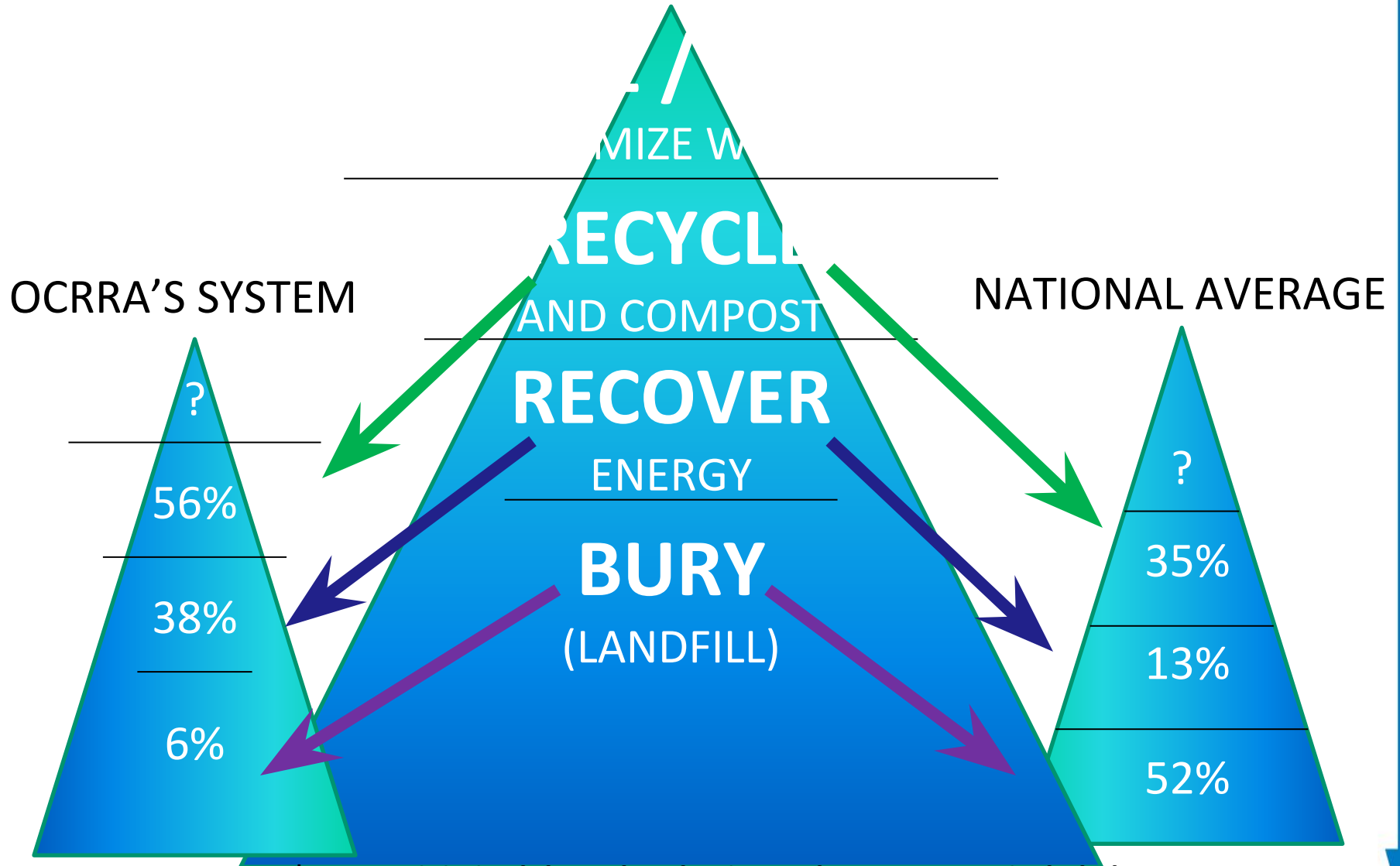


Trash



Waste
Reduction

OCRRA System



* Items minimized through reduction and reuse are not included in the percentages above, as they cannot be tracked (in any system).



Recycling

185,000 tons



Private MRFs



Paper

Plastic

Glass

Metal



C&D

100,000 tons



Transfer Station

80,000 tons

Cardboard & Metal 2,500 tons

9,000 tons metal

15,000 tons



Trash

270,000 tons



WTE

80,000 tons ash



Food

7,000 tons



Compost Site



Landfill



WestRock

Local mill recycles 850,000 tons of cardboard

- Reduced transport distance by 88%
- Recovered ~3,000 tons metal / year
- Diverted 44,000 tons of waste from landfill



Local Compost

Businesses and school children help Onondaga Lake flourish



Organics Recovery

- **Largest municipal facility in NYS**
- **Capacity: Process 10,000 tons of food waste / year**
- **Compost available in bulk and by the bag**



GHG Avoidance from Recycling

721,610 tons CO₂e avoided through comprehensive county-wide recycling program

Material	Tons Recycled/ Composted	GHG Emissions Mitigated (MTCO ₂ E)
Food	100,140	-4,006
Yard Waste	26,150	-1,046
Wood	4,100	-7,585
Mixed Plastics	8,925	1,785
Mixed Metals	102,616	-340,685
Corrugated Box	70,947	-185,172
Magazines	3,258	-8,797
Newspaper	16,884	-36,638
Mixed Paper - Office	41,620	-125,692
Books	679	-1,779
Glass	9,671	-2,418
Electronics/Batteries	4,146	-9,577
		-721,610

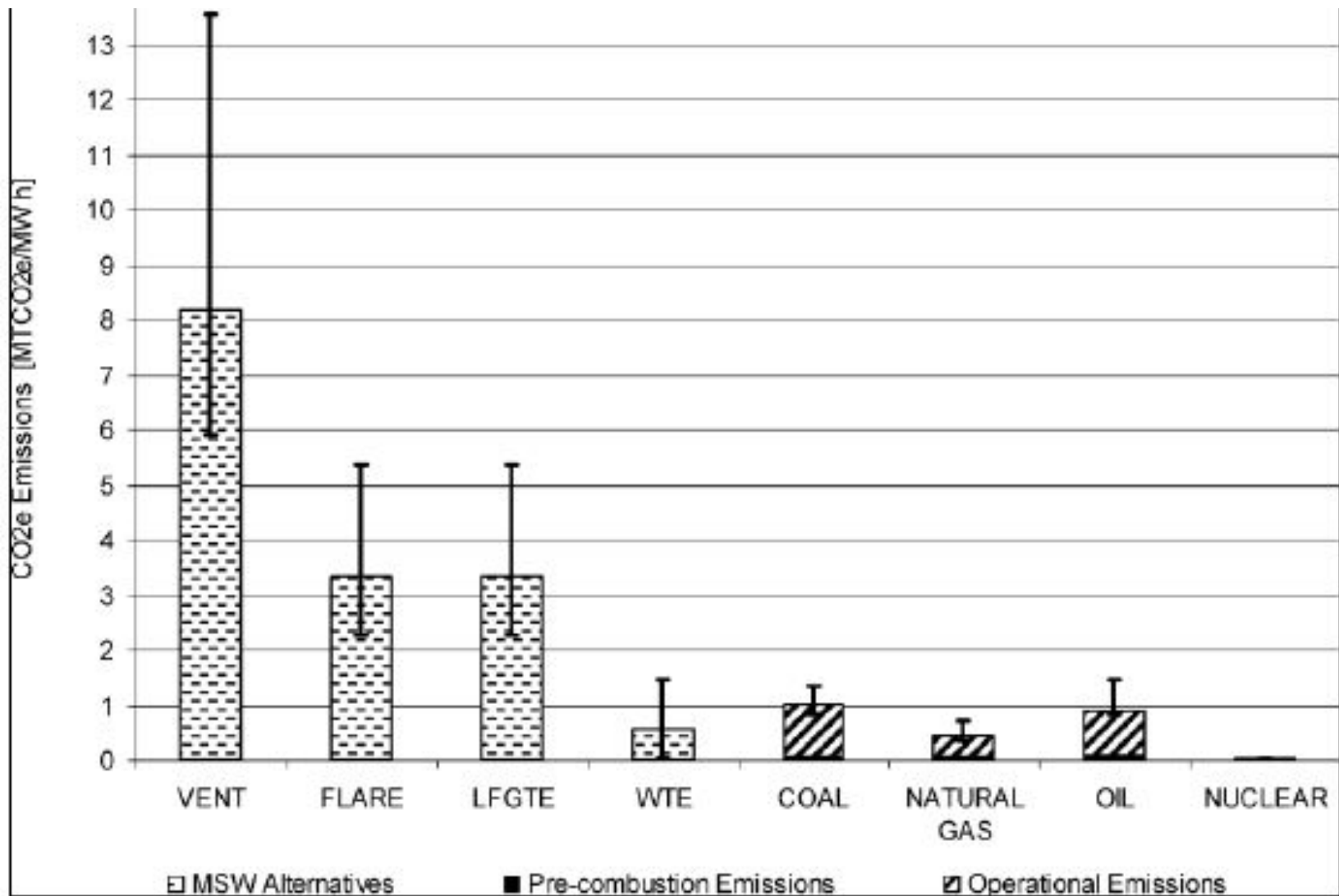
GHG Avoidance from WTE

- Processing non-recyclable waste at the WTE Facility avoided **353,385 tons** of CO₂e in 2017



All in, OCRRA's sustainable solid waste system avoided over 1 million tons of CO₂e in 2017

GHG Emission Comparisons



Source: Kaplan, Decarolis, and Thornloe, 2009 (Figure 2)

2018 Emissions Results (5-Year)

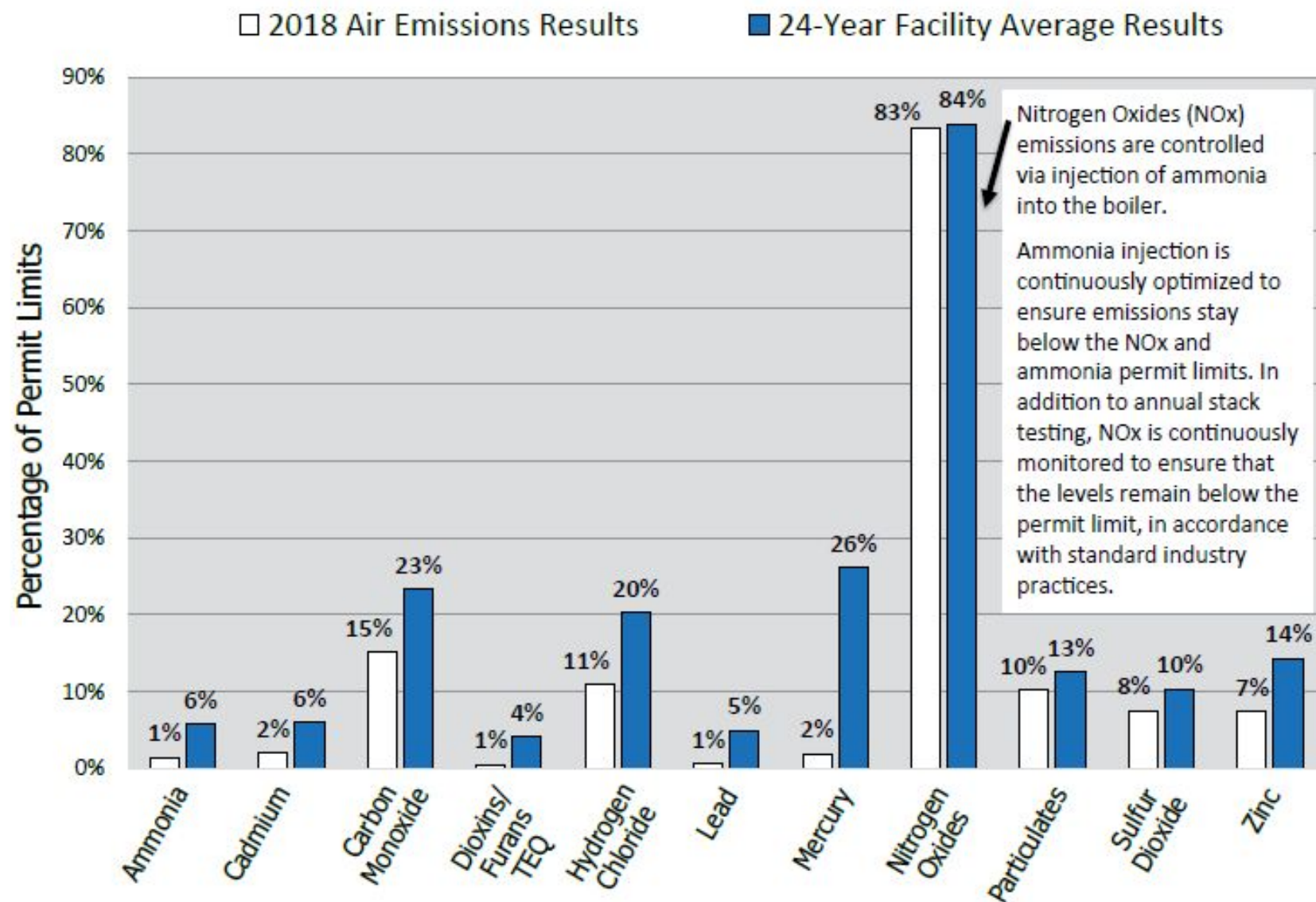
New York State Constituent	Pass / Fail	% Permit Limit	Federal Constituent	Pass / Fail	% Permit Limit
Chromium (lb/hr)	P	10.92%	Arsenic (lb/hr)	P	2.47%
Copper (lb/hr)	P	5.08%	Beryllium (lb/hr)	P	41.80%
Formaldehyde	P	22.73%	Hydrogen Fluoride (lb/hr)	P	14.02%
Hexavalent Chromium (lb/hr)	P	60.33	VOCs (total Hydrocarbons)	P	3.08%
Manganese (lb/hr)	P	20.48%			
Nickel (lb/hr)	P	7.98%			
PAH	P	9.05%			
PCBs	P	10.14%			
Vanadium	P	3.21%			
Zinc	P	7.37%			

Visit www.OCRRA.org for Air Emissions Testing Results

2018 Emissions Results (Annual)

		Constituent	Permit Limit ²	Pass/Fail? P/F	3-Boiler Average	% Permit Limit ³
TESTED ANNUALLY	FEDERAL	Cadmium (mg/dscm @ 7% O ₂)	3.50E-02	P	2.46E-04	0.70%
		Cadmium (lb/hr)	1.90E-03	P	3.76E-05	1.98%
		Carbon Monoxide (lb/hr)	8.04E+00	P	1.22E+00	15.13%
		Dioxins/Furans (ng/dscm @ 7% O ₂)	3.00E+01	P	4.47E-01	1.49%
		Hydrogen Chloride (ppmdv @ 7% O ₂)	2.50E+01	P	2.46E+00	9.85%
		Hydrogen Chloride (lb/hr)	5.24E+00	P	5.74E-01	10.95%
		Hydrogen Chloride Removal Efficiency (%)	>= 95.00	P	99.63	--
		Lead (mg/dscm @ 7% O ₂)	4.00E-01	P	1.63E-03	0.41%
		Lead (lb/hr)	3.81E-02	P	2.50E-04	0.66%
		Mercury (lb/hr)	4.00E-03	P	7.63E-05	1.91%
		Nitrogen Oxides (lb/hr)	5.80E+01	P	4.83E+01	83.28%
		Particulate (gr/dscf @ 7% O ₂)	1.00E-02	P	1.03E-03	10.28%
		PM ₁₀ (gr/dscf @ 7% O ₂)	1.00E-02	P	5.71E-04	5.71%
		PM ₁₀ , Filterable (lb/hr)	3.16E+00	P	1.96E-01	6.20%
		Sulfur Dioxide (lb/hr)	1.62E+01	P	1.22E+00	7.52%
	STATE	Ammonia (ppmdv @ 7% O ₂)	5.00E+01	P	6.37E-01	1.27%
		Ammonia (lb/hr)	4.88E+00	P	6.95E-02	1.42%
		Dioxins/Furans-2,3,7,8 TCDD TEQ (ng/dscm @ 7% O ₂)	4.00E-01	P	4.50E-03	1.13%
		Dioxins/Furans-2,3,7,8 TCDD TEQ (lb/hr)	1.29E-07	P	6.91E-10	0.54%
		Mercury (µg/dscm @ 7% O ₂)	2.80E+01	P	4.98E-01	1.78%
		Mercury Removal Efficiency (%)	>= 85.00	P	9.86E+01	--
		PAH (µg/dscm @ 7% O ₂)	1.00E+00	P	9.05E-02	9.05%
		Zinc (lb/hr)	6.45E-02	P	4.75E-03	7.37%

Emissions as % of Permit Limits



Medicine Disposal



Educating for a More Sustainable Future



School Education Program

- **NYS curriculum requirements**



New York State
Education Department

- **Standards for
3rd – 5th grade**



COMMON CORE

STATE STANDARDS INITIATIVE

PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

- **Example:**

✓ **CCSS ELA RI
3.1, 4.1, 5.1**

engage^{ny}

Our Students. Their Moment.

System Challenges

- Electricity Rates
- Recycling Markets
- Waste Stream



What's Next?

Extended Producer Responsibility



Dereth Glance

Executive Director, OCRRA



Save the world
a little each day.®

dglance@ocrra.org

(315) 453-2866, ext. 1212

www.OCRRA.org