



State of Utah

GARY R. HERBERT
Governor

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Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

DAQE-AN101420011-14

August 12, 2014

Al Burson
Stericycle Incorporated
28161 North Keith Drive
Lake Forest, IL 60045

Dear Mr. Burson:

Re: Approval Order: Administrative Amendment to Approval Order DAQE-AN101420010-13 for
Retrofits to Existing Air Pollution Control Device System
Project Number: N10142-0011

The attached document is the Approval Order for the above-referenced project. Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. The project engineer for this action is Jon Black, who may be reached at (801) 536-4047.

Sincerely,

Bryce C. Bird
Director

BCB:JB:kw

cc: Mike Owens
Davis County Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

**APPROVAL ORDER: Administrative Amendment to Approval
Order DAQE-AN101420010-13 for Retrofits to Existing Air
Pollution Control Device System**

**Prepared By: Jon Black, Engineer
Phone: (801) 536-4047
Email: jlblack@utah.gov**

APPROVAL ORDER NUMBER

DAQE-AN101420011-14

Date: August 12, 2014

**Stericycle Incorporated
BFI Medical Waste Incinerator
Source Contact:
Al Burson
Phone: (847) 370-7995**

**Bryce C. Bird
Director**

Abstract

Stericycle, Inc., (Stericycle) has requested equipment retrofits and replacements to AO DAQE-AN101420010-13 for its hospital, medical, and infectious waste incinerator (HMIWI) facility. The retrofitting activities are to upgrade the air pollution control system. The requested changes will consist of replacement of a gas cooler with a new evaporative cooler, replacement of an electrostatic precipitator with a baghouse, replacement of the wet gas absorber with a new absorber, addition of a carbon bed downstream of the absorber, and include urea or an equivalent reagent for control of NO_x emissions through the existing SNCR system. The existing emergency diesel generator will also be replaced with a new more efficient generator which can handle loss of power at the facility. The emergency diesel generator replacement will minimize bypass events by avoiding the loss of power. Waste delivery, processing, and unloading activities will not change, nor will any other changes be made to the HMIWI.

Stericycle is located in Davis County, which is a nonattainment area of the NAAQS for PM_{2.5} and a maintenance area for Ozone. Davis County is attainment for all other pollutants. NSPS 40 CFR 60 Subparts A, Ce, and IIII regulations apply. MACT 40 CFR 63 Subparts A and ZZZZ regulations apply to this source. Title V of the 1990 Clean Air Act applies to this source. The Title V Operating Permit applies to HMIWI facilities and will be Administratively Amended to incorporate the conditions of this Enhanced AO.

The retrofits at this facility, along with a limitation on the emergency diesel generator hours of operation, will create an emissions reduction in all criteria and HAP emissions. Therefore this permit action will qualify under R307-401-12 (Reduction in Air Contaminants) and will be processed as an Administrative Amendment. Stericycle will remain limited to specific emission concentrations listed in 40 CFR 60 Subpart Ce, R307-222 and R307-201-3. The emission reductions from the retrofits, in tons per year, are as follows: Particulate Matter (-0.63), PM₁₀ (-0.63), PM_{2.5} (-0.63), NO_x (-1.60), SO₂ (-6.73), CO (-2.01), VOC (-0.13), HAPs (-7.76) and CO_{2e} (-26.75).

The controlled PTE emissions, in TPY, will be as follows beginning October 6, 2014: Particulate Matter = 1.38, PM₁₀ = 1.38, PM_{2.5} (Subset of PM₁₀) = 1.38, NO_x = 14.97, SO₂ = 1.33, CO = 0.96, VOC = 0.24, Total HAPs = 1.66 and CO_{2e} = 10,930.13.

This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order. This AO is issued to, and applies to the following:

Name of Permittee:

Stericycle Incorporated
28161 North Keith Drive
Lake Forest, IL 60045

Permitted Location:

BFI Medical Waste Incinerator
90 North 1100 West
North Salt Lake, UT 84054

UTM coordinates: 420687 m Easting, 4521849 m Northing, UTM Zone 12
SIC code: 4953 (Refuse Systems)

Section I: GENERAL PROVISIONS

- I.1 All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
- I.2 The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
- I.3 Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]

- I.4 All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-401-8]
- I.5 At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
- I.6 The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
- I.7 The owner/operator shall comply with UAC, R307-150 Series. Inventories, Testing and Monitoring. In addition to the requirements of UAC, R307-150 the owner/operator shall comply with more frequent inventory submittals as required by the Utah State Plan for Hospital, Medical, Infectious Waste Incinerators as required under R307-220-3 and R307-222. [R307-150, R307-220-3, R307-222]

Section II: SPECIAL PROVISIONS

II.A The approved installations shall consist of the following equipment:

II.A.1 Hospital, Medical, Infectious Waste Incinerator
Site Wide

II.A.2 Incinerator (designated as HMIWI)
One (1) incinerator

Manufacturer: Joy Energy System, Inc
Maximum Design Feed Rate: 2,500 lbs of waste charged per hour
Model: TES2500

Equipped with natural gas-fired auxiliary burners, a bypass stack, automated waste feed system and ash removal system.

II.A.3 Incinerator Emissions Control System
HMIWI emission control system includes:

- One (1) evaporative gas cooler*
- One (1) carbon, sodium bicarbonate, lime, and/or equivalent injection system*
- One (1) baghouse*
- One (1) wet gas absorber*
- One (1) scrubbing system
- One (1) carbon bed*
- One (1) selective non-catalytic reduction (SNCR) system (New equipment added in 2012)
- * Retrofits to commence in 2014

Note: The injection system will remove and control dioxin/furan and mercury. The SNCR system controls NO_x emissions.

- II.A.4 **Waste Heat Boiler**
One (1) natural gas-fired boiler
- Manufacturer: Superior Boiler
Model No. Apache 11S8-WH-2904
Maximum Capacity: 11,078 lbs/hr of 200 psi steam or equivalent.
- II.A.5 **Sodium Bicarbonate, Lime, or Equivalent Silo**
One (1) sodium bicarbonate, lime or equivalent silo equipped with a fabric filter.
- II.A.6 **Emergency Generator**
One (1) Emergency Generator
Fuel Type: Diesel
Maximum Generator Rating: 762 hp
- II.A.7 **Support Facilities**
On-site support equipment consisting of refrigerated storage facilities for medical waste are noted as being located on the property but do not emit air contaminants.
- II.B Requirements and Limitations**
- II.B.1 **The Hospital, Medical, and Infectious Waste incinerator (HMIWI) Facility Requirements:**
- II.B.1.a The owner/operator shall notify the Director in writing when the installation of the new retrofit equipment listed in Conditions II.A.3 and II.A.6 have been completed and are operational. To ensure proper credit when notifying the Director, send your correspondence to the Director, attn: Compliance Section.
- If installation has not been completed within 18 months from the date of this AO, the Director shall be notified in writing on the status of the construction and/or installation. At that time, the Director shall require documentation of the continuous installation of the operation and may revoke the AO. [R307-401-18]
- II.B.1.b The owner/operator shall operate its HMIWI in accordance with 40 CFR 60 Subpart Ce (Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators), Utah Rule R307-222 (Emission Standards: Existing Incinerators for Hospital, Medical, Infectious Waste) and the Utah State Plan for Hospital, Medical, Infectious Waste Incinerators as required under R307-220-3 (Section II, Hospital, Medical, Infectious Waste Incinerators). [40 CFR 60 Subpart Ce, R307-220-3, R307-222]
- II.B.1.c The owner/operator shall operate the HMIWI below the maximum charge rate on a 3-hour rolling average basis. The maximum charge rate is defined as 110 percent of the lowest 3-hour average charge rate measured during the most recent performance test demonstrating compliance with all applicable emission limits. Records of the waste feed rate shall be kept at all times of incinerator operation and made available to the Director upon request. [40 CFR 60 Subpart Ce, R307-222, R307-401-8]

II.B.1.d Prior to October 6, 2014, emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

Source: Incinerator Emission Control System Exhaust Stack

Pollutant	Units (7% Oxygen, dry basis)	Limit
Particulate Matter	Milligrams per dry standard cubic meter (mg/dscm)	34
	Grains per dry standard cubic foot (gr/dscf)	0.015
Carbon Monoxide	Parts per million by volume (ppmv)	40
Dioxin/Furans	Nanograms per dry standard cubic meter total dioxin/furans (ng/dscm)	125
	Grains per billion dry standard cubic feet (gr/10 ⁹ dscf)	55
or;		
	ng/dscm TEQ	2.3
	gr/10 ⁹ dscf TEQ	1.0
Hydrogen Chloride	ppmv or percent reduction	100 or 93%
Sulfur Dioxide	ppmv	55
Nitrogen Oxides	ppmv	250
Lead	mg/dscm	1.2
	grains per thousand dry standard cubic feet (gr/10 ³ dscf)	0.52
	percent reduction	70%
Cadmium	mg/dscm	0.16
	gr/10 ³ dscf	0.07
	or percent reduction	65%
Mercury	mg/dscm	0.55
	gr/10 ³ dscf	0.24
	or percent reduction	85%

[40 CFR 60 Subpart Ce]

II.B.1.e Beginning October 6, 2014, emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

Source: Incinerator Emission Control System Exhaust Stack

Pollutant	Units (7% Oxygen, dry basis)	Limit
Particulate Matter	Milligrams per dry standard cubic meter(mg/dscm)	25
	Grains per dry standard cubic foot (gr/dscf)	0.011
Carbon Monoxide	Parts per million by volume (ppmv)	11

Dioxin/Furans	Nanograms per dry standard cubic meter total dioxin/furans (ng/dscm)	9.3
	Grains per billion dry standard cubic feet (gr/10 ⁹ dscf)	4.1
	or;	
	ng/dscm TEQ	0.054
	gr/10 ⁹ dscf TEQ	0.024
Hydrogen Chloride	ppmv	6.6
Sulfur Dioxide	ppmv	9.0
Nitrogen Oxides	ppmv	140
Lead	mg/dscm	0.036
	grains per thousand dry standard cubic feet (gr/10 ³ dscf)	0.016
Cadmium	mg/dscm	0.0092
	gr/10 ³ dscf	0.0040
Mercury	mg/dscm	0.018
	gr/10 ³ dscf	0.0079

[40 CFR 60 Subpart Ce]

- II.B.1.f An initial stack test to show compliance with the emission limitations stated in Condition II.B.1.e shall be performed for PM, CO, HCl, Dioxin/Furan, SO₂, NO_x, Pb, Cd, and Hg. The stack test shall be performed within 180 days of the installation of the Incinerator Emission Control System as designated in Condition II.A.3 of this AO or by October 6, 2014, whichever is later. Subsequent stack testing shall be performed for PM, CO, and HCl once per calendar year in accordance with 40 CFR 60 Subpart Ce, R307-222 and the Utah State HWIMI Plan. The annual testing frequency can be reduced to once every three years if all three performance tests over a 3-year period indicate compliance with the emission limits for each of the three pollutants. The frequency shall return to annual testing for a particular pollutant if a performance test for that pollutant indicates noncompliance with the respective emission limit. Upon operation of NO_x and CO CEMS as described in Condition II.B.1.g, stack testing for NO_x and CO will not be required. The use of the bypass stack during a stack test shall invalidate the stack test. [40 CFR 60 Subpart Ce, R307-222]
- II.B.1.f.1 Each stack test shall consist of a minimum of three test runs conducted under representative operating conditions. When testing is required, Dioxin/Furan, Pb, Cd, and Hg shall be tested simultaneously, and the minimum sample time shall be 4 hours per test run unless otherwise indicated. When testing is required, PM, CO, HCl, SO₂, and NOX shall be tested simultaneously, and the minimum sample time shall be 1 hour per test run unless otherwise indicated. All stack testing data and results shall be submitted to the Director within 60 days of the testing date(s). [R307-165, R307-401-8]
- II.B.1.f.2 Notification
- The Director shall be notified at least 30 days prior to conducting any required emission testing. A source test protocol shall be submitted to DAQ when the testing notification is submitted to the Director.

The source test protocol shall be approved by the Director prior to performing the test(s). The source test protocol shall outline the proposed test methodologies, stack to be tested, and procedures to be used. A pretest conference shall be held, if directed by the Director. [R307-165]

- II.B.1.f.3 Existing Source Operation: For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years. [R307-165]
- II.B.1.f.4 Sample Location

The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other EPA-approved testing method, as acceptable to the Director. An Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approved access shall be provided to the test location. [R307-165]
- II.B.1.f.5 Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2. [R307-165]
- II.B.1.f.6 Particulate Matter

40 CFR 60, Method 5 of Appendix A-3, 26A or 29 of Appendix A-8 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.7 Carbon Monoxide

40 CFR 60, Method 10 or 10B of Appendix A-4 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.8 Dioxins/furans

40 CFR 60, Method 23 of Appendix A-7 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.9 Hydrogen Chloride

40 CFR 60, Method 26 or 26A of Appendix A-8 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.10 Sulfur Dioxide

40 CFR 60, Method 6 or 6C of Appendix A-4 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.11 Nitrogen Oxides

40 CFR 60, Method 7 or 7E of Appendix A-4 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.f.12 Lead, Cadmium and Mercury

40 CFR 60, Method 29 of Appendix A-8 or other EPA approved method as acceptable to the Director. [R307-165]
- II.B.1.g The owner/operator shall operate continuous emissions monitoring systems (CEMS) or other

alternative monitoring approach approved by the Director to demonstrate compliance with NO_x and CO emissions limits. An O₂ monitor shall also be installed for adjusting the readings to percent O₂. Compliance with the NO_x and CO emission limits shall be demonstrated using a 12-hour rolling average, calculated each hour as the average of the previous 12 operating hours and not including startup, shutdown, or malfunction. While the affected emission unit is operating, hourly NO_x and CO emission rates expressed in ppmv shall be determined in accordance with R307-170 using the appropriate conversion factors. The CEMS shall be installed and operating no later than 18 months from the issuance date of this AO, unless an approved alternative is implemented. Prior to the installation and operation of the NO_x and CO CEMS, compliance with the NO_x and CO emissions limits shall be demonstrated by maintaining the minimum and maximum operating parameters identified in Conditions II.B.1.h and II.B.1.i.1 in accordance with 40 CFR 62 Subpart HHH and R307-222. CEMS shall be installed, calibrated, operated, and maintained in accordance with R307-170. [R307-170, R307-222]

- II.B.1.h Prior to the installation and operation of the CO CEMS, as described in Condition II.B.1.g, operating above the maximum charge rate (3-hour rolling average) and below the minimum secondary chamber temperature (3-hour rolling average) simultaneously constitutes a violation of the CO emissions limit. [R307-222]
- II.B.1.i The SNCR system shall inject ammonia, urea or an equivalent reagent into the incinerator's secondary chamber exhaust stream prior to the exhaust gas being fed into the waste heat boiler. All equivalent reagents shall be approved by the Director. [R307-401-8]
- II.B.1.i.1 The owner/operator shall establish the minimum reagent flow rate based on performance testing. The minimum reagent flow rate means 90 percent of the highest 3-hour average injection rate (taken, at a minimum, once every minute) measured during the most recent performance test demonstrating compliance with the NO_x emission limit. Prior to the installation and operation of the NO_x CEMS, as described in Condition II.B.1.g, operating above the maximum charge rate (3-hour rolling average), below the minimum secondary chamber temperature (3-hour rolling average), and below the minimum reagent flow rate (3-hour rolling average) simultaneously constitutes a violation of the NO_x emissions limit. [R307-222, R307-401-8]
- II.B.1.i.2 The owner/operator shall record the amount and type of NO_x reagent used during each hour of operation. [R307-401-8]
- II.B.1.j The baghouse shall operate in accordance with the following:
 - A) The pressure drop of the baghouse shall not be less than one (1) inches of water column or more than ten (10) inches of water column.
 - B) The baghouse operating parameters shall be monitored with equipment located such that an inspector/operator can safely read the output any time. The pressure drop readings shall be accurate to within plus or minus 0.5 inches of water column.
 - C) All instruments shall be calibrated according to the manufacturer's instructions.

[R307-401-8]
- II.B.1.k The owner/operator shall not allow visible emissions to exceed the following:
 - A) All baghouse emission points - 10% opacity
 - B) Sodium bicarbonate, lime, or equivalent silo emission point - 10% opacity

C) All diesel generator emission points - 20% opacity

D) All other stationary point or fugitive emission sources on site - 20% opacity*

* The 20% opacity limitation does not apply to the by-pass stack during by-pass events.

[R307-201-3]

II.B.1.k.1 A visual observation of the sodium bicarbonate, lime, or equivalent silo shall be performed once during each filling operation by an individual trained on the observation procedures of 40 CFR 60, Appendix A, Method 9. The individual is not required to be a certified visible emissions observer (VEO). If any visible emissions are observed, filling operations shall be suspended and the dust control device as well as any associated ducting shall be inspected. Any conditions existing outside of normal operational parameters shall be corrected and filling activities may resume. Upon resumption of filling operations a 40 CFR 60, Appendix A, Method 9 opacity determination of the silo shall be performed by a certified observer.

All other opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

For sources that are subject to NSPS, opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9. [R307-203-1]

II.B.1.k.2 Records of visual emission observations shall be kept at all times of filling operations. The records shall include the date, time and visual observation value noted. All records shall be kept in accordance with Condition I.4 of this AO. [R307-401-8]

II.B.2 **Emergency Diesel Generator Requirements**

II.B.2.a The emergency diesel generator shall not exceed 122 hours of operation per rolling 12-month period. [R307-401-8]

II.B.2.a.1 To determine compliance with a rolling 12-month total, the owner/operator shall calculate a new 12-month total for each day of the previous month by the twentieth day of each month using data from the previous 12 months. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log for the generator.

[R307-401-8]

II.B.2.b The sulfur content of any diesel fuel burned in any diesel engine on-site shall not exceed 15 ppm. [R307-401-8]

II.B.2.b.1 The sulfur content shall be determined by ASTM Method D2880-71, D4294-89, or approved equivalent. Certification of diesel fuel shall be either by the owner/operator's own testing or by test reports from the diesel fuel marketer. [R307-203-1]

Section III: APPLICABLE FEDERAL REQUIREMENTS

In addition to the requirements of this AO, all applicable provisions of the following federal programs have been found to apply to this installation. This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including UAC R307.

NSPS (Part 60), A: General Provisions

NSPS (Part 60), Ce: Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators

NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

MACT (Part 63), A: General Provisions

MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Title V (Part 70) area source

PERMIT HISTORY

This AO is based on the following documents:

Is Derived From	Notice of Intent dated March 7, 2014
Replaces	AO DAQE-AN101420010-13 dated January 8, 2013
Incorporates	Additional NOI Information dated March 24, 2014
Incorporates	Additional Source Information dated April 3, 2014
Incorporates	Additional Source Information dated June 20, 2014

ADMINISTRATIVE CODING

The following information is for UDAQ internal classification use only:

Davis County

CDS B

MACT (Part 63), Nonattainment or Maintenance Area, Title V (Part 70) major source, NSPS (Part 60),

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ	Division of Air Quality (typically interchangeable with UDAQ)
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO _x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM ₁₀	Particulate matter less than 10 microns in size
PM _{2.5}	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO ₂	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
UDAQ	Utah Division of Air Quality (typically interchangeable with DAQ)
VOC	Volatile organic compounds