

**R13 APPLICATION FOR A
CLASS II ADMINISTRATIVE UPDATE OF
THE MORGANTOWN FACILITY
PLANT ID 061-00132**

Prepared for:

**AES Asset Acquisition Corporation
dba Clean Earth of Morgantown**

1750 Morgantown Industrial Park
Morgantown, West Virginia 26501

Prepared by:

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Project No. 0101-13-0345-001

December 2016

POTESTA

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SECTION I

GENERAL APPLICANT INFORMATION

SECTION I

GENERAL APPLICANT INFORMATION



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
 801 57th Street, SE
 Charleston, WV 25304
 (304) 926-0475
www.dep.wv.gov/daq

**APPLICATION FOR NSR PERMIT
 AND
 TITLE V PERMIT REVISION
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):

- CONSTRUCTION MODIFICATION RELOCATION
 CLASS I ADMINISTRATIVE UPDATE TEMPORARY
 CLASS II ADMINISTRATIVE UPDATE AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT MINOR MODIFICATION
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

FOR TITLE V FACILITIES ONLY: Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

Section I. General

1. Name of applicant (as registered with the WV Secretary of State's Office):
 AES Asset Acquisition Corporation dba Clean Earth of Morgantown

2. Federal Employer ID No. (FEIN):
 27-3784718

3. Name of facility (if different from above):
 Same

4. The applicant is the:
 OWNER OPERATOR BOTH

5A. Applicant's mailing address:
 1750 Morgantown Industrial Park
 Morgantown, WV 26501

5B. Facility's present physical address:
 1750 Morgantown Industrial Park
 Morgantown, WV 25601

6. **West Virginia Business Registration.** Is the applicant a resident of the State of West Virginia? YES NO
 ⇒ If YES, provide a copy of the **Certificate of Incorporation/Organization/Limited Partnership** (one page) including any name change amendments or other Business Registration Certificate as **Attachment A**.
 ⇒ If NO, provide a copy of the **Certificate of Authority/Authority of L.L.C./Registration** (one page) including any name change amendments or other Business Certificate as **Attachment A**.

7. If applicant is a subsidiary corporation, please provide the name of parent corporation: Clean Earth, Inc.

8. Does the applicant own, lease, have an option to buy or otherwise have control of the *proposed site*? YES NO
 ⇒ If YES, please explain: Applicant owns the property at the Morgantown Industrial Park
 ⇒ If NO, you are not eligible for a permit for this source.

9. Type of plant or facility (stationary source) to be **constructed, modified, relocated, administratively updated** or **temporarily permitted** (e.g., coal preparation plant, primary crusher, etc.): Aerosol/paint can recycling

10. North American Industry Classification System (NAICS) code for the facility:
 561112

11A. DAQ Plant ID No. (for existing facilities only):
 0 6 1 - 0 0 1 3 2

11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only):
 R13-3148

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

<p>12A.</p> <p>⇒ For Modifications, Administrative Updates or Temporary permits at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</p> <p>⇒ For Construction or Relocation permits, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a MAP as Attachment B.</p> <p>From I-79, take Exit 152 towards Westover. Turn right on US 19 N/Fairmont Road. Turn right onto DuPont Road. DuPont Road becomes Morgantown Industrial Park. 1750 Morgantown Industrial Park is on the left.</p>		
<p>12.B. New site address (if applicable): NA</p>	<p>12C. Nearest city or town: Morgantown</p>	<p>12D. County: Monongalia</p>
<p>12.E. UTM Northing (KM): 4384.922</p>	<p>12F. UTM Easting (KM): 587.883</p>	<p>12G. UTM Zone: 17</p>
<p>13. Briefly describe the proposed change(s) at the facility: As-built changes and removal of equipment which was not installed.</p>		
<p>14A. Provide the date of anticipated installation or change: As-Built Changes ⇒ If this is an After-The-Fact permit application, provide the date upon which the proposed change did happen: / /</p>	<p>14B. Date of anticipated Start-Up if a permit is granted: As-Built Changes</p>	
<p>14C. Provide a Schedule of the planned Installation of/Change to and Start-Up of each of the units proposed in this permit application as Attachment C (if more than one unit is involved).</p>		
<p>15. Provide maximum projected Operating Schedule of activity/activities outlined in this application: Hours Per Day 24 Days Per Week 7 Weeks Per Year 52</p>		
<p>16. Is demolition or physical renovation at an existing facility involved? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>		
<p>17. Risk Management Plans. If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see www.epa.gov/ceppo), submit your Risk Management Plan (RMP) to U. S. EPA Region III.</p>		
<p>18. Regulatory Discussion. List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (<i>if known</i>). Provide this information as Attachment D.</p>		
<p>Section II. Additional attachments and supporting documents.</p>		
<p>19. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).</p>		
<p>20. Include a Table of Contents as the first page of your application package.</p>		
<p>21. Provide a Plot Plan, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as Attachment E (Refer to Plot Plan Guidance).</p> <p>⇒ Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).</p>		
<p>22. Provide a Detailed Process Flow Diagram(s) showing each proposed or modified emissions unit, emission point and control device as Attachment F.</p>		
<p>23. Provide a Process Description as Attachment G.</p> <p>⇒ Also describe and quantify to the extent possible all changes made to the facility since the last permit review (<i>if applicable</i>).</p>		
<p>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</p>		

24. Provide **Material Safety Data Sheets (MSDS)** for all materials processed, used or produced as **Attachment H**.
 ⇒ For chemical processes, provide a MSDS for each compound emitted to the air.

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	

General Emission Unit, specify Aerosol can unit, can crushers.

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input checked="" type="checkbox"/> Adsorption Systems	<input type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System

Other Collectors, specify

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and *Example Legal Advertisement* for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES NO

➤ If YES, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's "*Precautionary Notice – Claims of Confidentiality*" guidance found in the *General Instructions* as **Attachment Q**.

Section III. Certification of Information

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R**.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

Certification of Truth, Accuracy, and Completeness

I, the undersigned **Responsible Official** / **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

Compliance Certification

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE  DATE: 12/19/16
(Please use blue ink) (Please use blue ink)

35B. Printed name of signee: Bernie Guerin		35C. Title: Chief Financial Officer
35D. E-mail: BGuerin@cleaneearthinc.com	36E. Phone: 215-734-1400 ext. 230	36F. FAX:
36A. Printed name of contact person (if different from above): John Staples		36B. Title: EHS Manager
36C. E-mail: jstaples@cleaneearthinc.com	36D. Phone: (270) 395-0504	36E. FAX: (270) 395-0516

PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate | <input checked="" type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet |
| <input checked="" type="checkbox"/> Attachment B: Map(s) | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s) |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input checked="" type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s) |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan | <input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s) | <input checked="" type="checkbox"/> Attachment P: Public Notice |
| <input checked="" type="checkbox"/> Attachment G: Process Description | <input type="checkbox"/> Attachment Q: Business Confidential Claims |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table | <input type="checkbox"/> Attachment S: Title V Permit Revision Information |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee |

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

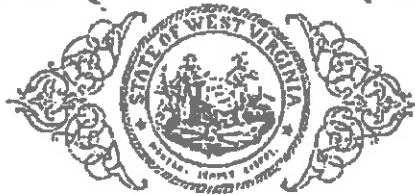
FOR AGENCY USE ONLY - IF THIS IS A TITLE V SOURCE:

- Forward 1 copy of the application to the Title V Permitting Group and:
- For Title V Administrative Amendments:
 - NSR permit writer should notify Title V permit writer of draft permit,
- For Title V Minor Modifications:
 - Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,
 - NSR permit writer should notify Title V permit writer of draft permit.
- For Title V Significant Modifications processed in parallel with NSR Permit revision:
 - NSR permit writer should notify a Title V permit writer of draft permit,
 - Public notice should reference both 45CSR13 and Title V permits,
 - EPA has 45 day review period of a draft permit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

ATTACHMENT A
BUSINESS CERTIFICATE

State of West Virginia



Certificate

*I, Natalie E. Tennant, Secretary of State of the
State of West Virginia, hereby certify that*

AES ASSET ACQUISITION CORPORATION

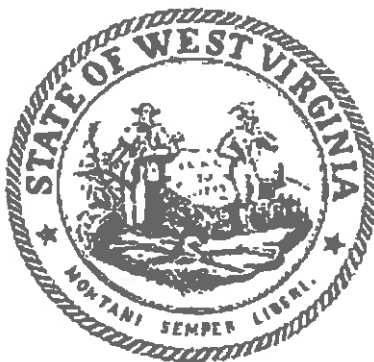
has filed a "Certificate of Registration of Trade Name" in my office according to the provisions of Chapter 47 of the West Virginia Code and was found to conform to law.

Therefore, I hereby issue this

CERTIFICATE OF REGISTRATION OF TRADE NAME

authorizing it to transact business in West Virginia under the assumed name of

CLEAN EARTH OF MORGANTOWN



*Given under my hand and the
Great Seal of the State of
West Virginia on this day of
December 7, 2015*

Natalie E. Tennant

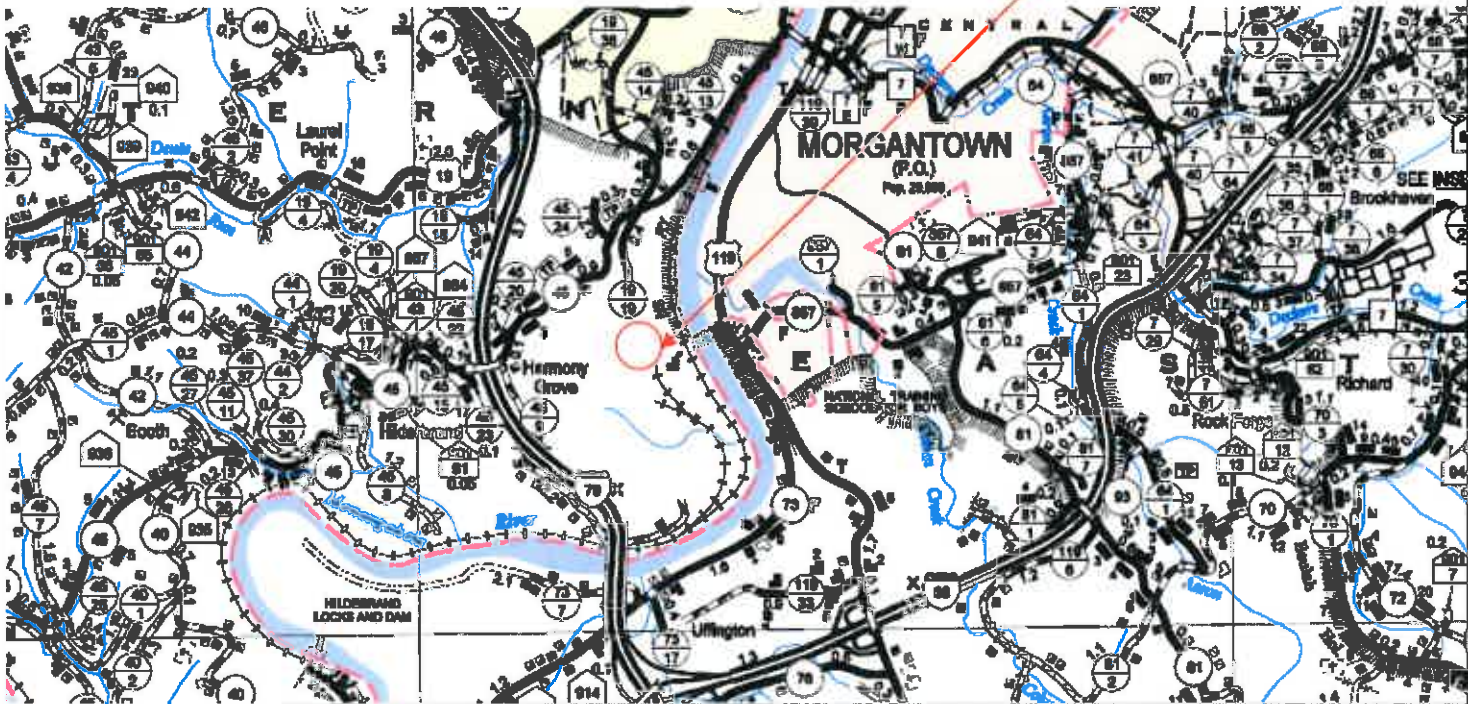
Secretary of State

ATTACHMENT B

AREA MAP



Facility Location



7012 MacCorkle Avenue, S.E
 Charleston, West Virginia 25304
 Phone: (304) 342-1400
 Fax: (304) 343-9031

Morgantown Facility
 AES Asset Acquisition Corporation
 dba Clean Earth of Morgantown
 Monongalia County, West Virginia

ATTACHMENT C
INSTALLATION AND START UP SCHEDULE

ATTACHMENT C

INSTALLATION AND STARTUP SCHEDULE

AES Asset Acquisition Corporation dba Clean Earth of Morgantown's facility was installed under Regulation 13 Permit No. R13-3148. The facility as proposed in that application/permit has not been fully installed/operational and there are as-built differences. This permit revision request is to clean up the permit and account for the as-built differences.

ATTACHMENT D
REGULATORY DISCUSSION

ATTACHMENT D

REGULATORY DISCUSSION

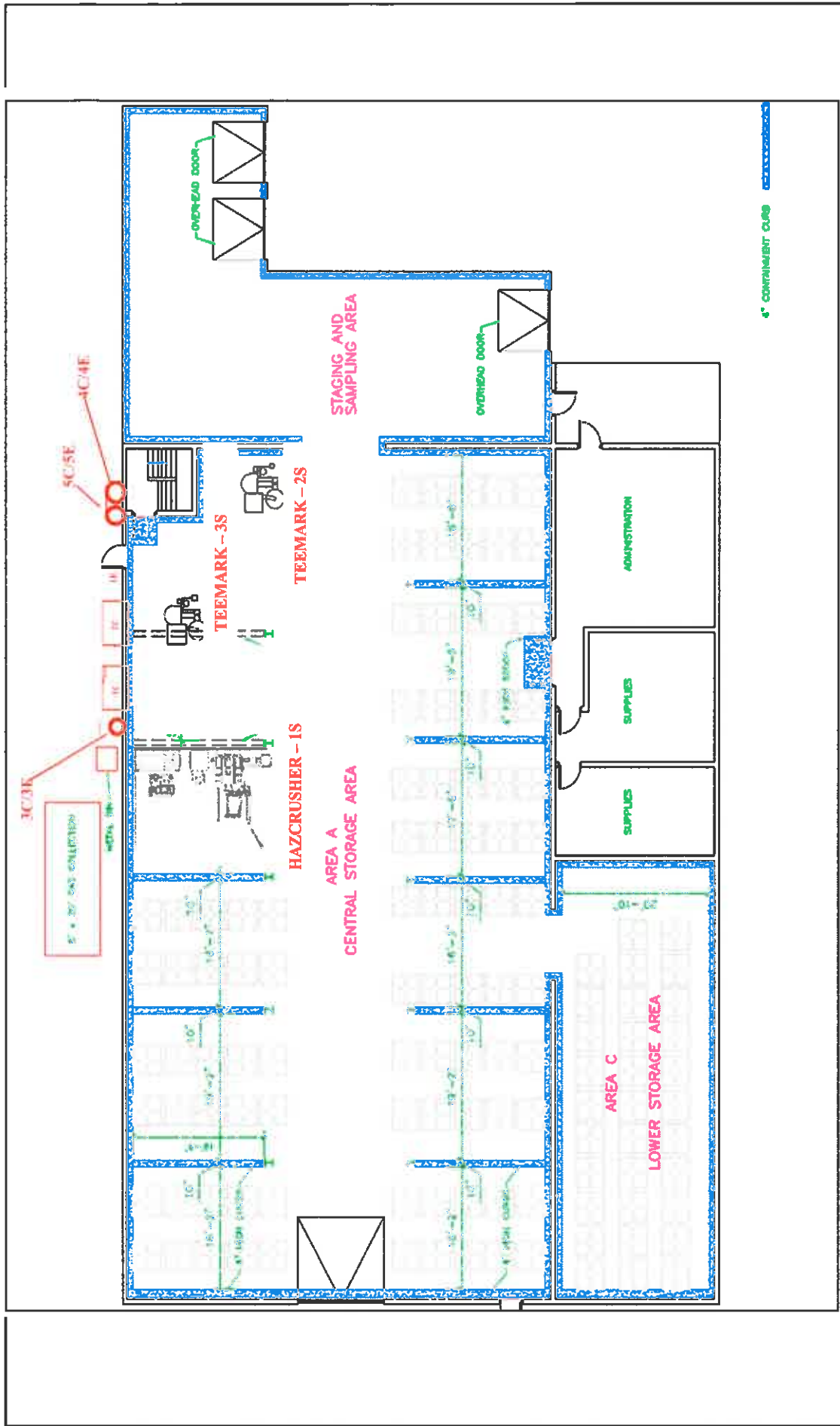
This permit does not place additional regulatory applicability on the facility. With the removal of the ability to operate the generator (which was installed but has never been made operable), the facility will remove the applicability of 40CFR60, Subpart JJJJ and 40CFR63, Subpart ZZZZ, both related to spark ignition engines.

ATTACHMENT E

PLOT PLAN

ATTACHMENT E - PLOT PLAN
Morgantown Facility
AES Asset Acquisition Corporation
dba Clean Earth of Morgantown

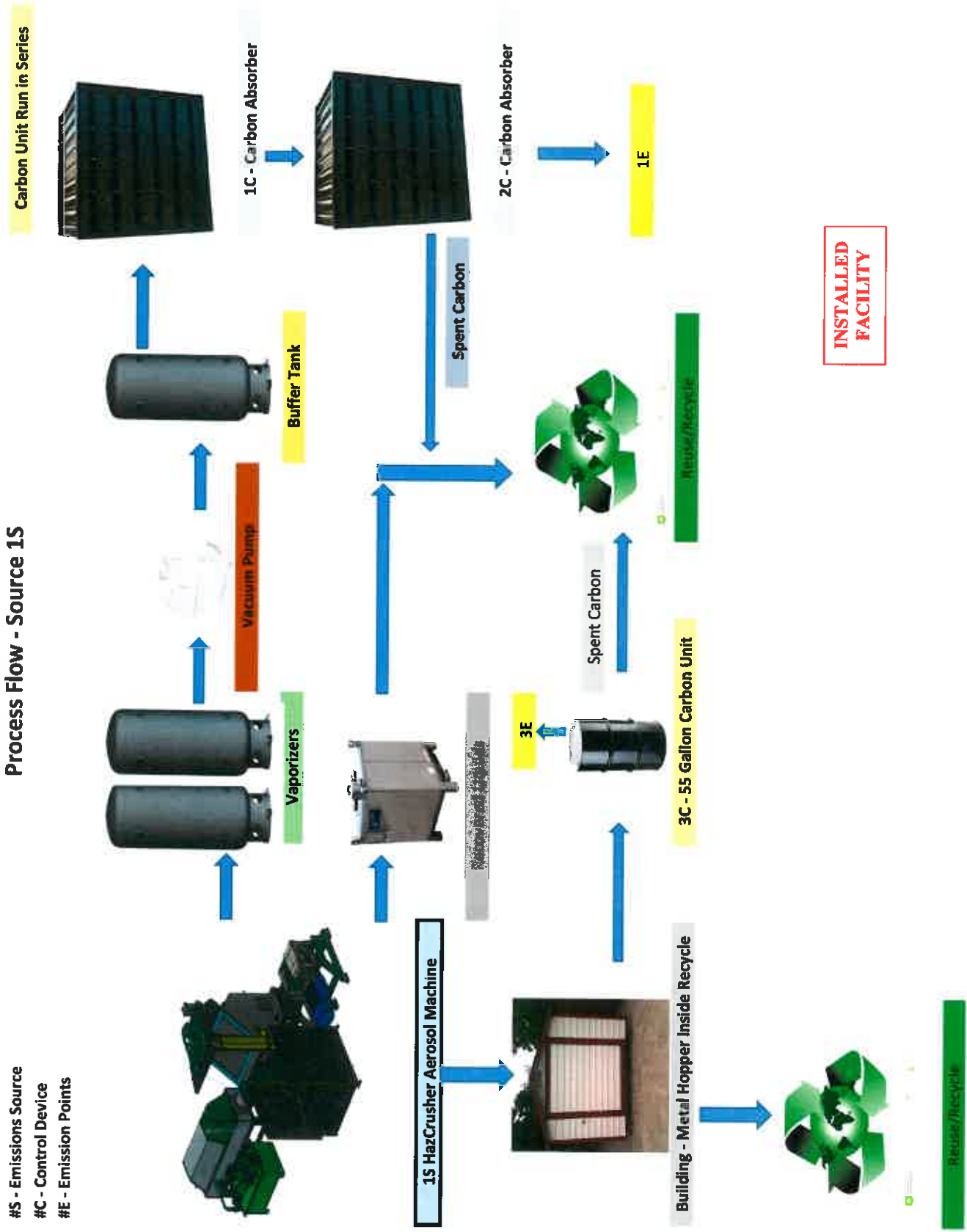
7012 MacCorkle Avenue, SE
 Charleston, West Virginia 25304
 Phone: (304) 342-1400
 Fax: (304) 343-9031



ATTACHMENT F
DETAILED PROCESS FLOW DIAGRAM

#S - Emissions Source
#C - Control Device
#E - Emission Points

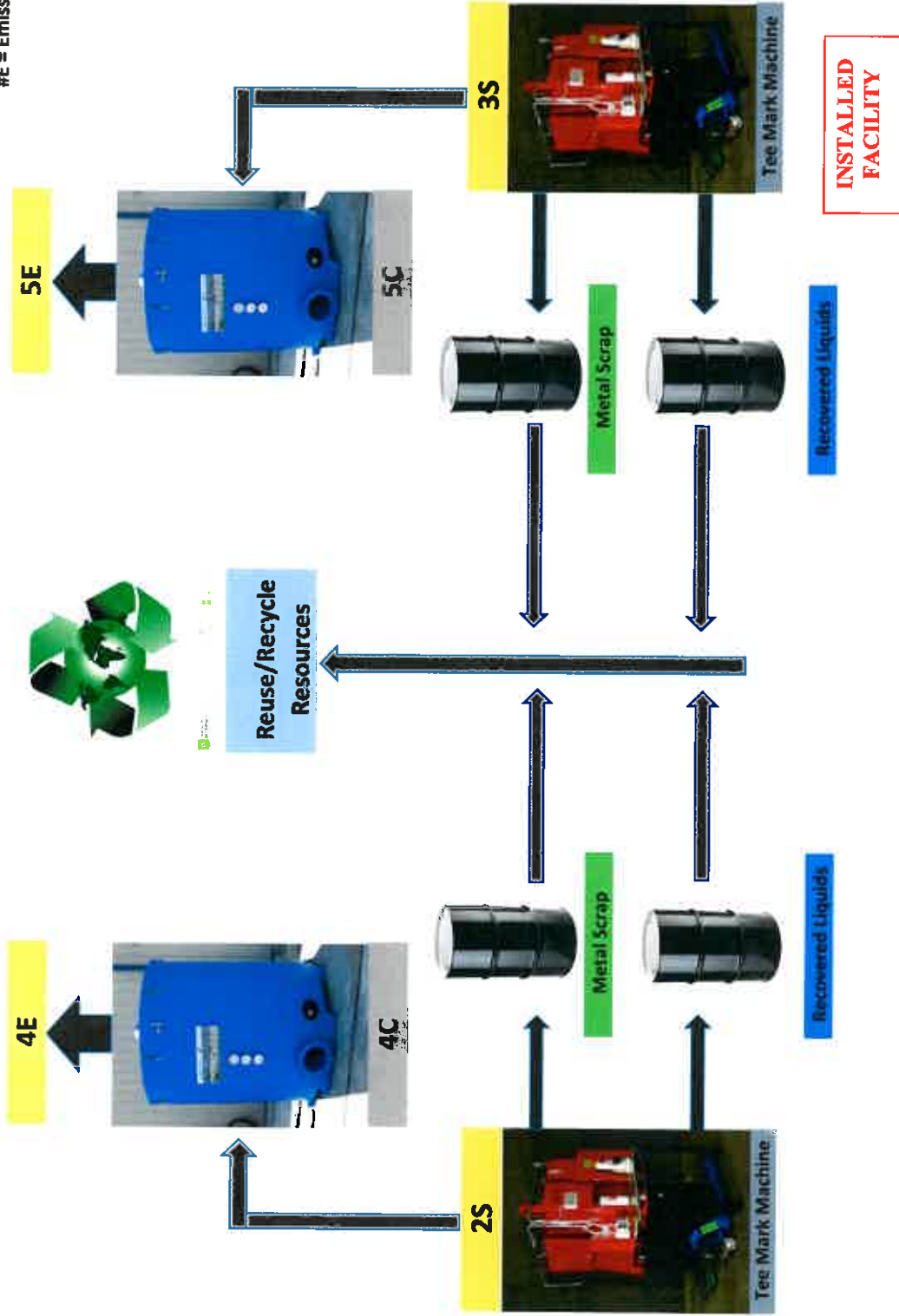
Process Flow - Source 1S



#S = Emissions Source
#C = Control Device
#E = Emission Points

Process Flow - 2S/3S

Attachment B



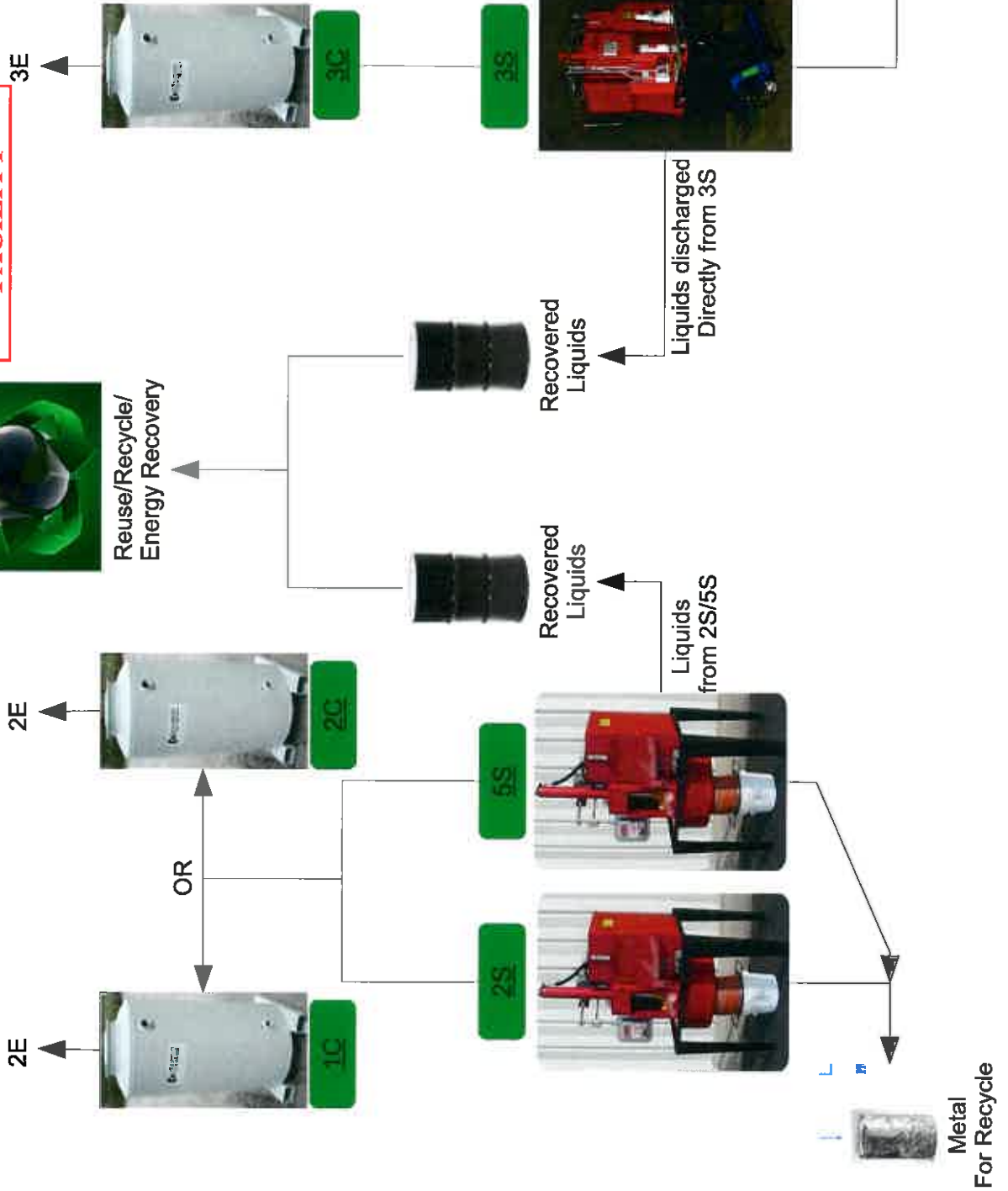
Process Flow - 2S/3S/5S

ORIGINALLY PROPOSED FACILITY

#S = Emissions source
#C = Control Device
#E = Emission Points



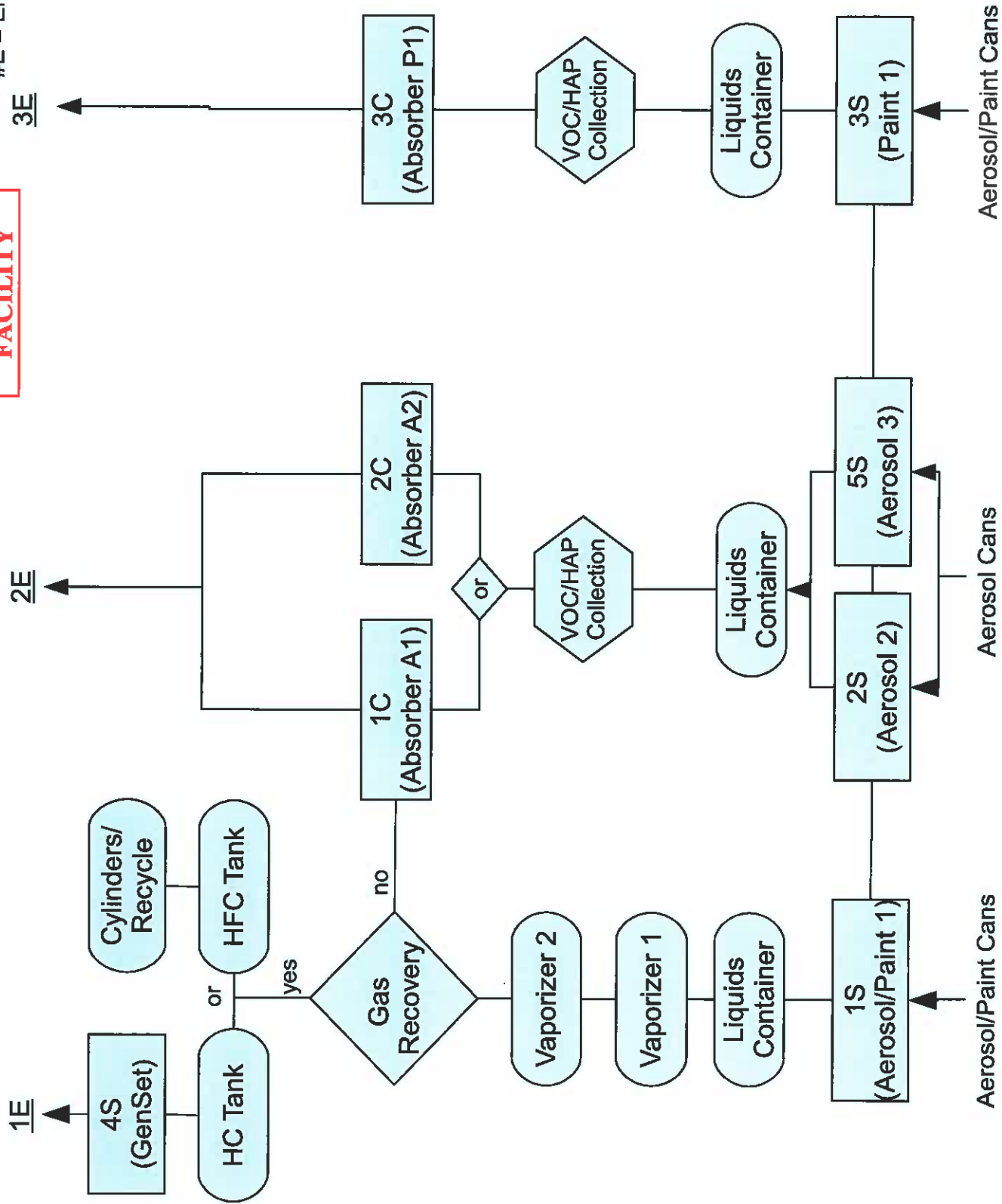
Reuse/Recycle/
Energy Recovery



AES Morgantown, WV
Aerosol/Paint Can Processing

#S = Emission Sources
 #C = Control Devices
 #E = Emission Points

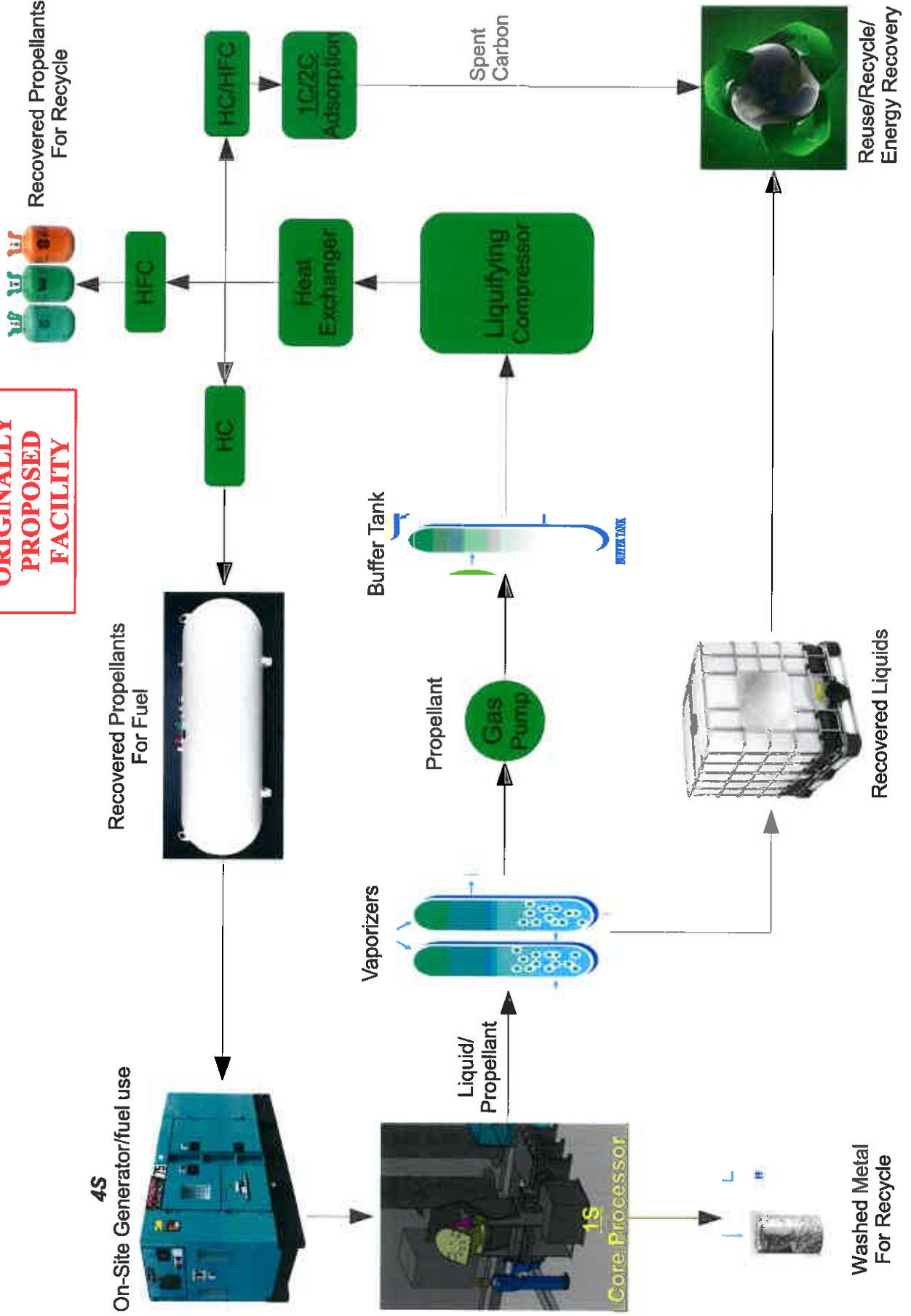
**ORIGINALLY
 PROPOSED
 FACILITY**



Process Flow - Source 1S

ORIGINALLY PROPOSED FACILITY

#S = Emissions source
 #C = Control Device
 #E = Emission Points



ATTACHMENT G
PROCESS DESCRIPTION

ATTACHMENT G

PROCESS DESCRIPTION

AES Asset Acquisition Corporation dba Clean Earth of Morgantown (Clean Earth) is located at the Morgantown Industrial Park. Clean Earth operates an aerosol and can recycling center and is labeled as a hazardous waste recycling facility. The site was originally permitted in R13-3148 which became effective on March 26, 2014. The facility receives many different forms of containers that need to be emptied to recover the metal or plastic from the container and also collect and send the contents to facilities which burn the material as fuel. The facility receives off-specification items directly from production companies, post-consumer/consumer return items from stores, and materials that have passed the expiration date or other reasons why the materials/supplies need to be recycled.

The site is a hazardous waste recycling facility and is allowed to recycle the waste listed under the codes included on the pages in the appendix. The codes have been reviewed to determine what materials are in each waste type that is listed. This review is also in the appendix. The materials in the hazardous waste list may be either a percentage of the material received or may be the waste (100%). Clean Earth requests the air permit to cover this code list.

Process Flow Diagrams and Processing Equipment

The initially proposed process flow diagrams and the existing process flow diagrams are included in Attachment F for comparison. The operating equipment is discussed below.

Hazcrusher (1S, 1C through 3C, 1E, and 3E)

Permit R13-3148 allowed for one (1) Aerosol Can Crusher which was installed and is the main aerosol crushing device operated at the facility. This unit is the Hazcrusher Aerosol Machine (Source 1S) which receives a small bin of aerosol cans and then runs and crushes all the cans. The fluids drain down into a drum for shipping off as fuel. The aerosol propellant was initially planned to be recovered via the gas skid and used as a fuel for an on-site power generator. The mixture of materials received for recycling has not produced sufficient amounts of propellants which would allow for collection and fueling of the generator. Therefore, the generator, which was installed but has never operated, is being removed from the permit. The generator will not be operated at this site. The gas recovery skid is still at the site but the propellant only pass through the process without the gas skid in operation. There is no compression of the propellant and no actions taken by the skid on the propellants. The propellants then pass through two (2) activated carbon filters (1C and 2C, 1E) which control volatile organic compounds (VOC)/hazardous air pollutants (HAPS). These carbon filters are Air 2500 activated carbon filters.

The crushed cans are conveyed to a receiving bin which stores the metal or plastic cans for shipping to a recycling facility. This bin is inside a small building called the Metal Building which is vented to a 55 gallon drum size activated carbon filter (3C, 3E).

Additionally, there are some fugitive emissions associated with this process. With the propellant just passing through the gas system and no compression occurring, the leaks estimate from compression has been removed. The other count of fugitive emission sources has remained the same.

The emissions for this process were initially estimated based on 2,000 cans per hour being crushed in the Hazcrusher. This unit is a specialty built unit (not an off-the-shelf type unit) and it has been determined that the maximum capacity of the unit to crush cans is 5,000 cans per hour instead of 2,000 cans per hour. The number of cans is variable because of the difference in sizes of the containers that are received for recycling. The resulting emissions have been updated to reflect the operating rate and the impact of having activated carbon filtration with a maximum release concentration of 1,500 ppm VOC and HAPS (actual measurements have been variable with a maximum of 871 ppm VOC's at emissions point 1E).

Also, an emission point has been added for the container storage (Metal Building) which is vented to 3C with a maximum concentration of 100 ppm (actual measurements have not been able to detect VOC's at emissions point 3E).

Teemark Can/Pail Crushers

There are two (2) Teemark Can/Pail Crushers on site. These units are manually fed one can/pail at a time. The operator presses a button and the can/pail is punctured and smashed. The metal is recycled. The fluids drain to a drum and are sent off-site to be used as fuel. Most of the material recycled through these systems are non-pressurized cans and pails. These cans/pails do not contain propellant like aerosol cans. However, there is some VOC/HAP release which is also controlled by activated carbon filters. Each Teemark has its own activated carbon filter. The processing rate is 300 cans/pails per hour for each unit. Teemark (2S) vents to activated carbon filter 4C with emission point 4E. Teemark (3S) vents to activated carbon filter 5C with emission point 5E. These carbon filters are Air 1800 activated carbon filters.

The emissions for these units has been updated. The initial emissions estimate was based on a measured reading from another facility of 251 ppm. The emissions are based on 100 ppm (actual measurements have not been able to detect VOC's at emissions point 4E and 5E).

Method to Track Compliance

To account for large variable listings, Clean Earth requests two methods of tracking compliance.

Method 1 is for mixed batch materials. These materials are typically consumer products (antiperspirants, shaving cream, cleaners, etc.) that arrive at the facility already mixed together. The size of the containers is variable as are the contents. These materials are processed in the Hazcrusher in the as-delivered mixture of containers. Clean Earth proposes to utilize the run time, the exhaust flow rate of 220 cubic feet per minute (cfm) for the Hazcrusher and 250 cfm for the Metal Building, and a measured ppm to determine the actual VOC emissions for mixed

batch operations. One VOC measurement will be taken per month and used to determine the emissions for all mixed batch items for that month. For this operation the total HAP will be considered equal to the total VOC and the HAPs will not be speciated.

Method 2 is for non-mixed batches of materials. This method of determining compliance will be for recycled materials where we received pallets of materials that are one type (for example a pallet of off specification aerosol white paint from a single manufacturer). The amount of VOC and HAPs will be based on the amount stated on the Safety Data Sheet. For this process the amounts are known and can be reasonably estimated. The total emission value will be based on the operating time, the exhaust flow rates (220 cfm for the Hazcrusher, 250 cfm for the Metal Building, and 250 cfm for each of the Teemark units), a measured emissions value at each stack taken once per month, and the known mixture of each of the materials (VOC and HAP) in the cans being recycled.

This method can be used for non-mixed batches which are processed through the Hazcrusher and also the pails that are crushed in the Teemarks.

Requested Permit Limit

Clean Earth requested a facility wide permit limit of 10.02 tons per year of VOCs and 10.02 tons per year of HAPS and toxic air pollutants (TAPS). The HAPS include both the HAPS in the calculations and the HAPS in the waste codes in Appendix 1.

ATTACHMENT H
MATERIAL SAFETY DATA SHEETS



SALES SPECIFICATION SHEET
VPR 4x10
 Granular Reactivated Carbon

Test	Specification		Calgon Carbon Test Method
	Min	Max	
BUTANE ACTIVITY, wt%	21.4	-	TM-36 or ASTM D 5742
ASH, wt%		10	TM-5
MOISTURE, wt%, as packed		2	TM-1 or ASTM D 2867
US SIEVE SERIES			TM-8
- 10		5	

This activated carbon product is not for use in potable water or food grade applications

This product is Made to Stock

Calgon Carbon Corporation's activated carbon products are continuously being improved and changes may have taken place since this publication went to press. (3340-08/09/96)

NORIT Americas Inc.

The Purification Company



ISO 9001:2000
FM 39843

DATASHEET

No. 2280

Jun 2006

NORIT® VAPURE REACT GRANULAR ACTIVATED CARBON

NORIT VAPURE REACT is a granular reactivated carbon produced under closely controlled operating conditions in our state-of-the-art facility. Quality and screen size are designed to provide high performance levels in the removal of odors, toxic vapors, and irritants from various gas streams. This product is a recycled activated carbon and not for food grade or potable water applications.

Product Specifications

Iodine number, mg/g	850 min.
Hardness number (ASTM)	95 min.
Moisture, % as packed	3 max.
Mesh size (U.S. Sieve Series)	
Greater than 4 mesh (4.75 mm), %	5 max.
Less than 10 mesh (2.00 mm), %	5 max.

Typical Properties*

Butane activity, % (ASTM)**	23
Apparent density, vibrating feed, g/mL	0.50
lb/ft ³	31

*For general information only, not to be used as purchase specifications.

**This butane activity value is equivalent to a carbon tetrachloride adsorption value of 62%.

Packaging/Transportation

Standard package is woven polypropylene bulk bags, 800 lbs net.

Activated carbon (NOT REGULATED)

Exempt from DOT, IATA, and IMDG regulations

Import/Export classification: 3802.10.0000 (HS Tariff Classification)

Domestic Freight Classification: NMFC 040560

CAS # 7440-44-0

Material Handling

Wet activated carbon depletes oxygen from air and, therefore, dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed. Appropriate protective equipment should be worn. Avoid inhalation of excessive carbon dust. No problems are known to be associated in handling this material. Please see the product Material Safety Data Sheet for details. Long-term inhalation of high dust concentrations can lead to respiratory impairment. Use forced ventilation or a dust mask when necessary for protection against airborne dust exposure (see Code of Federal Regulations - Title 29, Subpart Z, par. 1910.1000, Table Z-3).

(continued on reverse side)



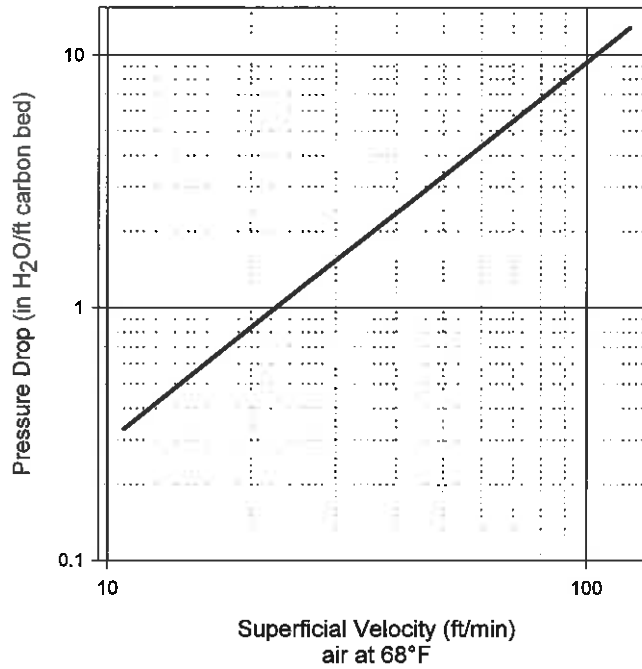
DATASHEET

No. 2280
Jun 2006

NORIT® VAPURE REACT (continued)

Engineering Data

Typical Pressure Drop Curve
for NORIT VAPURE REACT



Note: Any specification given was valid at time of issuance of the publication. However, we maintain a policy of continuous development and reserve the right to amend any specification without notice.



ATTACHMENT I
EMISSION UNITS TABLE

Attachment I
Emission Units Table
(includes all emission units and air pollution control devices
that will be part of this permit application review, regardless of permitting status)

Emission Unit ID ¹	Emission Point ID ²	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type ³ and Date of Change	Control Device ⁴
1S	1E/3E	Aerosol Can Crusher/Metal Building	2014	5,000 cans	Existing	1C and 2C/3C
2S	4E	Can Crusher	2008	300 cans	Existing	4C
3S	5E	Can Crusher	2016	300 cans	Existing	5C
NOTE: The generator permitted as source 4S was installed but never operated. This unit is to be removed from the permit.						

¹ For Emission Units (or Sources) use the following numbering system: 1S, 2S, 3S,... or other appropriate designation.
² For Emission Points use the following numbering system: 1E, 2E, 3E, ... or other appropriate designation.
³ New, modification, removal
⁴ For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

*Not a physical change.

ATTACHMENT J

EMISSION POINTS DATA SUMMARY SHEET

**Attachment J
EMISSION POINTS DATA SUMMARY SHEET**

Table 1: Emissions Data															
Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type ¹	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS ³ (Speciate VOCs & HAPS)	Maximum Potential Uncontrolled Emissions ⁴		Maximum Potential Controlled Emissions ⁵		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used ⁶	Emission Concentration ⁷ (ppmv or mg/m ³)
		ID No.	Source	ID No.	Device Type	Short Term ²	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr			
1E	Upward Vertical Stack	1S	Aerosol Can Crusher	1C or 2C	Adsorber	NA	NA	VOC Ethyl Benzene Glycol Ethers Hexane Methanol Toluene Xylene, mixed Total HAPS*	1.54 0.08 0.20 0.03 0.10 0.66 0.82 1.88	6.75 0.34 0.86 0.14 0.44 2.90 3.58 8.24	1.54 0.08 0.20 0.03 0.10 0.66 0.82 1.88	6.75 0.34 0.86 0.14 0.44 2.90 3.58 8.24	Gas/Vapor	EE	NA
3E	Upward Vertical Stack	1S	Metal Building	3C	Adsorber	NA	NA	VOC Ethyl Benzene Glycol Ethers Hexane Methanol Toluene Xylene, mixed Total HAPS*	0.12 0.01 0.01 0.01 0.01 0.05 0.06 0.15	0.51 0.03 0.06 0.01 0.03 0.22 0.27 0.64	0.12 0.01 0.01 0.01 0.01 0.05 0.06 0.15	0.51 0.03 0.06 0.01 0.03 0.22 0.27 0.64	Gas/Vapor	EE	NA
4E	Upward Vertical Stack	2S	Can Crusher	4C	Adsorber	NA	NA	VOC Methylene Chloride Total HAPS*	0.12 0.08 0.08	0.51 0.36 0.36	0.12 0.08 0.08	0.51 0.36 0.36	Gas/Vapor	EE	NA
5E	Upward Vertical Stack	3S	Can Crusher	5C	Adsorber	NA	NA	VOC Methylene Chloride Total HAPS*	0.12 0.08 0.08	0.51 0.36 0.36	0.12 0.08 0.08	0.51 0.36 0.36	Gas/Vapor	EE	NA

*Total HAPS includes the HAPS in Appendix I.

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncollected emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

¹ Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

² Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (i.e., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/week).

³ List all regulated air pollutants. Speciate VOCs, including all HAPS. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

⁴ Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁵ Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁶ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

⁷ Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m³) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO₂ use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data

Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas				Emission Point Elevation (ft)			UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow ¹ (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height ² <i>(Release height of emissions above ground level)</i>	Northing	Easting		
1E	0.29	Ambient	220	~55	~958	10	4,384,922	587,883		
3E	NA	Ambient	250	~8	~958	9	4,384,922	587,883		
4E	NA	Ambient	250	~8	~958	9	4,384,922	587,883		
5E	NA	Ambient	250	~8	~958	9	4,384,922	587,883		

¹ Give at operating conditions. Include inerts.
² Release height of emissions above ground level.

ATTACHMENT K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS ¹	Maximum Potential Uncontrolled Emissions ²		Maximum Potential Controlled Emissions ³		Est. Method Used ⁴
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads						
Storage Pile Emissions						
Loading/Unloading Operations						
Wastewater Treatment Evaporation & Operations						
Equipment Leaks		Does not apply		Does not apply		
General Clean-up VOC Emissions	Volatile Organic Compounds	0.91	0.40	0.091	0.40	EE ⁵
Other						

¹ List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS₂, VOCs, H₂S, Inorganics, Lead, Organics, O₃, NO, NO₂, SO₂, SO₃, all applicable Greenhouse Gases (including CO₂ and methane), etc. DO NOT LIST H₂, H₂O, N₂, O₂, and Noble Gases.

² Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

³ Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

⁴ Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

ATTACHMENT L

EMISSION UNIT DATA SHEETS

**Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 1S

<p>1. Name or type and model of proposed affected source:</p> <p>Aerosol can processing unit manufactured by Kanvironmental Corporation, Elmira, Ontario, Canada, known as the HazKrush</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>5,000 cans/hr</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>5,000 crushed cans/hr (solids, liquids, gaseous materials from the crushed can)</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Not Applicable</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Not Applicable

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used: Can Crusher/Metal Building

@	°F and	psia		
a. NO _x			lb/hr	grains/ACF
b. SO ₂			lb/hr	grains/ACF
c. CO			lb/hr	grains/ACF
d. PM ₁₀			lb/hr	grains/ACF
e. Hydrocarbons			lb/hr	NA grains/ACF
f. VOCs	1.54/0.12		lb/hr	NA grains/ACF
g. Pb			lb/hr	grains/ACF
h. Specify other(s)				
Ethyl Benzene	0.08/0.01		lb/hr	NA grains/ACF
Glycol Ethers	0.20/0.02		lb/hr	NA grains/ACF
Hexane	0.03/0.01		lb/hr	NA grains/ACF
Methanol	0.10/0.01		lb/hr	NA grains/ACF
Toluene	0.66/0.05		lb/hr	NA grains/ACF
Xylene	0.82/0.06		lb/hr	NA grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.
 (2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING

Measure VOC at exhaust once per month.

RECORDKEEPING

Record hours of operation and VOC measurement.

REPORTING

None Proposed.

TESTING

None Proposed.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

See additional sheet.

Attachment L – Emission Unit 1S

Additional maintenance information

Daily

Visually inspect complete system for loose or damaged components.

Ensure that all safety guarding is in place

Ensure nitrogen supply is open and that an adequate supply is available

Check levels in gas and liquid storage tanks. Empty if required.

Check briquette wash sump for debris and empty as needed using “Briquette Wash Reservoir Flush” setting on touch screen.

Start the machine and check for system leaks, unusual noise and/or vibration.

At the end of the day, log temperature of all gear boxes, compressor (top and bottom targets) and gas pump using an infrared heat gun. Also check heat transfer fluid level.

Weekly

Inspect shear blades for wear and tightness

Lubricate tipper as required

Check oil levels in the compressor

Check belt condition in the compressor and gas pump

Monthly

Visually inspect compression auger for wear

Inspect hopper lid seal

Check gear box oil level

Lubricate hopper lid pivots

Attachment L
EMISSIONS UNIT DATA SHEET
GENERAL

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 2S and 3S

<p>1. Name or type and model of proposed affected source:</p> <p>Can Crushers by TeeMark Corporation, Aitkin, MN. 2S is a Super 6P-VC-CF model. 3S is a Super 6PJ-VC.</p>
<p>2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.</p>
<p>3. Name(s) and maximum amount of proposed process material(s) charged per hour:</p> <p>300 cans (pails)/hr each</p>
<p>4. Name(s) and maximum amount of proposed material(s) produced per hour:</p> <p>300 crushed cans (pails)/hr each (Metals or plastics from cans recovered, paint collected for fuel blending at off-site RCRA facilities)</p>
<p>5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:</p> <p>Not Applicable</p>

* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Not Applicable

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

× 10⁶ BTU/hr.

7. Projected operating schedule:

Hours/Day

24

Days/Week

7

Weeks/Year

52

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used: Emissions per each.

		@	°F and	psia	
a.	NO _x			lb/hr	grains/ACF
b.	SO ₂			lb/hr	grains/ACF
c.	CO			lb/hr	grains/ACF
d.	PM ₁₀			lb/hr	grains/ACF
e.	Hydrocarbons			lb/hr	NA grains/ACF
f.	VOCs	0.12		lb/hr	NA grains/ACF
g.	Pb			lb/hr	grains/ACF
h.	Specify other(s)				
	Methylene Chloride	0.08		lb/hr	NA grains/ACF
				lb/hr	grains/ACF
				lb/hr	grains/ACF
				lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

9. Proposed Monitoring, Recordkeeping, Reporting, and Testing
 Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING
 Measure VOC at exhaust once per month.

RECORDKEEPING
 Record hours of operation and VOC measurement.

REPORTING
 None Proposed.

TESTING
 None Proposed.

MONITORING. PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

RECORDKEEPING. PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

REPORTING. PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

TESTING. PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

None.

**Attachment L
EMISSIONS UNIT DATA SHEET
CHEMICAL PROCESS**

For chemical processes please fill out this sheet and all supplementary forms (see below) that apply. Please check all supplementary forms that have been completed.

- Emergency Vent Summary Sheet*
- Leak Sources Data Sheet*
- Toxicology Data Sheet*
- Reactor Data Sheet*
- Distillation Column Data Sheet*

1. Chemical process area name and equipment ID number (as shown in *Equipment List Form*)
1S

2. Standard Industrial Classification Codes (SICs) for process(es)
4212

3. List raw materials and attach MSDSs
Paint and aerosol cans

4. List Products and Maximum Production and attach MSDSs

Description and CAS Number	Maximum Hourly (lb/hr)	Maximum Annual (ton/year)

5. Complete the *Emergency Vent Summary Sheet* for all emergency relief devices.

6. Complete the *Leak Source Data Sheet* and describe below or attach to application the leak detection or maintenance program to minimize fugitive emissions. Include detection instruments, calibration gases or methods, planned inspection frequency, and record-keeping, and similar pertinent information. If subject to a rule requirement (e.g. 40CFR60, Subpart VV), please list those here.

7. Clearly describe below or attach to application Accident Procedures to be followed in the event of an accidental spill or release.
The facility maintains a RCRA Part B permit that details spill response procedures.

8A. Complete the *Toxicology Data Sheet* or attach to application a toxicology report (an up-to-date material safety data sheets (MSDS) may be used) outlining the currently known acute and chronic health effects of each compound or chemical entity emitted to the air. If these compounds have already been listed in Item 3, then a duplicate MSDS sheet is not required. Include data such as the OSHA time weighted average (TWA) or mutagenicity, teratogenicity, irritation, and other known or suspected effects should be addressed. Indicate where these are unknown, and provide references.

8B. Describe any health effects testing or epidemiological studies on these compounds that are being or may be conducted by the company or required under TSCA, RCRA or other federal regulations. Discuss the persistence in the environment of any emission (e.g. pesticides, etc.).

9. **Waste Products** - Waste products status: (If source is subject to RCRA or 45CSR25, please contact the Hazardous Waste Section of WVDEP, OAQ at (304) 926-3647.)

9A. Types and amounts of wastes to be disposed:

9B. Method of disposal and location of waste disposal facilities:
 Carrier: _____ Phone: _____

9C. Check here if approved USEPA/State Hazardous Waste Landfill will be used

10. Maximum and Projected Typical Operating Schedule for process or project as a whole (circle appropriate units).

circle units:	(hrs/day) (hr/batch)	(days), (batches/day), (batches/week)	(days/yr), (weeks/year)
10A. Maximum	24	7	52
10B. Typical			

11. Complete a *Reactor Data Sheet* for each reactor in this chemical process.

12. Complete a *Distillation Column Data Sheet* for each distillation column in this chemical process.

13. **Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING	RECORDKEEPING
------------	---------------

REPORTING	TESTING
-----------	---------

MONITORING. Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment operation or air pollution control device.

RECORDKEEPING. Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING. Please describe the proposed frequency of reporting of the recordkeeping.

TESTING. Please describe any proposed emissions testing for this process equipment or air pollution control device.

14. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty

INFORMATION REQUIRED FOR CHEMICAL PROCESSES

The notes listed below for chemical processes are intended to help the applicant submit a complete application to the OAQ; these notes are not intended to be all inclusive. The requirements for a complete application for a permit issued under 45CSR13 are designed to provide enough information for a permit reviewer to begin a technical review. Additional information beyond that identified may be required to complete the technical review of any individual application.

Process Description

Please keep these points in mind when completing your process description as part of this permit application.

1. Provide a general process overview. This brief, but complete, process description should include chemical or registered trademark names of chemical products, intermediates, and/or raw materials to be produced or consumed, and the ultimate use(s) of the product(s). A list of the various chemical compounds is helpful.
2. Describe each process step. Include the process chemistry and stoichiometrically balanced reaction equation or material mass balance on all components.
3. Describe the methods and equipment used to receive, store, handle, and charge raw materials.
4. Describe the methods and equipment used to handle, store, or package final products and intermediates.
5. Provide process flow diagrams or equipment layout drawings which clearly show the process flow relationships among all pieces of process and control equipment. Identify all air emission discharge points. Discuss instrumentation and controls for the process.
6. Discuss the possibilities of process upsets, the duration and frequency of upsets, and consequences (including air emissions) of these upsets. Include a description of rupture discs, pressure relief valves, and secondary containment systems.
7. Discuss any fugitive emissions and the methods used to minimize them.
8. Include the following plans for the process if available:
 - a. preventative maintenance and malfunction abatement plan (recommended for all control equipment).
 - b. continuous emissions (in-stack) monitoring plan
 - c. ambient monitoring plan
 - d. emergency response plan

Regulatory Discussion

The following state and federal air pollution control regulations may be applicable to your chemical process. You should review these regulations carefully to determine if they apply to your process. Please summarize the results of your review in your permit application along with any other regulations you believe are applicable.

- Title 45 Legislative Rule Division of Environmental Protection, Office of Air Quality contains West Virginia's air pollution control regulations, including the following promulgated rules which may require emissions reductions or control technologies for your chemical process:
 - a. 45CSR27 - Best Available Technology (BAT) for Toxic Air Pollutants (TAPs)
 - b. 45CSR21 - VOC emissions controls for ozone maintenance in Kanawha, Cabell, Putnam, Wayne, and Wood counties.
 - c. 45CSR13 (Table 45-13A) - plantwide emission thresholds for permitting for certain pollutants.
- Federal Guidelines for case-by-case MACT determinations under section 112(g) of the 1990 CAAA for individual and total HAPs greater than 10 and 25 tons per year, respectively.
- There are also subparts of the federal Standards of Performance for New Stationary Sources (NSPS), 40CFR60.60, and the National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40CFR61 and 40CFR63, which apply to various chemical and nonchemical processes. These subparts are too numerous to list here, but these areas of the federal regulations should be consulted carefully to determine applicability to your process.

Emissions Summary and Calculations

Please keep these points in mind when submitting your emissions calculations as part of this permit application.

1. For each pollutant, provide the basis for the emissions estimate and for all emission reduction(s) or control efficiency(ies) claimed.
2. For all batch processes provide the following
 - a. Emissions of each pollutant in pound(s) per batch, from each process step
 - b. Annual emissions based on number of batches requested per year
 - c. The total time for each process step and the duration of the emissions during the process step
 - d. Total batch time, total emissions per batch (or per day), and annual emissions based on the number of batches requested per year.

LEAK SOURCE DATA SHEET

Source Category	Pollutant	Number of Source Components ¹	Number of Components Monitored by Frequency ²	Average Time to Repair (days) ³	Estimated Annual Emission Rate (lb/yr) ⁴
Pumps ⁵	light liquid VOC ^{6,7}	0			0
	heavy liquid VOC ⁸	1			166.5
	Non-VOC ⁹	0			0
Valves ¹⁰	Gas VOC	3			345.9
	Light Liquid VOC	0			0
	Heavy Liquid VOC	1			4.4
	Non-VOC	0			0
Safety Relief Valves ¹¹	Gas VOC	0			0
	Non VOC	0			0
Open-ended Lines ¹²	VOC	1			32.8
	Non-VOC	0			0
Sampling Connections ¹³	VOC	0			0
	Non-VOC	0			0
Compressors	VOC	1			0
	Non-VOC	0			0
Flanges	VOC	3			106.0
	Non-VOC	0			0
Other	VOC	0			0
	Non-VOC	0			0

¹⁻¹³ See notes on the following page.

Notes for Leak Source Data Sheet

1. For VOC sources include components on streams and equipment that contain greater than 10% w/w VOC, including feed streams, reaction/separation facilities, and product/by-product delivery lines. Do not include certain leakless equipment as defined below by category.
2. By monitoring frequency, give the number of sources routinely monitored for leaks, using a portable detection device that measures concentration in ppm. Do not include monitoring by visual or soap-bubble leak detection methods. "M/Q(M)/Q/SA/A/O" means the time period between inspections as follows:

Monthly/Quarterly, with Monthly follow-up of repaired leakers/Quarterly/Semi-annual/Annually/Other (specify time period)

If source category is not monitored, a single zero in the space will suffice. For example, if 50 gas-service valves are monitored quarterly, with monthly follow-up of those repaired, 75 are monitored semi-annually, and 50 are checked bimonthly (alternate months), with non checked at any other frequency, you would put in the category "valves, gas service:" 0/50/0/75/0/50 (bimonthly).

3. Give the average number of days, after a leak is discovered, that an attempt will be made to repair the leak.
4. Note the method used: MB - material balance; EE - engineering estimate; EPA - emission factors established by EPA (cite document used); O - other method, such as in-house emission factor (specify).
5. Do not include in the equipment count sealless pumps (canned motor or diaphragm) or those with enclosed venting to a control device. (Emissions from vented equipment should be included in the estimates given in the Emission Points Data Sheet.)
6. Volatile organic compounds (VOC) means the term as defined in 40 CFR §51.100 (s).
7. A light liquid is defined as a fluid with vapor pressure equal to or greater than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if 20% w/w or more of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a light liquid.
8. A heavy liquid is defined as a fluid with a vapor pressure less than 0.04 psi (0.3 Kpa) at 20°C. For mixtures, if less than 20% w/w of the stream is composed of fluids with vapor pressures greater than 0.04 psi (0.3 Kpa) at 20 °C, then the fluid is defined as a heavy liquid.
9. LIST CO, H₂S, mineral acids, NO, NO₂, SO₃, etc. DO NOT LIST CO₂, H₂, H₂O, N₂, O₂, and Noble Gases.
10. Include all process valves whether in-line or on an open-ended line such as sample, drain and purge valves. Do not include safety-relief valves, or leakless valves such as check, diaphragm, and bellows seal valves.
11. Do not include a safety-relief valve if there is a rupture disk in place upstream of the valve, or if the valve vents to a control device.
12. Open-ended lines include purge, drain and vent lines. Do not include sampling connections, or lines sealed by plugs, caps, blinds or second valves.
13. Do not include closed-purge sampling connections.

ATTACHMENT M
AIR POLLUTION CONTROL DEVICE SHEETS

ATTACHMENT M

Activated carbon is used to control the loss of volatile organic compounds, including some hazardous air pollutants. There are three sizes of activated carbon units used at this facility. 1C and 2C are Air 2500 Activated Carbon Adsorbers (see attached drawing). These units are installed in series and each unit contains 2,500 to 3,000 pounds of activated carbon. 3S is a 55 gallon drum size activated carbon unit. This unit is filled with the same activated carbon used in the other systems. The activated carbon used is represented by the MSDS sheets in Attachment H. 4S and 5S are Air 1800 Activated Carbon Adsorbers (see attached drawing). These units have 1,500 to 1,800 pounds of activated carbon. The activated carbon is replaced as needed.

Process Unit	Control Device
Hazcrusher 1S	1C and 2C
Metal Building	3C
Teemark 2S	4C
Teemark 3S	5C

Attachment M
Air Pollution Control Device Sheet
(ADSORPTION SYSTEM)

Control Device ID No. (must match Emission Units Table): 1C & 2C

Equipment Information

1. Name of Control Device: 1C and 2C	2. Manufacturer: Encotech Model No. Air 2500
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	

Gas Stream Characteristics

4. Gas Flow Rate into the Collector: ACFM 220 @ ambient °F Relative Humidity PSIA						
5. Emission Rate of each Pollutant (Specify) into and out of Collector:						
	IN			OUT		
Pollutant	lb/hr	grains/acf	ppm (volume)	lb/hr	grains/acf	ppm (volume)
A VOC	NA	NA	NA	NA	NA	1500
B						
C						
E						
E						
6. LEL (lower explosive limit) for most volatile pollutant:				Pollutant	PPM	
7. List vapor pressure (mmHg) at the operating temperature for each pollutant in inlet stream:				Pollutant	Temp	MmHg
				A		
				B		
				C		
				D		
				E		

Adsorbent Characteristics

8. Adsorbent: Type: Granular Carbon Manufacturer: Calgon Grade No.: VPR 4x10 Specifications:		9. Maximum adsorbate loading: lb pollutant/lb of adsorbent	
10. Pressure drop across unit: Approx. 10 @ 500 scfm (in inches of water)		11. Number of beds per unit: 1	
12. Weight of adsorbent material per bed: 2,500 – 3,000 lb		13. Adsorbent media average particle size: 4x10 mesh	
14. Adsorber geometry: Length: ft Diameter: 64 (width) in Bed Depth: 5.75 ft Bed Surface Area: 28.4 ft ² Bed Volume: 163.3 ft ³		15. Temperature Range Adsorption: Min. Temp. °F Max. Temp. 140 °F Average Temp. °F	
16. Cycle time for adsorption: hr		17. Frequency of adsorbent replacement: As Needed yr	
18. Cycle time for drying before adsorbing: hr			
19. Saturation Capacity of Pollutant on adsorbent (supply units):			
20. Length of mass transfer zone: in			

31. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Measure VOC once per month at the outlet.

RECORDKEEPING:

Record of carbon unit replacements and the once per month VOC measurement.

REPORTING:

None Proposed.

TESTING:

None Proposed.

MONITORING:

Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING:

Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

32. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

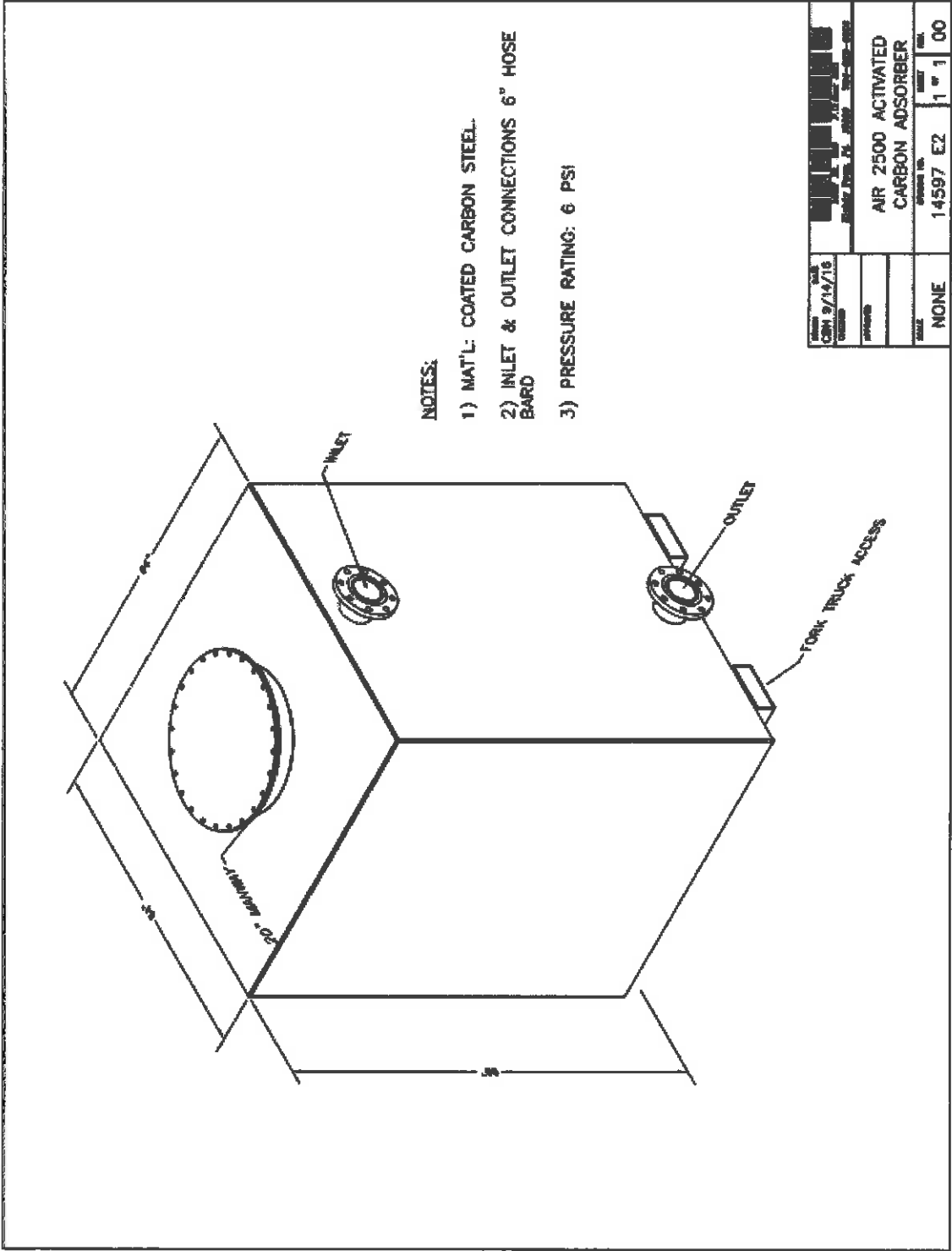
NA

33. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

NA

34. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

NA



NOTES:

- 1) MAT'L: COATED CARBON STEEL.
- 2) INLET & OUTLET CONNECTIONS 6" HOSE BARD
- 3) PRESSURE RATING: 6 PSI

DATE	BY	REV	DESCRIPTION
08/14/16			
AIR 2500 ACTIVATED CARBON ADSORBER			
PRICE	QTY	AMOUNT	
NONE	1	1.00	

Attachment M
Air Pollution Control Device Sheet
(ADSORPTION SYSTEM)

Control Device ID No. (must match Emission Units Table): 3C

Equipment Information

1. Name of Control Device: 3C	2. Manufacturer: Encotech Model No. 55 Gallon Drum
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	

Gas Stream Characteristics

4. Gas Flow Rate into the Collector: ACFM 250 @ ambient °F Relative Humidity PSIA						
5. Emission Rate of each Pollutant (Specify) into and out of Collector:						
	IN			OUT		
Pollutant	lb/hr	grains/acf	ppm (volume)	lb/hr	grains/acf	ppm (volume)
A VOC	NA	NA	NA	NA	NA	100
B						
C						
D						
E						
6. LEL (lower explosive limit) for most volatile pollutant:				Pollutant	PPM	
7. List vapor pressure (mmHg) at the operating temperature for each pollutant in inlet stream:				Pollutant	Temp	MmHg
				A		
				B		
				C		
				D		
				E		

Adsorbent Characteristics

8. Adsorbent: Type: Granular Carbon Manufacturer: Calgon Grade No.: VPR 4x10 Specifications:	9. Maximum adsorbate loading: lb pollutant/lb of adsorbent
10. Pressure drop across unit: NA (in inches of water)	11. Number of beds per unit: 1
12. Weight of adsorbent material per bed: 3000 lb	13. Adsorbent media average particle size: microns
14. Adsorber geometry: 55 Gallon Drum Length: ft Diameter: ft Bed Depth: ft Bed Surface Area: ft ² Bed Volume: ft ³	15. Temperature Range Adsorption: Min. Temp. NA °F Max. Temp. 140 °F Average Temp. NA °F
16. Cycle time for adsorption: hr	17. Frequency of adsorbent replacement: As Needed yr
18. Cycle time for drying before adsorbing: hr	
19. Saturation Capacity of Pollutant on adsorbent (supply units):	
20. Length of mass transfer zone: in	

Regenerative Systems

21. Type of regeneration: <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Stream <input type="checkbox"/> Other, specify:																			
22. Method of Regeneration: <input type="checkbox"/> Alternate use of entire units <input type="checkbox"/> Source shut down <input type="checkbox"/> Alternate use of beds in a single unit <input checked="" type="checkbox"/> Other (describe): Encotech, Inc. backup unit																			
23. Cycle time for regeneration: _____ hr	24. Emission steam velocity through bed: _____ ft/min																		
	25. Steam flow rate: _____ lb/min Steam temp.: _____ °F Steam pressure: _____ PSIA																		
26. Disposition of vapors during regeneration:																			
27. Guaranteed minimum efficiency per pollutant captured:	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 30%; text-align: center;">Captured Pollutant</th> <th style="width: 20%; text-align: center;">Minimum Efficiency</th> </tr> </thead> <tbody> <tr> <td>A</td> <td style="text-align: center;">VOC</td> <td style="text-align: center;">~80 %</td> </tr> <tr> <td>B</td> <td></td> <td style="text-align: center;">%</td> </tr> <tr> <td>C</td> <td></td> <td style="text-align: center;">%</td> </tr> <tr> <td>D</td> <td></td> <td style="text-align: center;">%</td> </tr> <tr> <td>E</td> <td></td> <td style="text-align: center;">%</td> </tr> </tbody> </table>		Captured Pollutant	Minimum Efficiency	A	VOC	~80 %	B		%	C		%	D		%	E		%
	Captured Pollutant	Minimum Efficiency																	
A	VOC	~80 %																	
B		%																	
C		%																	
D		%																	
E		%																	
28. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification): None																			
29. Describe the collection material disposal system: The carbon will be disposed of as a waste.																			
30. Have you included Adsorption Control Device in the Emissions Points Data Summary Sheet? Yes																			

31. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Measure the VOC once per month at the outlet.

RECORDKEEPING:

Record on carbon unit replacement and the once per month VOC measurement.

REPORTING:

None Proposed.

TESTING:

None Proposed.

MONITORING:

Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING:

Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

32. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

NA

33. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

NA

34. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

NA

Attachment M
Air Pollution Control Device Sheet
(ADSORPTION SYSTEM)

Control Device ID No. (must match Emission Units Table): 4C and 5C

Equipment Information

1. Name of Control Device: 4C and 5C	2. Manufacturer: Encotech Model No. Air 1800
3. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	

Gas Stream Characteristics

4. Gas Flow Rate into the Collector: ACFM 250 @ ambient °F Relative Humidity PSIA						
5. Emission Rate of each Pollutant (Specify) into and out of Collector:						
	IN			OUT		
Pollutant	lb/hr	grains/acf	ppm (volume)	lb/hr	grains/acf	ppm (volume)
A VOC	NA	NA	NA	NA	NA	100
B						
C						
D						
E						
6. LEL (lower explosive limit) for most volatile pollutant:				Pollutant	PPM	
7. List vapor pressure (mmHg) at the operating temperature for each pollutant in inlet stream:				Pollutant	Temp	MmHg
				A		
				B		
				C		
				D		
				E		

Adsorbent Characteristics

8. Adsorbent: Type: Granular Carbon Manufacturer: Calgon Grade No.: VPR 4x10 Specifications:	9. Maximum adsorbate loading: lb pollutant/lb of adsorbent
10. Pressure drop across unit: 4 (in inches of water)	11. Number of beds per unit: 1
12. Weight of adsorbent material per bed: 1,500 – 1,800 lb	13. Adsorbent media average particle size: microns
14. Adsorber geometry: Length: ft Diameter: 44 ft Bed Depth: 4.7 ft Bed Surface Area: 10.6 ft ² Bed Volume: 50 ft ³	15. Temperature Range Adsorption: Min. Temp. NA °F Max. Temp. 140 °F Average Temp. NA °F
16. Cycle time for adsorption: hr	17. Frequency of adsorbent replacement: As Needed yr
18. Cycle time for drying before adsorbing: hr	
19. Saturation Capacity of Pollutant on adsorbent (supply units):	
20. Length of mass transfer zone: in	

Regenerative Systems

21. Type of regeneration: <input checked="" type="checkbox"/> Replacement <input type="checkbox"/> Stream <input type="checkbox"/> Other, specify:			
22. Method of Regeneration: <input type="checkbox"/> Alternate use of entire units <input type="checkbox"/> Source shut down <input type="checkbox"/> Alternate use of beds in a single unit <input checked="" type="checkbox"/> Other (describe): Encotech, Inc. backup unit			
23. Cycle time for regeneration: _____ hr	24. Emission steam velocity through bed: _____ ft/min		
	25. Steam flow rate: _____ lb/min		
	Steam temp.: _____ °F		
Steam pressure: _____ PSIA			
26. Disposition of vapors during regeneration:			
27. Guaranteed minimum efficiency per pollutant captured:	Captured Pollutant		Minimum Efficiency
	A VOC		~80 %
	B		%
	C		%
	D		%
	E		%
28. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification): None			
29. Describe the collection material disposal system: The carbon will be disposed of as a waste.			
30. Have you included Adsorption Control Device in the Emissions Points Data Summary Sheet? Yes			

31. Proposed Monitoring, Recordkeeping, Reporting, and Testing

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

MONITORING:

Measure VOC once per month at the outlet.

RECORDKEEPING:

Record on carbon unit replacement and the once per month VOC measurement.

REPORTING:

None Proposed.

TESTING:

None Proposed.

MONITORING:

Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

RECORDKEEPING:

Please describe the proposed recordkeeping that will accompany the monitoring.

REPORTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

TESTING:

Please describe any proposed emissions testing for this process equipment on air pollution control device.

32. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.

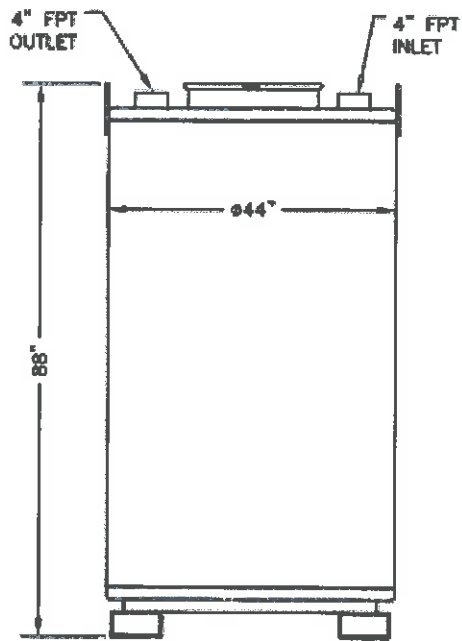
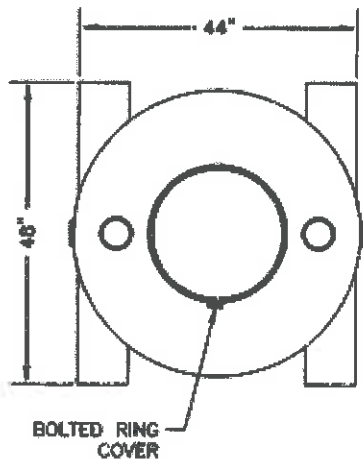
NA

33. Manufacturer's Guaranteed Control Efficiency for each air pollutant.

NA

34. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.

NA



NOTES:

- 1) MATERIAL OF CONSTRUCTION: COATED CARBON STEEL
- 2) GAC CAPACITY: 1800#
- 3) INLET & OUTLET CONNECTIONS: 4" FNPT
- 4) EMPTY VESSEL WEIGHT: 875#



AIR 1800

ATTACHMENT N
SUPPORTING EMISSIONS CALCULATIONS

By: PEW
Date: 12/14/2016

Checked By: JJD
Date: 12/15/2016

Pollutant	Proposed PTE			
	Uncontrolled		Controlled	
	pph	tpy	pph	tpy
CO	0	0	0	0
NOx	0	0	0	0
PM	0	0	0	0
PM10	0	0	0	0
PM2.5	0	0	0	0
SO2	0	0	0	0
VOC	1.97	8.65	1.97	8.65
Ethyl Benzene	0.09	0.38	0.09	0.38
Formaldehyde	0	0	0	0
Glycol Ethers	0.22	0.97	0.22	0.97
Hexane	0.04	0.15	0.04	0.15
Methylene Chloride	0.17	0.74	0.17	0.74
Methanol	0.11	0.49	0.11	0.49
Toluene	0.75	3.27	0.75	3.27
Xylene, mixed	0.92	4.03	0.92	4.03
Total HAPS	2.30	10.02	2.30	10.02

Pollutant	Change in PTE			
	Uncontrolled		Controlled	
	pph	tpy	pph	tpy
CO	-0.22	-0.98	-0.22	-0.98
NOx	-0.01	-0.03	-0.01	-0.03
PM	-0.005	-0.02	-0.005	-0.02
PM10	-0.005	-0.02	-0.005	-0.02
PM2.5	-0.005	-0.02	-0.005	-0.02
SO2	-0.0003	-0.0012	-0.0003	-0.0012
VOC	-0.58515	-2.56017	-0.58515383	-2.56017
Ethyl Benzene	0.026742	0.099931	0.026742309	0.099931
Formaldehyde	-0.01	-0.04	-0.01	-0.04
Glycol Ethers	0.060325	0.255026	0.060325464	0.255026
Hexane	0.012297	0.041973	0.012296923	0.041973
Methylene Chloride	-0.192	-0.82416	-0.192	-0.82416
Methanol	0.032765	0.123911	0.032765001	0.123911
Toluene	0.195984	0.867409	0.195983853	0.867409
Xylene, mixed	0.239468	1.067272	0.23946847	1.067272
Total HAPS	0.365582	1.581361	0.36558202	1.581361

Pollutant	Existing PTE			
	Uncontrolled		Controlled	
	pph	tpy	pph	tpy
CO	0.22	0.98	0.22	0.98
NOx	0.01	0.03	0.01	0.03
PM	0.005	0.02	0.005	0.02
PM10	0.005	0.02	0.005	0.02
PM2.5	0.005	0.02	0.005	0.02
SO2	0.0003	0.0012	0.0003	0.0012
VOC	2.56	11.21	2.56	11.21
Ethyl Benzene	0.06	0.28	0.06	0.28
Formaldehyde	0.01	0.04	0.01	0.04
Glycol Ethers	0.16	0.71	0.16	0.71
Hexane	0.03	0.11	0.03	0.11
Methylene Chloride	0.36	1.56	0.36	1.56
Methanol	0.08	0.37	0.08	0.37
Toluene	0.55	2.40	0.55	2.40
Xylene, mixed	0.68	2.96	0.68	2.96
Total HAPS	1.93	8.44	1.93	8.44

By: PEW
Date: 12/14/2016

Checked By: JJD
Date: 12/15/2016

Aerosol Can Unit 1S venting through Carbon Filters 1C and 2C in Series with Emission Point 1E

The following emissions estimate has been updated to reflect potential emissions from operations of the aerosol can crushing unit. The potential operation of the unit is for 5,000 cans per hour. Cans of varying dimensions are fed to the machine. An updated VOC reading was taken at the outlet of the carbon unit. An actual reading of 871 ppm was measured with one carbon unit in place. The past estimate was based on a reading of 251 ppm with total can throughput of 500 cans per hour. This was the best data available at the time of this initial permitting. The revised emissions estimate is based on 1,500 ppm with a 5,000 can per hour throughput. Operating the unit for a full year (8,760 hours of operation) would provide for a total throughput of cans of 43,800,000 cans per year.

The unit vents through two carbon filters 1C and 2C which are in series. The emissions estimate below does not account for the control of the carbon units only an outlet concentration from the units. VOC's interact with carbon in differing methods which provides for different control efficiencies based on which material is being vented to the unit.

Potential to emit:

Using the formula:

Weight of one cu/ft of air x CFM of Blower = Weight of Air/Min (WA/M)

$$\frac{WA/M \times (\text{average PPM of VOC's per cycle})}{1,000,000} \text{ Equals } (\text{average weight of VOC's}) \text{ Per Minute}$$

50 degree average in Morgantown by US climate census

Using 0.077863 pounds as the weight of one cu/ft of air and 220 cfm vacuum air speed we calculate the following:

$$0.077863 \times 220 \text{ cfm} = 17.12986 \text{ WA/M}$$

$$\frac{17.12986 \text{ WA/M} \times 1,500 \text{ PPM}}{1,000,000} \text{ Equals } 0.02569479 \text{ lbs of VOC/min}$$

$$0.02569479 \times 60 \text{ min} \text{ Equals } \begin{matrix} 1.54 \text{ lbs of VOCs per hour/5000 cans} \\ 8,760 \text{ hrs/yr} \\ 43,800,000 \text{ cans/yr} \\ 5,000 \text{ cans/hr} \\ 13,490.40 \text{ ppy} \\ 6.75 \text{ tpy} \end{matrix}$$

Hazardous Air Pollutant Emissions						
HAP	Source	% Wt	VOC Emissions (pph)	HAP Emissions (pph)	VOC Emissions (tpy)	HAP Emissions (tpy)
Ethyl Benzene	1S	5	1.54	0.08	6.75	0.34
Glycol Ethers	1S	12.7	1.54	0.20	6.75	0.86
Hexane	1S	2	1.54	0.03	6.75	0.13
Methanol	1S	6.5	1.54	0.10	6.75	0.44
Toluene	1S	43	1.54	0.66	6.75	2.90
Xylene, mixed	1S	53	1.54	0.82	6.75	3.57
Total HAPs				1.88		8.24

(1) from MSDS information. The maximum percentage of HAP was selected from multiple MSDSs. Therefore the total HAP content from Source 1S is greater than total VOC emissions.

By: PEW
Date: 12/14/2016

Checked By: JJD
Date: 12/15/2016

Aerosol Can Unit 1S Metal Can Storage Bin (Metal Building) venting through Carbon Filters 3C with Emission Point 3E

The following emissions estimate has been updated to reflect potential emissions from operations of the aerosol can crushing unit where the can metal is stored in a bin inside a building and vented through a carbon filter (3C). This estimate is a best estimate available for the unit. Emissions will vary based on the contents in the building and the amount of remaining VOC materials on the can metal. An actual reading was 0 ppm was measured at the site. The emissions estimate is based on 100 ppm.

Potential to emit:

Using the formula:

Weight of one cu/ft of air x CFM of Blower = Weight of Air/Min (WA/M)

$$\frac{WA/M \times (\text{average PPM of VOC's per cycle})}{1,000,000} \text{ Equals } (\text{average weight of VOC's}) \text{ Per Minute}$$

50 degree average in Morgantown by US climate census

Using 0.077863 pounds as the weight of one cu/ft of air and 250 cfm vacuum air speed we calculate the following:

$$0.077863 \times 250 \text{ cfm} = 19.46575 \text{ WA/M}$$

$$\frac{19.46575 \text{ WA/M} \times 100 \text{ PPM}}{1,000,000} \text{ Equals } 0.00194658 \text{ lbs of VOC/min}$$

$$0.001946575 \times 60 \text{ min} \text{ Equals } \begin{matrix} 0.12 \text{ lbs of VOCs per hour/5000 cans} \\ 8,760 \text{ hrs/yr} \\ 1,051.20 \text{ ppy} \\ 0.53 \text{ tpy} \end{matrix}$$

Hazardous Air Pollutant Emissions						
HAP	Source	% Wt	VOC Emissions (pph)	HAP Emissions (pph)	VOC Emissions (tpy)	HAP Emissions (tpy)
Ethyl Benzene	1S	5	0.12	0.01	0.53	0.03
Glycol Ethers	1S	12.7	0.12	0.02	0.53	0.07
Hexane	1S	2	0.12	0.01	0.53	0.01
Methanol	1S	6.5	0.12	0.01	0.53	0.03
Toluene	1S	43	0.12	0.05	0.53	0.23
Xylene, mixed	1S	53	0.12	0.06	0.53	0.28
Total HAPs				0.15		0.64

(1) from MSDS information. The maximum percentage of HAP was selected from multiple MSDSs. Therefore the total HAP content from Source 1S is greater than total VOC emissions.

By: PEW
Date: 12/14/2016

Checked By: JJD
Date: 12/15/2016

Fugitive Emission Calculations

Fugitive leak emissions are calculated here for the gases from the Aerosol Can Unit 1S that are passing through the gas skid even though there is no recovery of the gases. The gases transfer through a portion of the skid and are then vented to the carbon units (1C and 2C).

Fugitive Emission Source	Emission Factor (kg/hr/source) ¹	Emission Factor (lb/hr) ²	Number	Total (lb/hr)	Total (lb/yr)
Pump Seals - Light Liquids	0.0199	0.04387	0	0	-
Pump Seals - Heavy Liquids	0.00862	0.019	1	0.019	166.5
Valves (in-line) - Gas	0.00597	0.01316	3	0.039	345.9
Valves (in-line) - Light Liquid	0.00403	0.00888	0	0	-
Valves (in-line) - Heavy Liquid	0.00023	0.00051	1	0.001	4.4
Gas-Safety Relief Valves	0.104	0.22928	0	0	-
Open-Ended Lines	0.0017	0.00375	1	0.004	32.8
Flanges	0.00183	0.00403	3	0.012	106.0
Sampling Connections	0.015	0.03307	0	0	-
Compressor Seals	0.228	0.50265	0	0	-

1. US EPA Protocol for Equipment Leak Emission Estimates EPA-453/R-95-077 November 1995 Table 2-1 SOCFI Average Emission Factors.

2. kg/hr to lb/hr conversion factor is 2.2046 kg/lb

Total hourly VOC from fugitive emissions: 0.075 lb/hr
Annual operating hours 8,760 hrs/yr
Annual VOC from fugitive emissions:
(lb/hr x 8,760 hr/yr / 2,000 lb/ton) 0.33 tpy

Hazardous Air Pollutant Emissions						
HAP	Source	% Wt	VOC Emissions (pph)	HAP Emissions (pph)	VOC Emissions (tpy)	HAP Emissions (tpy)
Ethyl Benzene	1S	5	0.075	0.004	0.33	0.02
Glycol Ethers	1S	12.7	0.075	0.010	0.33	0.04
Hexane	1S	2	0.075	0.001	0.33	0.01
Methanol	1S	6.5	0.075	0.005	0.33	0.02
Toluene	1S	43	0.075	0.032	0.33	0.14
Xylene, mixed	1S	53	0.075	0.040	0.33	0.17
Total HAPs				0.091		0.40

By: PEW
Date: 12/14/2016

Checked By: JJD
Date: 12/15/2016

Can/Pail Units - 2S and 3S

The following emissions estimate has been updated to reflect potential emissions from operations of the can/pail crushing units. There are two of these units. Each of the units is manually fed one can at a time. The potential operation of the units is 300 cans per hour each. Typically these cans are between one and five gallons. An updated VOC reading was taken at the outlet of the carbon unit(s). The past estimate was based on a reading of 251 ppm with total can throughput of 500 cans per hour. This was the best data available at the time of this initial permitting. The revised emissions estimate is based on a reading of 100 ppm with a 300 can per hour throughput. An actual reading of 0 ppm was measured at the site. Operating the unit for a full year (8,760 hours of operation) would provide for a total throughput of 2,628,000 cans per year per unit.

Potential to emit for One Unit:

Using the formula:

Weight of one cu/ft of air x CFM of Blower = Weight of Air/Min (WA/M)

$$\frac{WA/M \times (\text{average PPM of VOC's per cycle})}{1,000,000} \text{ Equals } (\text{average weight of VOC's}) \text{ Per Minute}$$

50 degree average in Morgantown by US climate census

Using 0.077863 pounds as the weight of one cu/ft of air and 250 cfm vacuum air speed we calculate the following:

$$0.077863 \times 250 \text{ cfm} = 19.46575 \text{ WA/M}$$

$$\frac{19.46575 \text{ WA/M} \times 100 \text{ PPM}}{1,000,000} \text{ Equals } 0.001946575 \text{ lbs of VOC/min}$$

$$0.001946575 \times 60 \text{ min} \text{ Equals } \begin{matrix} 0.12 \text{ lbs of VOCs per hour/300 cans} \\ 8,760 \text{ hrs/yr} \\ 2,628,000 \text{ cans/yr} \\ 300 \text{ cans/hr} \\ 1,051.20 \text{ ppy} \\ 0.53 \text{ tpy} \end{matrix}$$

Hazardous/Toxic Air Pollutant Emissions Per Unit						
HAP	Source	% Wt	VOC Emissions (pph)	HAP Emissions (pph)	VOC Emissions (tpy)	HAP Emissions (tpy)
Methylene Chloride	2S or 3S	70	0.12	0.08	0.53	0.37
Total HAPs				0.08		0.37

Hazardous/Toxic Air Pollutant Emissions Both Units						
HAP	Source	% Wt	VOC Emissions (pph)	HAP Emissions (lb/hr)	VOC Emissions (pph)	HAP Emissions (tpy)
Methylene Chloride	2S and 3S	70	0.24	0.17	1.05	0.74
Total HAPs				0.17		0.74

ATTACHMENT O

**MONITORING, RECORDKEEPING, REPORTING, TESTING
PLANS**

ATTACHMENT O

MONITORING/RECORDKEEPING/REPORTING/TESTING PLANS

AES Asset Acquisition Corporation dba Clean Earth of Morgantown will continue with the existing monitoring, recordkeeping, reporting and testing as required in the permit for sources that exist with the changes as requested in Attachment G for Method to Track Compliance and Attachment L, Section 31. Requirements such as 40CFR60, Subpart JJJJ and 40CFR63, Subpart ZZZZ no longer apply to the source site since the generator will not be operated.

ATTACHMENT P

PUBLIC NOTICE

ATTACHMENT P

AIR QUALITY PERMIT NOTICE Notice of Application

Notice is given that AES Asset Acquisition Corporation dba Clean Earth of Morgantown has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Class II Administrative Update to Permit R13-3148 for an aerosol can/paint can recycling facility located at 1750 Morgantown Industrial Park, near Morgantown, in Monongalia County, West Virginia. The latitude and longitude coordinates are: 39.6095 and 79.9763.

The applicant estimates the new potential to discharge the following Regulated Air Pollutants will be: Volatile Organic Compounds 10.02 tons per year (TPY), Hazardous Air Pollutants / Toxic Air Pollutants 10.02 TPY.

Startup of operation under the revised permit is planned to begin on or about the 15th day of February, 2017 or when the permit is issued. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the **(INSERT DATE)** day of December, 2016.

By: AES Asset Acquisition Corporation dba Clean Earth of Morgantown
Name
Title
1750 Morgantown Industrial Park
Morgantown, West Virginia 26501

APPENDIX 1
HAZARDOUS WASTE CODES

ATTACHMENT 2

WVD981107600

Question 11: Description of Hazardous Wastes

A. waste Codes for Federally Regulated Hazardous Wastes

**D001 D002 D003 D004 D005 D006 D007 D008 D009 D010 D011 D012 D013 D014
D015 D016 D017 D018 D019 D020 D021 D022 D023 D024 D025 D026 D027 D028
D029 D030 D031 D032 D033 D034 D035 D036 D037 D038 D039 D040 D041 D042
D043**

**F001 K001 K035 K104 P001 P047 P095 U001 U036 U074 U111 U148 U185 U226
F002 K002 K036 K105 P002 P048 P099 U002 U037 U075 U112 U149 U186 U227
F003 K003 K037 K106 P003 P049 P101 U003 U038 U076 U113 U150 U187 U228
F004 K004 K038 K107 P004 P050 P102 U004 U039 U077 U114 U151 U188 U234
F005 K005 K039 K108 P005 P051 P103 U005 U041 U078 U115 U152 U189 U235
F006 K006 K040 K109 P007 P054 P104 U006 U042 U079 U116 U153 U190 U236
F007 K007 K041 K110 P008 P056 P105 U007 U043 U080 U117 U154 U191 U237
F008 K008 K042 K111 P009 P057 P106 U008 U044 U081 U118 U155 U192 U238
F009 K009 K043 K112 P010 P058 P108 U009 U045 U082 U119 U156 U193 U239
F010 K010 K044 K113 P011 P059 P109 U010 U046 U083 U120 U157 U194 U240
F011 K011 K045 K114 P012 P060 P110 U011 U047 U084 U121 U158 U196 U243
F012 K013 K046 K115 P013 P062 P111 U012 U048 U085 U122 U159 U197 U244
F013 K014 K047 K116 P014 P063 P112 U013 U049 U086 U123 U160 U200 U246
F032 K015 K048 K117 P015 P064 P113 U014 U050 U087 U124 U161 U201 U247
F034 K016 K049 K118 P016 P065 P114 U015 U051 U088 U125 U162 U202 U248
F035 K017 K050 K123 P017 P066 P115 U016 U052 U089 U126 U163 U203 U249
F037 K018 K051 K124 P018 P067 P116 U017 U053 U090 U127 U164 U204 U271
F038 K019 K052 K125 P020 P068 P118 U018 U055 U091 U128 U165 U205 U278
F039 K020 K060 K126 P021 P069 P119 U019 U056 U092 U129 U166 U208 U279
K021 K061 K131 P022 P070 P120 U020 U057 U093 U130 U167 U207 U280
K022 K062 K132 P023 P071 P121 U021 U058 U094 U131 U168 U208 U328
K023 K069 K136 P024 P072 P122 U022 U059 U095 U132 U169 U209 U353
K024 K071 K141 P026 P073 P123 U023 U060 U096 U133 U170 U210 U359
K025 K073 K142 P027 P074 P127 U024 U061 U097 U134 U171 U211 U364
K026 K083 K143 P028 P075 P128 U025 U062 U098 U135 U172 U213 U367
K027 K084 K144 P029 P076 P185 U026 U063 U099 U136 U173 U214 U372
K028 K085 K145 P030 P077 P188 U027 U064 U101 U137 U174 U215 U373
K029 K086 K147 P031 P078 P189 U028 U066 U102 U138 U176 U216 U387
K030 K087 K148 P033 P081 P190 U029 U067 U103 U140 U177 U217 U389
K031 K088 K149 P034 P082 P191 U030 U068 U105 U141 U178 U218 U394
K032 K093 K160 P036 P084 P192 U031 U069 U106 U142 U179 U219 U395
K033 K094 K151 P037 P085 P194 U032 U070 U107 U143 U180 U220 U404
K034 K095 K156 P038 P087 P196 U033 U071 U108 U144 U181 U221 U409
K096 K157 P039 P088 P197 U034 U072 U109 U145 U182 U222 U410
K097 K158 P040 P089 P198 U035 U073 U110 U146 U183 U223 U411
K098 K159 P041 P092 P199 U147 U184 U225
K099 K161 P042 P093 P202
K100 K169 P043 P094 P203
K101 K170 P044 P095 P204
K102 K171 P045 P096 P205
K103 K172 P046 P097**

Hazardous W Code	Chemical Abstracts No.	Substance
P003	107-02-8	Acrolein
P010	7778-39-4	Arsenic acid H ₃ AsO ₄
P012	1327-53-3	Arsenic oxide As ₂ O ₃
P011	1303-28-2	Arsenic oxide As ₂ O ₅
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P028	100-44-7	Benzene, (chloromethyl)-
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium powder
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide Ca(CN) ₂
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030		Cyanides (soluble cyanide salts), not otherwise specified
P016	542-88-1	Dichloromethyl ether
P047	1534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P065	628-86-4	Fulminic acid, mercury(2 +) salt (R,T)
P059	76-44-8	Heptachlor
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P196	15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis(chloro-
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-tetrahydro-
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(CO) ₄ , (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cyanide Ni(CN) ₂
P082	62-75-9	N-Nitrosodimethylamine
P089	56-38-2	Parathion
P048	51-28-5	Phenol, 2,4-dinitro-
P047	1534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P092	62-38-4	Phenylmercury acetate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P003	107-02-8	2-Propenal
P067	75-55-8	1,2-Propylenimine
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)

Hazardous W Code	Chemical Abstracts No.	Substance
P123	8001-35-2	Toxaphene
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide Zn(CN) ₂
P003	107-02-8	Acrolein
P003	107-02-8	2-Propenal
P010	7778-39-4	Arsenic acid H ₃ AsO ₄
P011	1303-28-2	Arsenic oxide As ₂ O ₅
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic oxide As ₂ O ₃
P012	1327-53-3	Arsenic trioxide
P013	542-62-1	Barium cyanide
P016	542-88-1	Dichloromethyl ether
P016	542-88-1	Methane, oxybis(chloro-
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide Ca(CN) ₂
P022	75-15-0	Carbon disulfide
P028	100-44-7	Benzene, (chloromethyl)-
P028	100-44-7	Benzyl chloride
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030	NA	Cyanides (soluble cyanide salts), not otherwise specified
P047	¹ 534-52-1	4,6-Dinitro-o-cresol, & salts
P047	¹ 534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P048	51-28-5	2,4-Dinitrophenol
P048	51-28-5	Phenol, 2,4-dinitro-
P054	151-56-4	Aziridine
P054	151-56-4	Ethyleneimine
P059	76-44-8	Heptachlor
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
P063	74-90-8	Hydrogen cyanide
P064	624-83-9	Methane, isocyanato-
P064	624-83-9	Methyl isocyanate
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P065	628-86-4	Mercury fulminate (R,T)
P067	75-55-8	Aziridine, 2-methyl-
P067	75-55-8	1,2-Propyleneimine
P068	60-34-4	Hydrazine, methyl-
P068	60-34-4	Methyl hydrazine
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(CO) ₄ , (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cyanide Ni(CN) ₂
P082	62-75-9	Methanamine, -methyl-N-nitroso-
P082	62-75-9	N-Nitrosodimethylamine
P089	56-38-2	Parathion
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P092	62-38-4	Mercury, (acetato-O)phenyl-
P092	62-38-4	Phenylmercury acetate
P095	75-44-5	Carbonic dichloride
P095	75-44-5	Phosgene
P096	7803-51-2	Hydrogen phosphide
P096	7803-51-2	Phosphine
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P101	107-12-0	Ethyl cyanide
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)

Hazardous W Code	Chemical Abstracts No.	Substance
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide Zn(CN) ₂
P123	8001-35-2	Toxaphene
U001	75-07-0	Acetaldehyde (I)
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	¹ 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U012	62-53-3	Aniline (I,T)
U012	62-53-3	Benzenamine (I,T)
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U037	108-90-7	Benzene, chloro-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U072	106-46-7	Benzene, 1,4-dichloro-
U239	1330-20-7	Benzene, dimethyl- (I)
U127	118-74-1	Benzene, hexachloro-
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U185	82-68-8	Benzene, pentachloronitro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U021	92-87-5	Benzidine
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U238	51-79-6	Carbamic acid, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U279	63-25-2	Carbaryl.
U211	56-23-5	Carbon tetrachloride
U036	57-74-9	Chlordane, alpha & gamma isomers
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U052	1319-77-3	Cresol (Cresylic acid)
U055	98-82-8	Cumene (I)
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U240	¹ 94-75-7	2,4-D, salts & esters
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U072	106-46-7	p-Dichlorobenzene

Hazardous W Code	Chemical Abstracts No.	Substance
U073	91-94-1	3,3'-Dichlorobenzidine
U078	75-35-4	1,1-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U084	542-75-6	1,3-Dichloropropene
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U395	119-90-4	3,3'-Dimethoxybenzidine
U091	60-11-7	p-Dimethylaminoazobenzene
U093	119-93-7	3,3'-Dimethylbenzidine
U095	79-44-7	Dimethylcarbamoyl chloride
U097	57-14-7	1,1-Dimethylhydrazine
U098	131-11-3	Dimethyl phthalate
U102	77-78-1	Dimethyl sulfate
U103	121-14-2	2,4-Dinitrotoluene
U105	123-91-1	1,4-Dioxane
U108	122-66-7	1,2-Diphenylhydrazine
U109	106-89-8	Epichlorohydrin
U041	75-07-0	Ethanal (I)
U001	121-44-8	Ethanamine, N,N-diethyl-
U404	106-93-4	Ethane, 1,2-dibromo-
U067	75-34-3	Ethane, 1,1-dichloro-
U076	107-06-2	Ethane, 1,2-dichloro-
U077	67-72-1	Ethane, hexachloro-
U131	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U025	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U209	71-55-6	Ethane, 1,1,1-trichloro-
U226	79-00-5	Ethane, 1,1,2-trichloro-
U227	98-86-2	Ethanone, 1-phenyl-
U004	75-01-4	Ethene, chloro-
U043	75-35-4	Ethene, 1,1-dichloro-
U078	127-18-4	Ethene, tetrachloro-
U210	79-01-6	Ethene, trichloro-
U228	140-88-5	Ethyl acrylate (I)
U113	51-79-6	Ethyl carbamate (urethane)
U238	106-93-4	Ethylene dibromide
U067	107-06-2	Ethylene dichloride
U077	110-80-5	Ethylene glycol monoethyl ether
U359	75-21-8	Ethylene oxide (I, T)
U115	96-45-7	Ethylenethiourea
U116	75-34-3	Ethylidene dichloride
U076	50-00-0	Formaldehyde
U122	108-31-6	2,5-Furandione
U147	118-74-1	Hexachlorobenzene
U127	87-68-3	Hexachlorobutadiene
U128	77-47-4	Hexachlorocyclopentadiene
U130	67-72-1	Hexachloroethane
U131	302-01-2	Hydrazine (R, T)
U133	57-14-7	Hydrazine, 1,1-dimethyl-
U098	122-66-7	Hydrazine, 1,2-diphenyl-
U109	7664-39-3	Hydrofluoric acid (C, T)
U134	7664-39-3	Hydrogen fluoride (C, T)
U134	96-45-7	2-Imidazolidinethione
U116	85-44-9	1,3-Isobenzofurandione
U190	58-89-9	Lindane
U129	108-31-6	Maleic anhydride
U147	7439-97-6	Mercury
U151	74-83-9	Methane, bromo-
U029	74-87-3	Methane, chloro- (I, T)
U045	107-30-2	Methane, chloromethoxy-
U046	75-09-2	Methane, dichloro-

Hazardous W Code	Chemical Abstracts No.	Substance
U080	74-88-4	Methane, iodo-
U138	56-23-5	Methane, tetrachloro-
U211	75-25-2	Methane, tribromo-
U225	67-66-3	Methane, trichloro-
U044	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U036	67-56-1	Methanol (l)
U154	72-43-5	Methoxychlor
U247	67-56-1	Methyl alcohol (l)
U154	74-83-9	Methyl bromide
U029	74-87-3	Methyl chloride (l,T)
U045	71-55-6	Methyl chloroform
U226	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U158	75-09-2	Methylene chloride
U080	74-88-4	Methyl iodide
U138	108-10-1	Methyl isobutyl ketone (l)
U161	80-62-6	Methyl methacrylate (l,T)
U162	108-10-1	4-Methyl-2-pentanone (l)
U161	91-20-3	Naphthalene
U165	63-25-2	1-Naphthalenol, methylcarbamate.
U279	98-95-3	Nitrobenzene (l,T)
U169	100-02-7	p-Nitrophenol
U170	79-46-9	2-Nitropropane (l,T)
U171	684-93-5	N-Nitroso-N-methylurea
U177	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U193	75-21-8	Oxirane (l,T)
U115	106-89-8	Oxirane, (chloromethyl)-
U041	82-68-8	Pentachloronitrobenzene (PCNB)
U185	108-10-1	Pentanol, 4-methyl-
U161	108-95-2	Phenol
U188	1319-77-3	Phenol, methyl-
U052	114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate.
U411	100-02-7	Phenol, 4-nitro-
U170	85-44-9	Phthalic anhydride
U190	96-12-8	Propane, 1,2-dibromo-3-chloro-
U066	78-87-5	Propane, 1,2-dichloro-
U083	79-46-9	Propane, 2-nitro- (l,T)
U171	1120-71-4	1,3-Propane sultone
U193	79-06-1	2-Propenamide
U007	542-75-6	1-Propene, 1,3-dichloro-
U084	107-13-1	2-Propenenitrile
U009	79-10-7	2-Propenoic acid (l)
U008	140-88-5	2-Propenoic acid, ethyl ester (l)
U113	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (l,T)
U162	114-26-1	Propoxur.
U411	78-87-5	Propylene dichloride
U083	7783-00-8	Selenium dioxide
U204	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS ₂ (R,T)
U205	77-78-1	Sulfuric acid, dimethyl ester
U103	79-34-5	1,1,2,2-Tetrachloroethane
U209	127-18-4	Tetrachloroethylene
U210	108-88-3	Toluene
U220	95-53-4	o-Toluidine
U328	71-55-6	1,1,1-Trichloroethane
U226	79-00-5	1,1,2-Trichloroethane
U227	79-01-6	Trichloroethylene
U228	121-44-8	Triethylamine.
U404	684-93-5	Urea, N-methyl-N-nitroso-
U177	75-01-4	Vinyl chloride
U043	1330-20-7	Xylene (l)

Hazardous W Code	Chemical Abstracts No.	Substance
U239	75-07-0	Acetaldehyde (I)
U001	75-07-0	Ethanal (I)
U001	75-05-8	Acetonitrile (I,T)
U003	98-86-2	Acetophenone
U004	98-86-2	Ethanone, 1-phenyl-
U004	53-96-3	Acetamide, -9H-fluoren-2-yl-
U005	53-96-3	2-Acetylaminofluorene
U005	79-06-1	Acrylamide
U007	79-06-1	2-Propenamide
U007	79-10-7	Acrylic acid (I)
U008	79-10-7	2-Propenoic acid (I)
U008	107-13-1	Acrylonitrile
U009	107-13-1	2-Propenenitrile
U009	62-53-3	Aniline (I,T)
U012	62-53-3	Benzenamine (I,T)
U012	71-43-2	Benzene (I,T)
U019	92-87-5	Benzidine
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U021	98-07-7	Benzene, (trichloromethyl)-
U023	98-07-7	Benzotrichloride (C,R,T)
U023	111-44-4	Dichloroethyl ether
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U025	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U028	117-81-7	Diethylhexyl phthalate
U028	74-83-9	Methane, bromo-
U029	74-83-9	Methyl bromide
U029	57-74-9	Chlordane, alpha & gamma isomers
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U036	108-90-7	Benzene, chloro-
U037	108-90-7	Chlorobenzene
U037	510-15-6	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U038	510-15-6	Chlorobenzilate
U038	106-89-8	Epichlorohydrin
U041	106-89-8	Oxirane, (chloromethyl)-
U041	75-01-4	Ethene, chloro-
U043	75-01-4	Vinyl chloride
U043	67-66-3	Chloroform
U044	67-66-3	Methane, trichloro-
U044	74-87-3	Methane, chloro- (I,T)
U045	74-87-3	Methyl chloride (I,T)
U045	107-30-2	Chloromethyl methyl ether
U046	107-30-2	Methane, chloromethoxy-
U046	1319-77-3	Cresol (Cresylic acid)
U052	1319-77-3	Phenol, methyl-
U052	98-82-8	Benzene, (1-methylethyl)-(I)
U055	98-82-8	Cumene (I)
U055	96-12-8	1,2-Dibromo-3-chloropropane
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U066	106-93-4	Ethane, 1,2-dibromo-
U067	106-93-4	Ethylene dibromide
U067	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U069	84-74-2	Dibutyl phthalate
U069	106-46-7	Benzene, 1,4-dichloro-
U072	106-46-7	p-Dichlorobenzene
U072	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U073	91-94-1	3,3'-Dichlorobenzidine
U073	75-34-3	Ethane, 1,1-dichloro-
U076	75-34-3	Ethylidene dichloride
U076	107-06-2	Ethane, 1,2-dichloro-
U077	107-06-2	Ethylene dichloride

Hazardous W Code	Chemical Abstracts No.	Substance
U077	75-35-4	1,1-Dichloroethylene
U078	75-35-4	Ethene, 1,1-dichloro-
U078	75-09-2	Methane, dichloro-
U080	75-09-2	Methylene chloride
U080	78-87-5	Propane, 1,2-dichloro-
U083	78-87-5	Propylene dichloride
U083	542-75-6	1,3-Dichloropropene
U084	542-75-6	1-Propene, 1,3-dichloro-
U084	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U091	119-90-4	3,3'-Dimethoxybenzidine
U091	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U093	60-11-7	p-Dimethylaminoazobenzene
U093	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U095	119-93-7	3,3'-Dimethylbenzidine
U095	79-44-7	Carbamic chloride, dimethyl-
U097	79-44-7	Dimethylcarbamoyl chloride
U097	57-14-7	1,1-Dimethylhydrazine
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U098	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U102	131-11-3	Dimethyl phthalate
U102	77-78-1	Dimethyl sulfate
U103	77-78-1	Sulfuric acid, dimethyl ester
U103	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U105	121-14-2	2,4-Dinitrotoluene
U105	123-91-1	1,4-Diethyleneoxide
U108	123-91-1	1,4-Dioxane
U108	122-86-7	1,2-Diphenylhydrazine
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U109	140-88-5	Ethyl acrylate (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U113	75-21-8	Ethylene oxide (I,T)
U115	75-21-8	Oxirane (I,T)
U115	96-45-7	Ethylenethiourea
U116	96-45-7	2-Imidazolidinethione
U116	50-00-0	Formaldehyde
U122	118-74-1	Benzene, hexachloro-
U127	118-74-1	Hexachlorobenzene
U127	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U128	87-68-3	Hexachlorobutadiene
U128	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U129	58-89-9	Lindane
U129	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U130	77-47-4	Hexachlorocyclopentadiene
U130	67-72-1	Ethane, hexachloro-
U131	67-72-1	Hexachloroethane
U131	302-01-2	Hydrazine (R,T)
U133	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U134	74-88-4	Methane, iodo-
U138	74-88-4	Methyl iodide
U138	108-31-6	2,5-Furandione
U147	108-31-6	Maleic anhydride
U147	7439-97-6	Mercury
U151	67-56-1	Methanol (I)
U154	67-56-1	Methyl alcohol (I)
U154	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U158	108-10-1	Methyl isobutyl ketone (I)
U161	108-10-1	4-Methyl-2-pentanone (I)
U161	108-10-1	Pentanol, 4-methyl-

Hazardous W Code	Chemical Abstracts No.	Substance
U161	80-62-6	Methyl methacrylate (I,T)
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U162	91-20-3	Naphthalene
U165	98-95-3	Benzene, nitro-
U169	98-95-3	Nitrobenzene (I,T)
U169	100-02-7	p-Nitrophenol
U170	100-02-7	Phenol, 4-nitro-
U170	79-46-9	2-Nitropropane (I,T)
U171	79-46-9	Propane, 2-nitro- (I,T)
U171	684-93-5	N-Nitroso-N-methylurea
U177	684-93-5	Urea, N-methyl-N-nitroso-
U177	82-68-8	Benzene, pentachloronitro-
U185	82-68-8	Pentachloronitrobenzene (PCNB)
U185	108-95-2	Phenol
U188	85-44-9	1,3-Isobenzofurandione
U190	85-44-9	Phthalic anhydride
U190	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U193	1120-71-4	1,3-Propane sultone
U193	106-51-4	p-Benzoquinone
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U197	7783-00-8	Selenium dioxide
U204	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS ₂ (R,T)
U205	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U209	79-34-5	1,1,2,2-Tetrachloroethane
U209	127-18-4	Ethene, tetrachloro-
U210	127-18-4	Tetrachloroethylene
U210	56-23-5	Carbon tetrachloride
U211	56-23-5	Methane, tetrachloro-
U211	108-88-3	Benzene, methyl-
U220	108-88-3	Toluene
U220	75-25-2	Bromoform
U225	75-25-2	Methane, tribromo-
U225	71-55-6	Ethane, 1,1,1-trichloro-
U226	71-55-6	Methyl chloroform
U226	71-55-6	1,1,1-Trichloroethane
U226	79-00-5	Ethane, 1,1,2-trichloro-
U227	79-00-5	1,1,2-Trichloroethane
U227	79-01-6	Ethene, trichloro-
U228	79-01-6	Trichloroethylene
U228	51-79-6	Carbamic acid, ethyl ester
U238	51-79-6	Ethyl carbamate (urethane)
U238	1330-20-7	Benzene, dimethyl- (I,T)
U239	1330-20-7	Xylene (I)
U239	¹ 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U240	¹ 94-75-7	2,4-D, salts & esters
U240	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4- methoxy-
U247	72-43-5	Methoxychlor
U247	63-25-2	Carbaryl
U279	63-25-2	1-Naphthalenol, methylcarbamate
U279	95-53-4	Benzenamine, 2-methyl-
U328	95-53-4	o-Toluidine
U328	110-80-5	Ethylene glycol monoethyl ether
U359	121-44-8	Ethanamine, N,N-diethyl-
U404	121-44-8	Triethylamine
U404	114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U411	114-26-1	Propoxur
U411	NA	Arsenic
D004	NA	Cadmium
D006	NA	Chromium
D007	NA	Lead
D008	NA	Mercury
D009	NA	Selenium
D010		Spent cyanide plating bath solutions from electroplating operations.
F007		Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F008		Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F009		Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.
F010		Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F011		Quenching waste water treatment sludge from metal heat treating operations where cyanides are used in the process.
F012		Metal Treating