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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3148A
Plant ID No.:	061-00132
Applicant:	AES Asset Acquisition Corporation d.b.a. Clean Earth of Morgantown (Clean Earth), formerly AES Environmental, LLC
Facility Name:	Morgantown
Location:	Morgantown, Monongalia County
NAICS Code:	562112 - Hazardous Waste Collection
Application Type:	Modification
Received Date:	January 5, 2017
Engineer Assigned:	John Legg
Fee Amount:	$300.00 (January 09, 2017) and $700.00 (April 28, 2017)
Date Received:	see above
Complete Date:	April 28, 2017
Due Date:	July 28, 2017
Applicant Ad Date:	January 10, 2017
Newspaper:	*The Dominion Post*
UTM's:	Easting: 587.883 km Northing: 4384.922 km Zone: 17
Lat./Long.:	Latitude: 39.6095 Longitude: -79.9763
Description:	As-built changes and removal of equipment which was not operated or installed.

Clean Earth's Morgantown facility was constructed under R13-3148 (approved 3/26/2014). The facility as proposed in that application/permit has not been fully installed/operational and there are as-built differences. This modification is to clean up the permit and account for the as-built differences:

- Hazcrusher capacity increased from 2,000 to 5,000 cans/hr, i.e., from 17.52 MM cans/yr to 43.8 MM cans/yr, a 2.5 times increase.

- Aerosol propellent gas skid unit no longer used to recycle/compress gas from Hazcrusher. Fugitive emissions from gas skid unit are zero when not run in compression mode.

- The electric generator was removed from site. It was to be fueled by aerosol propellents from the Hazcrusher.

- Two activated carbon units in series (1C and 2C) are now used to control aerosol propellent gas from the Hazcrusher.

- New emission point (3E) was established for cans crushed by the Hazcrusher. Crushed cans are stored in a bin receiver in the Metal Building.

- A new adsorber (a 55-gallon-sized, activated carbon drum) is used to control Metal Building emissions (3C).

- Two (2) Teemark can/pail crushers (2S and 3S) will be used to crush cans. A backup can/pail crusher (5S) may have been eliminated. (Not sure if backup crusher ever existed.) Each crusher is rated at 300 cans/hr. Each crusher has its own activate carbon adsorber (4C and 5C). The permit will allow an additional 2.628 MM cans/pails each year to be crushed.

  Both emission points 2E and 3E will be allowed to emit methylene chlorine. The previous permit only allowed methylene chloride to be emitted from one emission point (2E).

- VOC emission concentration estimates/assumptions for the Hazcrusher, the Metal Building, and the two (2) Teemark crushers have been updated:

Equipment	Before	After	Actual Measured Concentration
Hazcrusher (1S)	Not Given/ Stated	1,500 ppm	871 ppm
Metal Building [Not assigned a source ID No., i.e., considered to have the same source ID as the Hazcrusher (1S)]	New Emission Point	100 ppm	Not Detected
Teemark Crusher (2S)	251 ppm*	100 ppm	Not Detected
Teemark Crusher (3S)	251 ppm*	100 ppm	Not Detected
* Based on an actual reading measured an another facility.			

DESCRIPTION OF PROCESS

Clean Earth is located at the Morgantown Industrial Park and operates an aerosol/paint can recycling center and is labeled as a hazardous waste recycling facility.

The site was originally permitted on March 26, 2014 under air permit R13-3148.

The facility receives many different forms of containers that need to be emptied to recover the metal or plastic from the container and also to 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 return items from stores, and materials that have passed the expiration date or other reasons why the materials/supplies need to be recycled.

Hazcrusher (1S, 1C and 2C, 1E; and 1S, 3C, 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 bin of aerosol cans and then runs and crushes all the cans.

The fluids from the crushed cans drain down into a drum for shipping off as fuel.

The aerosol propellent(s) from the crushed cans was initially planned to be recovered via the gas skid and used as a fuel for an on-site electric 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 and will not be operated at this site.

The gas recovery skid is still at the site but the propellants only pass through the process without the gas skid in operation, i.e., there is no compression of the propellant and no actions taken by the skid on the propellants.

The propellants pass through the gas skid to two (2) activated carbon filters (1C and 2C, 1E) in series which control volatile organic compounds (VOC)/hazardous air pollutants (HAPS). These carbon filters are Air 2500 activated carbon filters containing 2,500 to 3,000 pounds of activated carbon.

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 through a 55 gallon-size drum of activated carbon (3C, 3E).

Additionally, there were some fugitive emissions associated with the propellant compression process. With the propellant just passing through the gas system and no compression occurring, the leak estimate from compression has been removed/zeroed (see Table 2 below). The other fugitive emission sources still remain the same.

The emissions for the 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 has been determined to have a maximum crushing capacity of 5,000 cans per hour instead of 2,000 cans per hour. The number of cans is variable because of the differences in the size of the containers that are received for recycling. The resulting emissions have been updated to reflect the increase in operating rate and the impact of having activated carbon filtration with a maximum estimated release concentration of 1,500 ppm VOC's and HAPS (actual measurements have been variable with a maximum of 871 ppm VOC's at emission point 1E).

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

Teemark Can/Pail Crushers (2S, 4C, and 4E; and 3S, 5C, and 5E)

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 the Teemark crushers are non-pressured can and pails. These cans/pails do not contain propellant like aerosol cans. However, there is some VOC/HAP release which is 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 through activated carbon filter 4C with emission point 4E. Teemark (3S) vents through activated carbon filter 5C with emission point 5E. These carbon filters are Air 1800 activated carbon filters containing 1,500 to 1800 pounds of activated carbon .

Emission estimates for these units have been updated. The initial estimates were based on a measured reading from another facility of 251 ppm. The updated emission estimates are based on 100 ppm [actual measurements have not detected VOC's at either emissions point (4E and 5E)].

The changes to the Emission Units Table are shown below in Table 1 and reflect the as-built facility.

Table 1:Changes to Old Permit R13-3148's Emission Units Table.						
Emission Unit ID	**Emission Point ID**	**Emission Unit Description**	**Year Installed/ Modified**	**Design Capacity**	**Type and Date of Change**	**Control Device**
1S	1E/3E	Aerosol~~/ Paint~~ Can Crusher / Metal Building	2014	~~2000~~ 5,000 cans/hr	~~new~~ Existing	1C ~~or~~ and 2C/3C
2S	~~2E~~ 4E	~~Aerosol~~ Can Crusher	~~2014~~ 2008	~~800~~ 300 cans/hr	Existing	~~1C or 2C~~ 4C
3S	~~3E~~ 5E	~~Aerosol/ Paint~~ Cans Crusher	~~2014~~ 2016	300 cans/ hr	Existing	~~3C~~ 5C
~~4S~~	~~1E~~	~~Natural Gas/ Propane Engine; ECO 38-2LN/4~~	~~2014~~	~~142 HP~~	~~new~~	~~N/A~~
~~5S~~	~~2E~~	~~Aerosol Can Crusher~~	~~2014~~	~~800 cans / hr~~	~~existing~~	~~1C or 2C~~

Control Devices		
Control Device ID	**Control Device Type**	**Control Device Description**
1C & 2C	Two (2) Activated Carbon Adsorbers in Series	~~Siemens VSC3000-STS~~ Same Description for Both Adsorbers: Encotech, Model Air 2500 Adsorbent: Granular Carbon, Calgon VPR 4X10 (2,500 to 3,000 pounds A.C.)
~~2C~~	~~Adsorber~~	~~Siemens VSC3000-STS~~
3C	Activated Carbon Adsorber	~~Siemens VSC3000-STS~~ Enotech, 55 gallon-sized Drum Adsorbent: Granular Carbon, Calgon VPR 4X10
4C	Activated Carbon Adsorber	Encotech, Model Air 1800 Adsorbent: Granular Carbon, Calgon VPR 4X10 (1,500 to 1,800 pounds A.C.)
5C	Activated CarbonAdsorber	Encotech, Model Air 1800 Adsorbent: Granular Carbon, Calgon VPR 4X10 (1,500 to 1,800 pounds A.C.)

Method to Track Compliance

To account for large variable listings, Clean Earth requests two (2) methods of tracking compliance.

Method 1 - Mixed Batches

Method 1 is for mixed batches of 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 batched 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 - Non-mixed Batches

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 emission 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 less than 10.0 tons per year for VOCs and less than 10.0 tons per year of HAPS and toxic air pollutants (TAPS). The HAPS include both the HAPS in the calculations (ethyl benzene, glycol ethers, hexane, methanol, toluene, mixed xylene isomers, and methylene chloride) and the HAPS in the waste codes in Appendix 1 to the application.

Material Safety Data Sheet

Attachment H to the application contained information on Calgon Corporation's VPR 4 x 10 Granular Reactivated Carbon, and Norit Americas Inc.'s Norit® Vapure React Granular Activated Carbon.

SITE INSPECTION

This facility is an existing facility and is known to the DAQ. The facility has a hazardous waste air permit under 45CSR25. The last inspection was a full on-site inspection conducted on November 2, 2016 by Kirk Powroznik. There were no violations found at the time of the inspection. The facility was given the code of 30 for in compliance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

VOC emissions were calculated for the Hazcrusher aerosol can crushing unit [1S] and the two Teemark paint bucket/can crushers [2S and 3S] based on past maximum VOC concentration measurements taken at the emissions points and using the maximum air speed/pump rate through the carbon adsorbers units. Annual emissions are based on operating 8,760 hours per year.

Note: According to the air pollution control device sheets, the granular carbon in the adsorbers provide a minimum efficiency of ~80% control of the VOCs and HAPs. The control device minimum efficiency, however, was not used in the emission calculations.

Hazardous Air Pollutants were calculated using the maximum percentage of HAP from multiple MSDSs. Therefore, the total HAP content is greater than 100%. This also explains why the Total HAP emissions for [1S] is greater than the Total VOC emissions.

Table 2: Blower Speeds, Assumed VOC Emissions (in PPM) exiting Carbon Filters, Calculate VOC & Total HAP Emissions.

ID No.	Process Description	Weight of One Cubic Feet of Air (lb) at 50°F	Air Speed Through Pump/Blower (ft3/min)	PPM of VOC	VOC		Total HAP	
					(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
1E	Aerosol Can Unit 1S venting through carbon filters 1C and 2C in series to Emission Point 1E	0.077863	220	1,500	1.54	6.75	1.88	8.24
3E	Aerosol Can Unit 1S Metal Can Storage Bin (Metal Building) venting through Carbon, 55-gallon Drum Filter 3C to Emission Point 3E		250	100	0.12	0.53	0.15	0.64
4E	Can/Pail Crusher Unit 2S venting through Carbon Filter 4C to Emission Point 4E		250	100	0.12	0.53	0.08	0.37

Table 2: Blower Speeds, Assumed VOC Emissions (in PPM) exiting Carbon Filters, Calculate VOC & Total HAP Emissions.								
ID No.	Process Description	Weight of One Cubic Feet of Air (lb) at 50°F	Air Speed Through Pump/Blower (ft3/min)	PPM of VOC	VOC		Total HAP	
					(lb/hr)	(ton/yr)	(lb/hr)	(ton/yr)
5E	Can/Pail Crusher Unit 3S venting through Carbon Filter 5C to Emission Point 5E		250	100	0.12	0.53	0.08	0.37

Fugitive Emissions:

A "Leak Source Data Sheet" was completed in Attachment L to R13-3148A for the Hazcrusher Aerosol Can Crusher [1S] operation and is provided below.

Fugitive emissions were calculated using the US EPA Protocol for Equipment Leak Emission Estimates EPA-453/R-95-077 November 1995 Table 2-1 SOCMI Average Emission Factors.

The emission factors and calculations were reviewed by the writer. Total VOC fugitive emissions decreased from 0.58 lb/hr and 2.53 ton/yr to 0.075 lb/hr and 0.33 ton/yr because the propellant is passing through the gas recovery skid and is not being compressed.

Table 2: Revised Fugitive Emission Leak Source Data for Hazcrusher Aerosol Can Crusher [1S] Operation.				
Source Category	Pollutant	Emission Factor (1) (lb/hr)	Number of Source Components	Estimated Annual Emissions (lb / yr)
Pumps	Heavy Liquid VOC	0.019	1	166.5
Valves	Gas VOC	0.01316	3	345.9
	Heavy Liquid VOC	0.00051	1	4.4
Open-ended Lines	VOC	0.00375	1	32.8
(2) Compressor Seals	VOC	0.50265	~~1~~ 0	~~4,403.2~~ 0.0
Flanges	VOC	0.00403	3	106.0
Total			10	~~5058.8~~ 655.6

Table 2: Revised Fugitive Emission Leak Source Data for Hazcrusher Aerosol Can Crusher [1S] Operation.				
Source Category	**Pollutant**	**Emission Factor (1) (lb/hr)**	**Number of Source Components**	**Estimated Annual Emissions (lb / yr)**
(1) US EPA Protocol for Equipment Leak Emission Estimates EPA-453/R-95-077 November 1995 Table 2-1 SOCMI Average Emission Factors. Factors converted to lb/hr by multiplying by 2.2046 kg/lb. (2) Fugitive emissions decreased from 4,403.2 lb/yr to 0.0 lb/yr because the propellants passing through the gas recovery skid are no longer being compressed.				

Emissions data provided in Attachment J's "Emission Points Data Summary Sheet" was reviewed and verified by the writer.

Table 3: Revised Emission Point Data Summary Sheet.					
Emission Point ID	**Emission Unit ID**	**Control Device**	**Regulated Pollutant**	**Maximum Potential Controlled Emissions**	
				lb/hr	**tpy**
1E	1S (Aerosol Can Crusher) ~~4S (Generator Engine)~~	1C ~~or~~ and 2C	~~PM~~	~~0.01~~	~~0.02~~
			~~PM_{10}~~	~~0.01~~	~~0.02~~
			~~$PM_{2.5}$~~	~~0.01~~	~~0.02~~
			~~CO~~	~~0.22~~	~~0.98~~
			~~NO_x~~	~~0.01~~	~~0.03~~
			~~SO_2~~	~~0.01~~	~~0.01~~
			VOC	~~1.28~~ 1.54	~~5.61~~ 6.75
			Ethyl Benzene	~~0.06~~ 0.08	~~0.28~~ 0.34
			~~Formaldehyde~~	~~0.01~~	~~0.04~~
			Hexane	0.03	~~0.11~~ 0.14
			Glycol Ethers	~~0.16~~ 0.20	~~0.71~~ 0.86
			Methanol	~~0.08~~ 0.10	0~~.36~~ 0.44

Table 3: Revised Emission Point Data Summary Sheet.					
Emission Point ID	**Emission Unit ID**	**Control Device**	**Regulated Pollutant**	**Maximum Potential Controlled Emissions**	
				lb/hr	**tpy**
			Toluene	~~0.55~~ 0.66	~~2.40~~ 2.90
			Mixed Xylene	~~0.68~~ 0.82	~~2.96~~ 3.58
			Total HAPs	~~1.56~~ 1.88	~~6.84~~ 8.24
3E	1S (Metal Building) (New Emission Point)	3C	VOC	0.12	0.51
			Ethyl Benzene	0.01	0.03
			Glycol Ethers	0.01	0.06
			Hexane	0.01	0.01
			Methanol	0.01	0.03
			Toluene	0.05	0.22
			Mixed Xylene	0.06	0.27
			Total HAPs	0.15	0.64
~~2E~~ 4E	2S (Can Crusher) ~~5S (Aerosol Can Crusher)~~	~~2C~~ 4C	VOC	~~0.51~~ 0.12	~~2.23~~ 0.51
			Methylene Chloride	~~0.36~~ 0.08	~~1.56~~ 0.36
			Total HAPs	0.08	0.36
5E	3S (Can Crusher) (New Emission Point)	5C	VOC	0.12	0.51
			Methylene Chloride	0.08	0.36
			Total HAPs	0.08	0.36
~~3E~~	~~3S~~	~~3C~~	~~VOC~~	~~0.19~~	~~0.84~~

Greenhouse Gas Emissions:

With the generator engine's elimination, Greenhouse Gas Emissions cease to exist.

Table 4: Greenhouse Gas Emissions (Metric Tons).					
Source	**Emission Point**	**CO_2**	**Methane**	**Nitrous Oxide**	**CO_2e**
~~4S~~	~~1E~~	~~283.87~~	~~0.01~~	~~0.002~~	~~284.74~~

Facility Emissions:

Total emissions for the facility including fugitive emissions are provided in Table 5 below.

Table 5: Total Emissions for the Facility. Fugitive Emissions Included in Total.				
Regulated Pollutant	**Before Modification (R13-3148) Maximum Potential Emissions**		**After Modification (R13-3148A) Maximum Potential Emissions**	
	(lb/hr)	**(tpy)**	**lb/hr**	**(tpy)**
PM	0.01	0.02	0.00	0.00
PM_{10}	0.01	0.02	0.00	0.00
$PM_{2.5}$	0.01	0.02	0.00	0.00
CO	0.22	0.98	0.00	0.00
NO_X	0.01	0.03	0.00	0.00
SO_2	0.01	0.01	0.00	0.00
VOC	2.56	11.21	1.97	8.65
Total HAPs	1.93	8.45	2.30	10.02*
CO_2e	n/a	284.74	0.00	0.00
* Permitted total facility-wide VOC/HAP emissions will be limited so as not to exceed 10.0 tons/yr.				

REGULATORY APPLICABILITY

Modification R13-3148A does not place additional regulatory applicability on the facility. With the removal of the generator (which was installed but never made operable), the facility will remove the applicability of 40 CFR 60, Subpart JJJJ and 40 CFR 63,

Subpart ZZZZ, both related to spark ignition engines.

STATE REGULATIONS:

The following state regulations have been reviewed for applicability.

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation

This application was submitted as a Class II Administrative Update. Because the facility was not constructed according to R13-3148, the application was bumped to a modification permit.

This modification application meets all the requirements of 45CSR13. The applicant ran a Class I legal notice in ***The Dominion Post*** (on January 10, 2017); paid the required $1,000 application fee for a modification permit (on January 9, 2017 - $300.00, and on April 28, 2017 - $700.00 to bump application up to a modification permit); and the application was deemed complete on April 28, 2017.

45CSR16 Standards of Performance for New Stationary Sources

With the removal of the generator engine, this facility is no longer subject to 45 CFR 60, Subpart JJJJ, and in turn, is no longer subject to this state regulatory rule.

45CSR21 Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds

This rule does not apply to this facility because it applies only to sources located in Putnam, Kanawha, Cabell, Wayne, and Wood Counties of West Virginia, and not to Monongalia County, West Virginia where the facility is located.

45CSR22 Air Quality Management Fee Program

The facility is subject to the fee program of 45CSR22 and demonstrated compliance by paying an application fee totaling $1,000.00 for this modification permit.

This facility was added to the Certificate to Operate (CTO) database for the annual CTO fee program.

45CSR25 Control of Air Pollution from Hazardous Waste Treatment, Storage and Disposal Facilities

The requirements for Rule 25 are not included in Rule 13 construction permits.

According to an inspection memo in the file, the applicant is a hazardous waste large quantity generator and is a permitted waste transfer station.

45CSR27 To Prevent and Control the Emissions of Toxic Air Pollutants

The purpose of 45CSR27 is to prevent and control the discharge of toxic air pollutants requiring the application of best available technology (BAT).

Methylene Chloride meets the definition of a “toxic air pollutant” per 45CSR27-2.10. Methylene Chloride is listed as an ingredient of Pro Strip with a composition of 50-60 wt% according to the material safety data sheet.

Methylene Chloride is emitted from emission points [4E and 5E] from emission units [2S and 3S].

According to the process description and process flow diagrams provided in the application, emission units 2S and 3S are can crusher recycling units. The cans are punctured in the units and any remaining liquids are collected. The collected liquids are properly disposed of. The metal from the cans is recycled.

The process described for emission units 2S and 5S does not meet the definition of a “chemical processing unit” per definition 2.4 of § 45-27-2.

“Chemical processing unit” means an assembly of reactors, tanks, distillation columns, heat exchangers, vaporizers, compressors, dryers, decanters, and/or other equipment used to treat, store, manufacture, or use toxic air pollutants. For the purpose of this rule, the term chemical processing unit includes

surface coating equipment or similar equipment utilizing a toxic air pollutant as a solvent or for other purposes.

The facility is not subject to 45CSR27. Permit limitations will prohibit Pro Strip and methylene chloride containing materials from being processed in any emission unit other than emission units [2S and 3S].

4CSR30 Requirements for Operating Permits

This facility does not meet the definition of a "major source" per 45CSR30, and therefore is not subject to 40CSR30.

This facility does not emit more than 10 tpy of any hazardous air pollutant (HAP) or more than 25 tpy of Total HAPs, nor does it emit 100 tpy or more of any pollutant subject to regulation.

Greenhouse gases are subject to regulation; however, they have a PTE major source threshold of 100,000 tpy CO_2e.

45CSR34 Emission Standards for Hazardous Air Pollutants

The facility is no longer subject to this rule because they are no longer subject to 40CFR63, Subpart ZZZZ.

FEDERAL REGULATIONS:

The following federal regulations have been reviewed for applicability.

40 CFR 60
Subpart JJJJ STANDARDS OF PERFORMANCE FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES

The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE). For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

The 142 hp, year 2013 generator is being removed from service. Because of this, the facility is no longer subject to this subpart.

40 CFR63,

Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§ 63.6590 (c)(1) states that a new stationary RICE located at an area source meets the requirements of this subpart by meeting the requirements of 40 CFR part 60 subpart JJJJ.

The 142 hp, year 2013 generator is being removed from service. Because of this, the facility is no longer subject to subpart JJJJ or ZZZZ.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

A summary of each of the Hazardous Air Pollutants that are components in the materials involved for the processes described in this application is provided below.

Ethyl Benzene: Ethyl benzene is mainly used in the manufacturing of styrene. Acute (short-term) exposure to ethyl benzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects, such as dizziness. Chronic (long-term) exposure to ethyl benzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethyl benzene. Limited information is available on the carcinogenic effects of ethyl benzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethyl benzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethyl benzene as a Group D, not classifiable as to human carcinogenicity.

Formaldehyde: Formaldehyde is used mainly to produce resins used in particle board products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human

carcinogen (Group B1).

Glycol Ethers: Glycol ethers have many uses; these include use as solvents and as an ingredient in cleaning compounds, liquid soaps, and cosmetics. Acute (short-term) exposure to high levels of the glycol ethers in humans results in narcosis, pulmonary edema, and severe liver and kidney damage. Chronic (long-term) exposure to the glycol ethers in humans may result in neurological and blood effects, including fatigue, nausea, tremor, and anemia. No information is available on the reproductive, developmental, or carcinogenic effects of the glycol ethers in humans. Animal studies have reported reproductive and developmental effects from inhalation and oral exposure to the glycol ethers. EPA has not classified the glycol ethers for carcinogenicity. The glycol ethers are used as solvents for resins, lacquers, paints, varnishes, gum, perfume, dyes, inks, as a constituent of paints and pastes, cleaning compounds, liquid soaps, cosmetics, and hydraulic fluids. 2-Butoxyethanol is used in the production of cleaning agents and as a general solvent.

n-Hexane: n-Hexane is a solvent that has many uses in the chemical and food industries, either in pure form or as a component of commercial hexane. The latter is a mixture that contains approximately 52% n-hexane; the balance is made up of structural analogs and related chemicals such as methylpentane and methylcyclopentane. Highly purified n-hexane is used as a reagent for chemical or chromatographic separations. Other grades of n-hexane are used as solvents for extracting edible fats and oils in the food industry and as a cleaning agent in the textile, furniture, and printing manufacturing industries. Hexane is the solvent base for many commercial products, such as glues, cements, paint thinners, and degreasers. n-Hexane is a minor constituent of crude oil and natural gas and occurs in different petroleum distillates. No data are available regarding the potential toxicity of n-hexane in humans orally exposed to n-hexane. However, as might be expected for a chemical with such wide application, the potential exists for persons to be environmentally and/or occupationally exposed to n-hexane via other routes of exposure.

Methanol: Methanol is released to the environment during industrial uses and naturally from volcanic gases, vegetation, and microbes. Exposure may occur from ambient air and during the use of solvents. Acute (short-term) or chronic (long-term) exposure of humans to methanol by inhalation or ingestion may result in blurred vision, headache, dizziness, and nausea. No information

is available on the reproductive, developmental, or carcinogenic effects of methanol in humans. Birth defects have been observed in the offspring of rats and mice exposed to methanol by inhalation. EPA has not classified methanol with respect to carcinogenicity.

Methanol is primarily used as an industrial solvent for inks, resins, adhesives, and dyes. It is also used as a solvent in the manufacture of cholesterol, streptomycin, vitamins, hormones, and other pharmaceuticals. Methanol is also used as an antifreeze for automotive radiators, an ingredient of gasoline (as an antifreezing agent and octane booster), and as fuel for picnic stoves. Methanol is also an ingredient in paint and varnish removers. Methanol is also used as an alternative motor fuel.

Methylene chloride (Dichloromethane): Methylene chloride is predominantly used as a solvent. The acute (short-term) effects of methylene chloride inhalation in humans consist mainly of nervous system effects including decreased visual, auditory, and motor functions, but these effects are reversible once exposure ceases. The effects of chronic (long-term) exposure to methylene chloride suggest that the central nervous system (CNS) is a potential target in humans and animals. Human data are inconclusive regarding methylene chloride and cancer. Animal studies have shown increases in liver and lung cancer and benign mammary gland tumors following the inhalation of methylene chloride.

Toluene: The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. `Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies. The major use of toluene is as a mixture added to gasoline to improve octane

ratings. Toluene is also used to produce benzene and as a solvent in paints, coatings, synthetic fragrances, adhesives, inks, and cleaning agents. Toluene is also used in the production of polymers used to make nylon, plastic soda bottles, and polyurethanes and for pharmaceuticals, dyes, cosmetic nail products, and the synthesis of organic chemicals.

Xylene: Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity. Mixed xylenes are used in the production of ethylbenzene, as solvents in products such as paints and coatings, and are blended into gasoline.

AIR QUALITY IMPACT ANALYSIS

This modification application does not meet the definition of a major modification according to the definitions in 45CSR14 and 45CSR19; therefore, modeling is not required for this permit application.

MONITORING OF OPERATIONS

The permittee is required to keep records on:

- The carbon change outs in the five (5) adsorbers.
- The number of aerosol cans and paint cans processed per month by the three (3) can crushers.
- The hours of operation of the can crushers.

RECOMMENDATION TO DIRECTOR

The writer recommends that modification Permit R13-3148A be granted to AES whose facility is located in Morgantown, Monongalia County, WV. Based on the

information provided in the permit application, the applicant meets all applicable federal and state air regulations pertaining to the requested change.

John Legg
Permit Writer

Date