APPENDIX M

AIR EMISSIONS

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AIR EMISSION STANDARDS COMPLIANCE PLAN

M – 1.0 AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS (40 CFR Part 264 Subpart BB)

Tank #3 and its ancillary equipment (i.e., HWMU #1 tank system) are subject to the requirements of Subpart BB of 40 CFR Part 264. 40 CFR §§ 264.1052 through 264.1055, § 264.1057, and § 264.1060 do not apply to the HWMU #1 tank system because there are no compressors in waste service, no equipment in gas/vapor service, no sampling connection systems, and no closed-vent systems or control devices in use at the Barre Service Center (BSC).

Tank #3 is used to store spent Safety-Kleen hydrocarbon-based parts washer solvent which has a vapor pressure of approximately 0.11 kPa at 20 degrees C and is classified as a heavy liquid as defined in 40 CFR § 264.1031. Safety-Kleen's procedure and data supporting its spent hydrocarbon-based parts washer solvent vapor pressure determination are provided in **Attachment M-1**. Light liquids, as defined in 40 CFR § 264.1031, are not stored or managed in the HWMU #1 tank system.

Pursuant to 40 CFR § 264.1050, each piece of equipment subject to Subpart BB requirements is identified with a tag bearing a unique identification number to distinguish it from non-subject equipment. **Figure L-2** shows the piping schematic of the HWMU #1 tank system and identifies each piece of subject equipment and its corresponding identification number.

Pursuant to 40 CFR § 264.1056, the tank system's single open-ended transfer line is equipped with a check valve, gate valve, and cam lock seal that are kept closed except during waste transfer operations.

Pursuant to 40 CFR § 264.1058, each pump, valve, flange, and pressure relief device is inspected daily and repaired as necessary (see the CO Tank Sys BB Equipment inspection log contained in **Appendix E**). 40 CFR § 264.1058 defines a leak as a reading of 10,000 ppm or greater when measured using a portable organic vapor analyzer. Since Safety-Kleen hydrocarbon-based parts washer solvent has a maximum vapor phase concentration in air of approximately 2,700 ppm, a portable organic vapor analyzer cannot be used for leak detection. As such, all subject equipment is monitored visually for leaks. Inspections conducted pursuant to this section are documented as a part of the facility operating record.

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Pursuant to 40 CFR § 264.1064, if a leak is detected, the piece of equipment is marked with a leak tag that indicates the unique equipment identification number and date of initial leak detection. All repairs shall comply with the recordkeeping requirements outlined in 40 CFR § 264.1064. The first attempt at repairing the leaking equipment shall be made within five calendar days of initial leak detection, and all leaking equipment shall be repaired within 15 calendar days of initial leak detection (see 40 CFR § 264.1058). If repairs are delayed due to unforeseen circumstances, the reasons shall be documented in the facility operating record. **Attachment M-2** is a copy of the Safety-Kleen document used to record this information. In accordance with 40 CFR § 264.1065, a semiannual report shall be submitted to the Agency if any equipment is not repaired as required.

M – 2.0 AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS (40 CFR PART 264 SUBPART CC)

The HWMU #1 tank system and certain containers are subject to the requirements of 40 CFR § 264 Subpart CC. The BSC does not manage waste in surface impoundments.

M – 2.1 Waste Determination Procedures

Pursuant to 40 CFR § 264.1083, waste determinations are made according to the Waste Analysis Plan in **Appendix C**. Safety-Kleen has determined that all organic wastes managed at the BSC in the HWMU #1 tank system and certain organic wastes managed in containers display an average volatile organic concentration of greater than 500 ppmw at the point of waste origination.

The point of waste origination (defined in 40 CFR § 265.1081), for all wastes generated off-site and transported to the facility in sealed containers, which are subsequently managed in tanks or containers at the facility, is the facility boundary at the entrance gate. For hazardous wastes generated on-site, the point of waste origination is the location in the facility where generation occurs.

M – 2.2 Tanks

Pursuant to 40 CFR § 264.1084, Tank #3 (HWMU #1) is used to store organic hazardous wastes as described in **Appendix L**. Tank #3 is a fixed roof, non-pressurized unit. Based on the volume of the tank (i.e., 15,000 gallons), the maximum organic vapor pressure of the waste stored in the tank (i.e., less than 11.1 psi), the actual vapor pressure of the waste managed in the tank (i.e., approximately 0.2 psi),

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and the fact that no stabilization activities occur, this tank is managed under Level 1 controls (i.e., fixed roof and documentation of maximum organic vapor pressure $\leq$76.6 kPa). The maximum organic vapor pressure is determined using knowledge of the waste pursuant to 40 CFR § 264.1083.

The tank is designed so that all openings can be closed with no visible gaps, holes, cracks, or other open spaces into the interior of the tank. The cover and all cover openings operate with no detectable emissions when in a closed position. All openings in the tank system are kept closed except when waste is being added to or removed from the system, when sampling occurs, or repairs and maintenance are performed. A visual inspection of all tank system closure devices will be performed annually using the CO Subpart CC Visual Tank Inspection log included in **Appendix E**.

The tank is equipped with a pressure/vacuum vent that is designed to operate with no detectable organic emissions when in the closed position. The vent is included in the annual Subpart CC inspection (see **Appendix E**).

M – 2.3 Containers

Containers subject to Subpart CC are stored in HWMUs #3, #4, and #5. The types of containers used to hold/store hazardous wastes at the facility are described in **Appendix K**. Since these containers are all less than 0.46 m^3 (119 gallons) in volume, and the waste stored in them is not treated by stabilization, emissions from containers between 0.1 m^3 (26 gallons) and 0.46 m^3 (119 gallons) in size are controlled in accordance with the Container Level 1 standards specified in 40 CFR § 264.1086. Container Level 2 and 3 standards are not applicable.

Containers received and/or stored at the facility shall be equipped with covers and closure devices so that there are no visible holes, gaps, or other open spaces into the container when the closure devices are in place and secured. When the BSC receives containers of hazardous waste, and the containers are not emptied immediately, a visual inspection of the containers shall be performed within 24 hours of receipt. The container, cover, and closure devices shall be inspected for visible cracks, holes, gaps, or other open spaces. If a defect is observed, the container shall be emptied into the wet dumpster, repackaged, or overpacked into a larger container. Inspections of containers are documented using the CO CSA Inspection Log found in **Appendix E**.

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ATTACHMENT M-1

RCRA Subpart AA and BB Air Emission Standards for Equipment Leaks
In Heavy Liquid Service Determination

Safety-Kleen Waste Parts Washer Solvent Storage Tank Farms
RCRA Subpart AA and BB Air Emission Standards for Equipment Leaks
In Heavy Liquid Service Determination

Objective

Determine whether waste parts washer solvent stored in bulk storage tanks at Safety-Kleen branches and recycle centers meets the definition of '***In light liquid service'*** or '***In heavy liquid service'*** per definitions provided in 40 CFR Subpart AA and BB regulations.

Applicable Definitions Per 40 CFR §63.1001

- ***In light liquid service*** means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kilopascals (kPa) at 20 °C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kilopascals (kPa) at 20 °C is equal to or greater than 20 percent by weight of the total process stream, and the fluid is a liquid at operating conditions.

- ***In heavy liquid service*** means that the piece of equipment is not in gas/vapor service or in light liquid service.

Procedure

- More than 50 individual samples were pulled from bulk waste parts washer solvent storage tanks at Safety-Kleen branches across the country.

- Samples were sent to an independent accredited laboratory for volatile (SW846 8260) and semi-volatile (SW846 8270) analysis by gas chromatography.

- TABLE I summarizes all contaminants identified by the laboratory and lists the highest concentration found in the data set (n > 50) for each contaminant identified.

- Contaminants highlighted in red have a vapor pressure that exceeds 0.3 kPa at 20°C

  NOTE: Vapor pressures of individual solvents obtained from the *National Institute of Health's (NIH)* PubChem database

  https://pubchem.ncbi.nlm.nih.gov/

- The total concentration of contaminants with a vapor pressure > 0.3 kPa at 20°C = 4,164 ppm or 0.42%

Conclusion

Since the total concentration of organic components with a vapor pressure > 0.3 kPa at 20°C is less than 20% by weight of the total process stream, waste parts washer solvent stored in bulk storage tanks meets the RCRA definition of **'In heavy liquid service'**.

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TABLE I

Contaminant	Concentration (ppm)	Vapor Pressure > 0.3 kPa @ 20°C
2,4 - Dinitrotoluene	0.32	No
Chlorobenzene	0.36	Yes
2,4,5 - Trichlorophenol	0.43	No
1,4 - Dichlorobenzene	0.47	No
Hexachlorobenzene	0.47	No
Benzene	7.0	Yes
3 & 4 – Methylphenol	20	No
Trichloroethylene	87	Yes
2-Butanone (MEK)	470	Yes
Tetrachloroethylene	3,600	Yes

In addition, Safety-Kleen determined the vapor pressure of the waste parts washer solvent stored in the bulk storage tanks at branches and recycle centers across the country.

- Representative samples of waste parts washer solvent were pulled from three different bulk storage tanks and sent to a lab for vapor pressure determination.
- Bulk storage tanks sampled were located at three different Safety-Kleen solvent recycle centers located in three different states. Each tank consisted of commingled waste parts washer solvent from thousands of different customers.
- Samples were analyzed by *Phoenix Chemical Laboratory*, an independent 3rd party ISO 9001 conforming lab
- Vapor pressure determined via *ASTM D2879* **-** *Standard Test Method for Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope* and summarized in TABLE II below.

TABLE II

Sample ID	Vapor Pressure @ 20°C (kPa)
Spent PW Solvent Sample 1	0.13
Spent PW Solvent Sample 3	0.09
PW Solvent Tank 117 Core	0.10
AVERAGE	**0.11**

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ATTACHMENT M-2

Subpart BB Repair Record

REPAIR RECORD FOR EQUIPMENT IN HEAVY LIQUID SERVICE

In Compliance With 40 CFR 264.1064

Date of Potential Leak_____

Equipment Identification Number_____

Date Leak Was Detected_____

Date(s) of Each Attempt to Repair the Leak_____

Date of Delay for Repair and Reason for Delay
(required if repairs are delayed by more than 15 days)_____

Method of Repair_____

Date of Repair_____

Signature of Inspector/Repairer_____

This form must be completed for each time a leak is discovered in any piece of equipment in hazardous waste liquid service.

Additional Requirements

If a leak is detected, the following additional steps must be taken:

1. Attach a waterproof and readily visible tag to the piece of leaking equipment. This tag must be marked with the equipment ID number.
2. Make an attempt to repair the equipment within 5 days of detection.
3. If the leaking equipment is a valve, the tag must be left in place for 2 months after repair. The tag may be removed from other types of equipment immediately after repair.

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