FINAL DRAFT/PROPOSED CAAPP PERMIT
Griffith Micro Science, Inc.
I.D. No.: 043110AAC
Application No.: 95120085
August 8, 2000

217/782-2113

TITLE V - CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT
and
TITLE I PERMIT[1]

PERMITTEE

Griffith Micro Science, Inc.
Attn.: Kathleen Hoffman
7775 Quincy Street
Willowbrook, Illinois 60521

Application No.: 95120085 I.D. No.: 043110AAC
Applicant's Designation: Date Received: December 7, 1995
Operation of: Sterilization of Medical Supplies and Treatment of Spices
Date Issued: TO BE DETERMINED Expiration Date[2]: DATE
Source Location: 7775 Quincy Street, Willowbrook, DuPage County
Responsible Official: Kathleen Hoffman, Director of Environmental Health and Safety

This permit is hereby granted to the above-designated Permittee to operate a Sterilization of Medical Supplies and Treatment of Spices Plant, pursuant to the above referenced permit application. This permit is subject to the conditions contained herein.

If you have any questions concerning this permit, please contact Robert Bernoteit at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:RWB:psj

cc: Illinois EPA, FOS, Region 1
USEPA

[1] This permit may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the Clean Air Act and regulations promulgated thereunder, including 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within the permit.

[2] Except as provided in condition 8.7 of this permit.

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1.0 SOURCE IDENTIFICATION

1.1 Source

Griffith Micro Science, Inc.
7775 Quincy Street
Willowbrook, Illinois 60521
630/472-4514

I.D. No.: 043110AAC
Standard Industrial Classification: 7389, Business Services, Nec.

1.2 Owner/Parent Company

IBA
8550 West Bryn Mawr, Suite 600
Chicago, Illinois 60631

1.3 Operator

Griffith Micro Science, Inc.
7775 Quincy Street
Willowbrook, Illinois 60521

Kathleen Hoffman
773/867-7258

1.4 General Source Description

Griffith Micro Science, Inc. is located at 7775 Quincy Street and at 830 Midway Drive in Willowbrook. The source is a medical sterilization facility. This sterilization only facility receives and processes primarily medical supplies and pharmaceuticals in addition to treating spices. The sterilization facility utilizes ethylene oxide as the principle sterilant gas, although propylene oxide is sometimes used. All sterilizer vacuum pumps exhaust to a wet (acid) scrubber. After leaving the sterilizing chambers, the product aerates or degasses without any vacuum in one of the aeration rooms or compartments. The product remains in aeration for approximately 18 hours then is moved to a segregated post-processing area.

2.0 LIST OF ABBREVIATIONS/ACRONYMS USED IN THIS PERMIT

Act	Environmental Protection Act [415 ILCS 5/1 et seq.]
ACMA	Alternative Compliance Market Account
AP-42	Compilation of Air Pollution Emission Factors, Volume 1, Stationary Point and Other Sources (and Supplements A through F), USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27717
APTI	Air Pollution Training Institute
ASTM	American Society for Testing and Materials
atm	atmosphere of pressure
ATU	Allotment Trading Unit
Btu	British thermal unit
°C	degrees Celsius
CAA	Clean Air Act [42 U.S.C. Section 7401 et seq.]
CAAPP	Clean Air Act Permit Program
CFR	Code of Federal Regulations
%Eff	control device efficiency
ERMS	Emissions Reduction Market System
°F	degrees Fahrenheit
FDA	Food and Drug Administration
ft^3	cubic foot
GC/FID	Gas Chromatograph with Flame Ionization Detector
GC/PID	Gas Chromatograph with Photoionization Detector
HAP	Hazardous Air Pollutants
hr	hour
IAC	Illinois Administrative Code
I.D. No.	Identification Number of Source, assigned by Illinois EPA
ILCS	Illinois Compiled Statutes
Illinois EPA	Illinois Environmental Protection Agency
kg	kilogram
kPa	kilopascal
l	liter
lb	pound
MACT	Maximum Achievable Control Technology
Mft^3	Million cubic feet
mmBtu	Million Btus
mo	month
MW	Megawatts
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
ppm	parts per million

ppmv	parts per million by volume
PS	Performance Specification
PSD	Prevention of Significant Deterioration
psi	pound per square inch
psia	pound per square inch absolute
RMP	Risk Management Plan
scf	standard cubic feet
scfm	standard cubic feet per minute
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
T1	Title I – identifies Title I conditions that have been carried over from an existing permit
T1N	Title I New – identifies Title I conditions that are being established in this permit
T1R	Title I Revised – identifies Title I conditions that have been carried over from an existing permit and subsequently revised in this permit
USEPA	United States Environmental Protection Agency
VOL	Volatile Organic Liquid
VOM	Volatile Organic Material
yr	year

3.0 INSIGNIFICANT ACTIVITIES

3.1 Identification of Insignificant Activities

The following activities at the source constitute insignificant activities as specified in 35 IAC 201.210:

3.1.1 Activities determined by the Illinois EPA to be insignificant activities, pursuant to 35 IAC 201.210(a)(1) and 201.211, as follows:

Ethylene Glycol Reactor Tanks
Ethylene Glycol Storage Tank

3.1.2 Activities that are insignificant activities based upon maximum emissions, pursuant to 35 IAC 201.210(a)(2) or (a)(3), as follows:

None

3.1.3 Activities that are insignificant activities based upon their type or character, pursuant to 35 IAC 201.210(a)(4) through (18), as follows:

Direct combustion units designed and used for comfort heating purposes and fuel combustion emission units as follows: (A) Units with a rated heat input capacity of less than 2.5 mmBtu/hr that fire only natural gas, propane, or liquefied petroleum gas; (B) Units with a rated heat input capacity of less than 1.0 mmBtu/hr that fire only oil or oil in combination with only natural gas, propane, or liquefied petroleum gas; and (C) Units with a rated heat input capacity of less than 200,000 Btu/hr which never burn refuse, or treated or chemically contaminated wood [35 IAC 201.210(a)(4)].

Storage tanks of organic liquids with a capacity of less than 10,000 gallons and an annual throughput of less than 100,000 gallons per year, provided the storage tank is not used for the storage of gasoline or any material listed as a HAP pursuant to Section 112(b) of the CAA [35 IAC 201.210(a)(10)].

Storage tanks of any size containing exclusively soaps, detergents, surfactants, glycerin, waxes,

vegetable oils, greases, animal fats, sweeteners, corn syrup, aqueous salt solutions, or aqueous caustic solutions, provided an organic solvent has not been mixed with such materials [35 IAC 201.210(a)(17)].

3.1.4 Activities that are considered insignificant activities pursuant to 35 IAC 201.210(b).

3.2 Compliance with Applicable Requirements

Insignificant activities are subject to applicable requirements notwithstanding status as insignificant activities. In particular, in addition to regulations of general applicability, such as 35 IAC 212.301 and 212.123 (Condition 5.2.2), the Permittee shall comply with the following requirements, as applicable:

3.2.1 For each cold cleaning degreaser, the Permittee shall comply with the applicable equipment and operating requirements of 35 IAC 215.182, 218.182, or 219.182.

3.2.2 For each particulate matter process emission unit, the Permittee shall comply with the applicable particulate matter emission limit of 35 IAC 212.321 or 212.322. For example, the particulate matter emissions from a process emission unit shall not exceed 0.55 pounds per hour if the emission unit’s process weight rate is 100 pounds per hour or less, pursuant to 35 IAC 266.110.

3.2.3 For each organic material emission unit that uses organic material, e.g., a mixer or printing line, the Permittee shall comply with the applicable VOM emission limit of 35 IAC 215.301, 218.301, or 219.301, which requires that organic material emissions not exceed 8.0 pounds per hour or do not qualify as photochemically reactive material as defined in 35 IAC 211.4690.

3.3 Addition of Insignificant Activities

3.3.1 The Permittee is not required to notify the Illinois EPA of additional insignificant activities present at the source of a type that is identified in Condition 3.1, until the renewal application for this permit is submitted, pursuant to 35 IAC 201.212(a).

3.3.2 The Permittee must notify the Illinois EPA of any proposed addition of a new insignificant activity of a type addressed by 35 IAC 201.210(a)and 201.211 other than those identified in Condition 3.1, pursuant to Section 39.5(12)(b) of the Act.

3.3.3 The Permittee is not required to notify the Illinois EPA of additional insignificant activities present at the source of a type identified in 35 IAC 201.210(b).

4.0 SIGNIFICANT EMISSION UNITS AT THIS SOURCE

Emission Unit	Description	Date Constructed	Emission Control Equipment
AC	Eight (8) Aeration Chambers (Fourteen (14) Pallet Capacity, Willowbrook I)	June, 1984 (Modified March, 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
AR	Three (3) Aeration Rooms (Willowbrook I)	June, 1984 (Modified March, 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
Boiler-1	Lattner Model HRT-60 Natural Gas-Fired Boiler (Boiler-1, 2.5 mmBtu/hr, Willowbrook I)	Unknown	None
SC-1	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Six (6) Pallet Capacity, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-2	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook I)	June, 1984 (Modified 1998)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber (Three (3) Pallet Capacity, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-4	Five (5) Ethylene Oxide/Propylene Oxide	July, 1999	Willowbrook II Scrubber (WBII-

	Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook II)		Scrubber) and Dry Bed Reactor

Emission Unit	Description	Date Constructed	Emission Control Equipment
SV-1	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Six (6) Pallet Capacity Sterilization Chambers, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-2	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook I)	June, 1984 (Modified 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vent (Three (3) Pallet Capacity Sterilization Chamber, Willowbrook I)	June, 1984	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-4	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook II)	July, 1999	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor
WBII-AR	Two (2) Aeration Rooms (Willowbrook II)	July, 1999	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor
WBII-Boiler-1	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-1, 3.3 mmBtu/hr, Willowbrook II)	July, 1999	None
WBII-Boiler-2	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-2, 3.3 mmBtu/hr, Willowbrook II)	July, 1999	None
Fugitive VOM/HAP Emissions	Pumps, Seals, Flanges, etc.	-	None

5.0 OVERALL SOURCE CONDITIONS

5.1 Source Description

5.1.1 This permit is issued based on the source requiring a CAAPP permit as a major source of VOM and HAP emissions.

5.1.2 For purposes of the CAAPP, the Griffith Micro Science, Inc. Willowbrook I facility located at 7775 Quincy Street is considered a single source with the Griffith Micro Science, Inc. Willowbrook II facility, located at 830 Midway Drive. The source has elected to obtain a single CAAPP permit for these locations.

5.2 Applicable Regulations

5.2.1 Specific emission units at this source are subject to particular regulations as set forth in Section 7 (Unit-Specific Conditions) of this permit.

5.2.2 In addition, emission units at this source are subject to the following regulations of general applicability:

a. No person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally overhead at a point beyond the property line of the source unless the wind speed is greater than 40.2 kilometers per hour (25 miles per hour), pursuant to 35 IAC 212.301 and 212.314.

Compliance with this requirement is considered to be assured by the inherent nature of operations at this source, as demonstrated by historical operation.

b. The emission of smoke or other particulate matter from any emission unit shall not exceed an opacity of greater than 30 percent, except that an opacity of greater than 30 percent but less than 60 percent shall be allowed for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one such emission unit located within a 305 meter (1000 feet) radius from the center point of any other such emission unit

owned or operated by the Permittee, and provided further that such opaque emissions permitted from each such emission unit shall be limited to 3 times in any 24 hour period, pursuant to 35 IAC 212.123 and 212.124.

5.2.3 The Permittee shall comply with the standards for recycling and emissions reduction of ozone depleting substances pursuant to 40 CFR Part 82, Subpart F, except as provided for motor vehicle air conditioners in Subpart B of 40 CFR Part 82:

a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.

b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

c. Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

5.2.4 Risk Management Plan

a. This stationary source, as defined in 40 CFR Section 68.3, is subject to 40 CFR Part 68, the Accidental Release Prevention regulations [40 CFR 68.215(a)(1)].

b. The owner or operator of a stationary source shall revise and update the RMP submitted, as specified in 40 CFR 68.190.

5.2.5 a. Should this stationary source become subject to a regulation under 40 CFR Parts 60, 61, or 63, or 35 IAC after the date issued of this permit, then the owner or operator shall, in accordance with the applicable regulation(s), comply with the applicable requirements by the date(s) specified and shall certify compliance with the applicable requirements of such regulation(s) as part of the annual

compliance certification, as required by 40 CFR Part 70 or 71.

b. No later than upon the submittal for renewal of this permit, the owner or operator shall submit, as part of an application, the necessary information to address either the non-applicability of, or demonstrate compliance with all applicable requirements of any potentially applicable regulation which was promulgated after the date issued of this permit.

c. This stationary source will be subject to 40 CFR Part 63 Subparts A and O, Ethylene Oxide Emission Standards for Sterilization Facilities, when such rule becomes final and effective. The Permittee shall comply with the applicable requirements of such regulation by the date(s) specified in such regulation and shall certify compliance with the applicable requirements of such regulation as part of the annual compliance certification required by 40 CFR Part 70 or 71 beginning in the year that compliance is required under a final and effective rule.

5.2.6 Episode Action Plan

a. If the source is required to have an episode action plan pursuant to 35 IAC 244.142, the Permittee shall maintain at the source and have on file with the Illinois EPA a written episode action plan (plan) for reducing the levels of emissions during yellow alerts, red alerts, and emergencies, consistent with safe operating procedures. The plan shall contain the information specified in 35 IAC 244.144.

b. The Permittee shall immediately implement the appropriate steps described in this plan should an air pollution alert or emergency be declared.

c. If a change occurs at the source which requires a revision of the plan (e.g., operational change, change in the source contact person), a copy of the revised plan shall be submitted to the Illinois EPA for review within 30 days of the change. Such plans

shall be further revised if disapproved by the Illinois EPA.

d. For sources required to have a plan pursuant to 35 IAC 244.142, a copy of the original plan and any subsequent revisions shall be sent to:

i. Illinois EPA, Compliance Section; and

ii. For sources located in Cook County and outside of the city of Chicago: Cook County Department of Environmental Control; or

iii. For sources located within the city of Chicago: Chicago Department of Environmental Control.

5.3 Non-Applicability of Regulations of Concern

None

5.4 Source-Wide Operational and Production Limits and Work Practices

In addition to the source-wide requirements in the Standard Permit Conditions in Section 9, the Permittee shall fulfill the following source-wide operational and production limitations and/or work practice requirements:

None

5.5 Source-Wide Emission Limitations

5.5.1 Permitted Emissions for Fees

The annual emissions from the source, not considering insignificant activities as addressed by Section 3.0 of this permit, shall not exceed the following limitations. The overall source emissions shall be determined by adding emissions from all emission units. Compliance with these limits shall be determined on a calendar year basis. These limitations (Condition 5.5.1) are set for the purpose of establishing fees and are not federally enforceable.

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Nitrogen Oxides (NO_x)	3.45
Particulate Matter (PM)	0.26
Sulfur Dioxide (SO_2)	0.03
Volatile Organic Material (VOM)	10.73
HAP, not included in VOM or PM	--
TOTAL	14.47

5.5.2 Emissions of Hazardous Air Pollutants

Source-wide emission limitations for HAPs as listed in Section 112(b) of the CAA are not set. This source is considered to be a major source of HAPs.

5.5.3 Other Source-Wide Emission Limitations

Other source-wide emission limitations are not set for this source pursuant to either the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, Illinois EPA rules for Major Stationary Sources Construction and Modification, 35 IAC Part 203, or Section

502(b)(10) of the CAA. However, there may be unit specific emission limitations set forth in Section 7 of this permit pursuant to these rules.

5.6 General Recordkeeping Requirements

5.6.1 Emission Records

The Permittee shall maintain records of the following items for the source to demonstrate compliance with Condition 5.5.1, pursuant to Section 39.5(7)(b) of the Act:

Total annual emissions on a calendar year basis for the emission units covered by Section 7 (Unit Specific Conditions) of this permit.

5.6.2 Records for Storage Vessels

Each storage vessel with a design capacity less than 40,000 gallons is subject to no provisions of 35 IAC Part 218 other than those required by maintaining readily accessible records of the dimensions of the storage vessel and analysis of the capacity of the storage vessel [35 IAC 218.129(f)].

5.6.3 Retention and Availability of Records

a. All records and logs required by this permit shall be retained for at least five years from the date of entry (unless a longer retention period is specified by the particular recordkeeping provision herein), shall be kept at a location at the source that is readily accessible to the Illinois EPA or USEPA, and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request.

b. The Permittee shall retrieve and print, on paper during normal source office hours, any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a source inspection.

5.7 General Reporting Requirements

5.7.1 General Source-Wide Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of deviations of the source with the permit requirements as follows, pursuant to Section

39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken.

5.7.2 Annual Emissions Report

The annual emissions report required pursuant to Condition 9.7 shall contain emissions information for the previous calendar year.

5.8 General Operational Flexibility/Anticipated Operating Scenarios

N/A

5.9 General Compliance Procedures

N/A

6.0 EMISSIONS REDUCTION MARKET SYSTEM (ERMS)

6.1 Description of ERMS

The ERMS is a "cap and trade" market system for major stationary sources located in the Chicago ozone nonattainment area. It is designed to reduce VOM emissions from stationary sources to contribute to reasonable further progress toward attainment, as required by Section 182(c) of the CAA.

The ERMS addresses VOM emissions during a seasonal allotment period from May 1 through September 30. Participating sources must hold "allotment trading units" (ATUs) for their actual seasonal VOM emissions. Each year participating sources are issued ATUs based on allotments set in the sources' CAAPP permits. These allotments are established from historical VOM emissions or "baseline emissions" lowered to provide the emissions reductions from stationary sources required for reasonable further progress.

By December 31 of each year, the end of the reconciliation period following the seasonal allotment period, each source should have sufficient ATUs in its transaction account to cover its actual VOM emissions during the preceding season. A transaction account’s balance as of December 31 will include any valid ATU transfer agreements entered into as of December 31 of the given year, provided such agreements are promptly submitted to the Illinois EPA for entry into the transaction account database. The Illinois EPA will then retire ATUs in sources’ transaction accounts in amounts equivalent to their seasonal emissions. When a source does not appear to have sufficient ATUs in its transaction account, the Illinois EPA will issue a notice to the source to begin the process for Emissions Excursion Compensation.

In addition to receiving ATUs pursuant to their allotments, participating sources may also obtain ATUs from the market, including ATUs bought from other participating sources and general participants in the ERMS that hold ATUs (35 IAC 205.630) and ATUs issued by the Illinois EPA as a consequence of VOM emissions reductions from an Emissions Reduction Generator or an Intersector Transaction (35 IAC 205.500 and 35 IAC 205.510). During the reconciliation period, sources may also buy ATUs from a secondary reserve of ATUs managed by the Illinois EPA, the “Alternative Compliance Market Account” (ACMA) (35 IAC 205.710). Sources may also transfer or sell the ATUs that they hold to other sources or participants (35 IAC 205.630).

6.2 Applicability

This permit is issued based on this source not being a participating source in the Emissions Reduction Market System (ERMS), 35 IAC Part 205, pursuant to 35 IAC 205.200. This is based on the source's actual VOM emissions during the seasonal allotment period from May 1 through September 30 of each year being less than 10 tons and the source's baseline emissions also being less than 10 tons.

6.3 Recordkeeping and Reporting

a. The Permittee shall maintain the following records to allow the confirmation of actual VOM emissions during the seasonal allotment period:

i. Records of operating data and other information for each individual emission unit or group of related emission units at the source, as specified in Sections 5 and 7 of this permit, as appropriate, to determine actual VOM emissions during the seasonal allotment period;

ii. Records of the VOM emissions, in tons, during the seasonal allotment period, with supporting calculations, for each individual emission unit or group of related emission units at the source, determined in accordance with the procedures specified in Sections 5 and 7 of this permit; and

iii. Total VOM emissions from the source, in tons, during each seasonal allotment period, which shall be compiled by November 30 of each year.

b. In the event that the source's VOM emissions during the seasonal allotment period equal or exceed 10 tons, the source shall become a participating source in the ERMS and beginning with the following seasonal allotment period, shall comply with 35 IAC Part 205, by holding allotment trading units (ATUs) for its VOM emissions during each seasonal allotment period, unless the source obtains exemption from the ERMS by operating with seasonal VOM emissions of no more than 15 tons pursuant to a limitation applied for and established in its CAAPP permit.

6.4 Federal Enforceability

Section 6.0 becomes federally enforceable upon approval of the ERMS by USEPA as part of Illinois' State Implementation Plan.

7.0 UNIT SPECIFIC CONDITIONS

7.1 Units SC-1, SC-2, SC-3 Controls AWS#1 or AWS#2/DBR

Willowbrook I Sterilization Chambers Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.1.1 Description

Materials to be sterilized arrive at the source on pallets. If materials are not on pallets, they are placed on pallets for transportation through various parts of the source. Sterilization is performed on products that are packaged on pallets. Each pallet is approximately 40" x 48" x 60" in volume. When products are received from a manufacturer, they are placed in an unprocessed holding area. Sterilizer lots are configured to meet the FDA validated sterilization cycle for a certain sterilizer, such as 3, 5, 6, or 13 pallets. Lot sizes can be no larger than the sterilizer.

At a scheduled time, a sterilizer "load" or "lot" of pallets are transferred to the Preconditioning Room. This room is operated at temperatures ranging from 90°F to 120°F and 40% to 75% relative humidity. Typical lots remain in the Preconditioning Room for 12 to 96 hours, but most cycles have a narrow window of preconditioning. This room is designed to make microbiological spores more receptive to sterilant gas. Due to the nature of some materials, they may bypass this step and are placed directly in the sterilizer. This "preconditioning" process is not the same as the "presterilization conditioning" process.

At a scheduled time, the "lot" is placed into the sterilizer. Here the products are sterilized using the chamber vacuum process. All vacuum pump exhausts from the sterilizers flow to the acid/wet scrubber. The typical in-chamber sterilization cycle consists of four phases: (1) presterilization conditioning, (2) sterilization, (3) evacuation, and (4) air wash.

At a scheduled time, products are loaded into the sterilizing chamber. The sterilizer is hand-closed using a stainless steel door with an airtight seal, then a partial vacuum is drawn inside the chamber. This initial vacuum, or drawdown, prevents dilution of the sterilant

gas. Chamber pressure is reduced to a vacuum pressure of half an atmosphere or less. The initial drawdown takes from 10 to 45 minutes, depending on the product being sterilized. Chamber temperature is then adjusted to between 90 to 130°F, in conjunction with humidification. Proper humidification is important to the process because the susceptibility of microorganisms to the steriliant gas is increased under moist conditions. Usually, the relative humidity is above 40% via adding steam, expressed more often as inches of steam added. The sterilant gas, which is supplied as a liquid, is vaporized and introduced into the chamber. The pressure is held usually for four to six hours depending on the temperature, pressure, humidity level, type of sterilant gas, and products being sterilized. This is the only time ethylene oxide is injected into the chamber. Following sufficient exposure time, with the FDA-validated cycle parameters, the sterilant gas is evacuated from the chamber using a vacuum pump. The pressure of the chamber is raised to atmospheric pressure by introducing air or nitrogen. The combination of evacuation and air wash phases can be repeated to remove as much of the ethylene oxide from the product as possible.

There are six chambers with a capacity of six pallets, six with a capacity of thirteen pallets and one chamber with a capacity of three pallets at Willowbrook I. The source operates two air pollution control systems. Acid Water Scrubber System #1 or the Deoxx system is typically used to control emissions from the sterilization chamber vacuum pumps. This system consists of a wet scrubber used to control high concentrations of ethylene oxide in the exhaust stream. The second system, which is used as an alternate operating scenario for the sterilizer vacuum pumps, consists of a wet acid scrubber followed by a dry bed reactant system. This system is typically used to control emissions from the aeration rooms/chambers and from the sterilization chamber back vents and was installed to meet the ethylene oxide MACT requirements.

7.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
SC-1	Six (6) Ethylene Oxide/Propylene Oxide	Acid Water Scrubber (Scrubber #1) or

	Sterilization Chambers (Six (6) Pallet Capacity, Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-2	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook I)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber (Three (3) Pallet Capacity, Willowbrook I)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.1.3 Applicability Provisions and Applicable Regulations

a. The Ethylene Oxide/Propylene Oxide Sterilization Chambers listed in Condition 7.1.2 are “affected chambers” for the purpose of these unit-specific conditions.

b. The affected chambers are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996. Pursuant to 40 CFR 63.362, the owner or operator of the affected chambers shall comply with the following:

i. The emission limitations of Condition 7.1.3 (b)(ii) (see also 40 CFR 63.362(c)) apply during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

ii. Each owner or operator of a sterilization source using 1 ton shall reduce ethylene oxide emissions to the atmosphere by at least 99 percent from each sterilization chamber vent [40 CFR 63.362(c)].

c. The affected chambers are subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:

i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.1.3 (c)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

ii. Emissions of organic material in excess of those permitted by Condition 7.1.3(c)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by any other air pollution control equipment approved by the Illinois EPA and approved by the USEPA as a SIP revision capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere [35 IAC 218.302(c)].

d. The affected chambers are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.1.3 (d)(i), (ii), or (iii) (see also 35 IAC 218.986 (a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)]; or

iii. Pursuant to 35 IAC 218.986(e), any leaks from components subject to the control requirements of 35 IAC 218 Subpart TT shall be subject to the following control measures by March 15, 1995:

Repair any component from which a leak of VOL can be observed. The repair shall be completed as soon as practicable but no later than 15 days after the leak is found, unless the leaking component cannot be repaired until the process unit is shut down, in which case the leaking component must be repaired before the unit is restarted [35 IAC 218.986(e)(1)].

7.1.4 Non-Applicability of Regulations of Concern

None

7.1.5 Operational and Production Limits and Work Practices

a. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of Willowbrook I Acid-Water Scrubber #1, the Permittee is authorized to continue operation of the affected chambers in violation of the applicable requirement of 35 IAC Part 218, Subparts G and TT, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

i. The Permittee shall repair the damaged feature(s) of Willowbrook I Acid-Water Scrubber #1, reroute emissions from the affected chambers to Willowbrook I Acid-Water Scrubber #2, or remove the affected chambers from sterilization service as soon as practicable. This shall be accomplished within 24 hours unless the feature(s) cannot be repaired within 24 hours and the affected chambers cannot be removed from sterilization service within 48 hours, and the Permittee obtains an extension, for up to 48 hours, from the Illinois EPA. The request for such an extension must document that Willowbrook I Acid-Water Scrubber #1 is unavailable and specify a schedule of actions the Permittee will take that will assure the feature(s) will be repaired, emissions will be rerouted from the affected chambers to Willowbrook I Acid-

Water Scrubber #2, or the affected chambers will be removed from service as soon as possible.

ii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Conditions 7.1.9(e) and 7.1.10(c).

b. The Permittee shall follow good operating practices for the acid water scrubbers and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

c. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall exhaust no more than five (5) of the affected chambers to the acid water scrubbers and dry bed reactor during the first evacuation. This is the maximum number of chambers evacuated at which compliance with Condition 7.1.3(b)(ii) (see also 40 CFR 63.362(c)) was demonstrated during the most recent compliance test.

7.1.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected chambers are subject to the following:

a. i. Emissions of organic material from Sterilization Retorts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 shall not exceed 99 tons/year. This condition is based on representations of maximum actual emission rates in order to limit emissions to levels at which the Illinois EPA believes 35 IAC Part 203 would apply.

ii. The above limitations were established in Permit 84060002, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

b. i. Emissions of organic material excluding Freon 12 from Sterilization Retort #8 shall not exceed 25 tons/year. This condition is based on representations of maximum actual emission rate.

ii. The above limitations were established in Permit 85110056, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

c. Emissions and Operation of Sterilization Retorts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 shall not exceed the following limits:

i. The Deoxx System (acid water scrubber) shall be operated to reduce the ethylene oxide emissions from Sterilization Retorts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 by at least 99%.

ii. Monthly usage of propylene oxide and ethylene oxide shall not exceed 2,800 and 70,000 pounds, respectively.

iii. This permit is issued based on negligible emissions of volatile organic material other than propylene oxide and ethylene oxide from Sterilization Retorts 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12. For this purpose, emissions from all such emission units shall not exceed nominal emission rates of 0.1 lb/hour and 0.44 ton/year.

iv. The above limitations were established in Permit 90080038, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

7.1.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.1.3(b) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed in 40 CFR 63.7 according to the applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.1.12(a) through (c) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after initial startup of the source (the compliance date for the specific source as determined in 40 CFR 63.360(g)) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(b), the following procedures shall be used to determine compliance with the emission limits under Condition 7.1.3(b)(ii) (see also 40 CFR 63.362(c)), the sterilization chamber vent standard:

i. Pursuant to 40 CFR 63.363(b)(1)(i), during the performance test required in Condition 7.1.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine the efficiency of control devices used to comply with Condition 7.1.3(b)(ii) (see also 40 CFR 63.362(c)) using the test methods and procedures in Condition 7.1.12(b)(i) (see also 40 CFR 63.365(b)(1)). The owner or operator shall also, for facilities with acid-water scrubbers, establish as a site-specific operating parameter during the test methods and procedures in Condition 7.1.12(b)(i) (see also 40 CFR 63.365(b)(1)) either:

A. The maximum ethylene glycol concentration using the procedures described in Condition 7.1.12(c)(i) (see also 40 CFR 63.365(e)(1)) [40 CFR 63.363(b)(1)(i)(A)]; or

B. The maximum liquor tank level using the procedures described in Condition 7.1.12 (c)(ii) (see also 40 CFR 63.365(e)(2)) [40 CFR 63.363(b)(1)(i)(B)].

ii. Following the date on which the initial performance test is completed, operation of the facility (with acid-water scrubbers) with an ethylene glycol concentration in the scrubber liquor in excess of the maximum ethylene glycol concentration or the liquor tank level in excess of the maximum liquor tank level shall constitute a violation of the sterilization chamber vent standard [40 CFR 63.363(b)(2)(i)].

c. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.1.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

d. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60, Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA determine that process variables dictate shorter sampling times [35 IAC 218.105(f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and volumetric flow rates [35 IAC 218.105(f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105(f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.1.7 (d)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient

documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.1.7(d)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.1.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.1.3(b) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation,

operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. Pursuant to 40 CFR 63.364(b), for sterilization facilities complying with Condition 7.1.7(b) (see also 40 CFR 63.363(b)) through the use of an acid-water scrubber, the owner or operator shall either:

i. Sample the scrubber liquor and analyze and record once per week the ethylene glycol concentration of the scrubber liquor using the test methods and procedures in Condition 7.1.12 (c)(i) (see also 40 CFR 63.365(e)(1)). Monitoring is required during a week only if the scrubber unit has been operated [40 CFR 63.364 (b)(1)]; or

ii. Measure and record once per week the level of the scrubber liquor in the recirculation tank. The owner or operator shall install, maintain, and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.) [40 CFR 63.364(b)(2)].

c. Pursuant to 35 IAC 218.105(g), leak detection methods for volatile organic material owners or operators required by 35 IAC Part 218 to carry out a leak detection monitoring program shall comply with the following requirements:

i. Leak Detection Monitoring:

A. Monitoring shall comply with 40 CFR 60, Appendix A, Method 21 [35 IAC 218.105 (g)(1)(A)];

B. The detection instrument shall meet the performance criteria of Method 21 [35 IAC 218.105(g)(1)(B)];

C. The instrument shall be calibrated before use on each day of its use by the methods specified in Method 21 [35 IAC 218.105 (g)(1)(C)];

D. Calibration gases shall be:

I. Zero air (less than 10 ppm of hydrocarbon in air) [35 IAC 218.105 (g)(1)(D)(i)]; and

II. A mixture of methane or n-hexane and air at a concentration of approximately, but no less than, 10,000 ppm methane or n-hexane [35 IAC 218.105(g)(1)(D)(ii)].

E. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21 [35 IAC 218.105 (g)(1)(E)].

ii. Pursuant to 35 IAC 218.105(g)(2), when equipment is tested for compliance with no detectable emissions as required, the test shall comply with the following requirements:

A. The requirements of Conditions 7.1.8 (c)(i)(A) through (e)(i)(E) (see also 35 IAC 218.105(g)(1)(A) through (g)(1)(E)) above shall apply [35 IAC 218.105 (g)(2)(A)]; and

B. The background level shall be determined as set forth in Method 21 [35 IAC 218.105 (g)(2)(B)].

iii. Pursuant to 35 IAC 218.105(g)(3),leak detection tests shall be performed consistent with:

A. "APTI Course SI 417 controlling Volatile Organic Compound Emissions from Leaking Process Equipment", EPA-450/2-82-015 [35 IAC 218.105(g)(3)(A)];

B. "Portable Instrument User's Manual for Monitoring VOC Sources", EPA-340/1-86-015 [35 IAC 218.105(g)(3)(B)];

C. "Protocols for Generating Unit-Specific Emission Estimates for Equipment Leaks of VOC and VHAP", EPA-450/3-88-010 [35 IAC 218.105(g)(3)(C)]; and/or

D. "Petroleum Refinery Enforcement Manual", EPA-340/1-80-008 [35 IAC 218.105 (g)(3)(D)].

7.1.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected chamber to demonstrate compliance with Conditions 5.5.1, 7.1.3, and 7.1.6, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.1.3(b) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.1.7, which include the following [Section 39.5(7)(e) of the Act]:

i. The date, place and time of sampling or measurements;

ii. The date(s) analyses were performed;

iii. The company or entity that performed the analyses;

iv. The analytical techniques or methods used;

v. The results of such analyses; and

vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.986(e)(2), any leaks from components subject to the control requirements of 35 IAC 218 Subpart TT shall be subject to the following control measures by March 15, 1995:

For any leak which cannot be readily repaired within one hour after detection, the following records, as set forth in this subsection, shall be kept. These records shall be maintained by the owner or operator for a minimum of two years after the date on which they are made. Copies of the records shall be made available to the Illinois EPA or the USEPA upon verbal or written request.

i. The name and identification of the leaking component [35 IAC 218.986(e)(2)(A)];

ii. The date and time the leak is detected [35 IAC 218.986(e)(2)(B)];

iii. The action taken to repair the leak [35 IAC 218.986(e)(2)(C)]; and

iv. The date and time the leak is repaired [35 IAC 218.986(e)(2)(D)].

d. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

i. Control device monitoring data [35 IAC 218.991 (a)(2)(A)];

ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991 (a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine

maintenance performed including dates and duration of any outages [35 IAC 218.991 (a)(2)(C)].

e. Records for Malfunctions and Breakdowns of Willowbrook I Acid-Water Scrubber #1

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of an affected chamber subject to 35 IAC Part 218, Subparts G and TT during malfunctions and breakdown of the control features of the Willowbrook I Acid-Water Scrubber #1, which as a minimum, shall include:

i. Date and duration of malfunction or breakdown;

ii. A detailed explanation of the malfunction or breakdown;

iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected chambers could not be removed from service without risk of injury to personnel or severe damage to equipment;

iv. The measures used to reduce the quantity of emissions and the duration of the event;

v. The steps taken to prevent similar malfunctions or breakdowns or reduce their frequency and severity; and

vi. The amount of release above typical emissions during malfunction/breakdown.

f. Records addressing use of good operating practices for the acid water scrubbers and dry bed reactor:

i. Records for periodic inspection of the acid water scrubbers and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect,

effect on emissions, date identified, date repaired, and nature of repair.

g. The type and amount of sterilant gas used for each affected chamber, lb/mo and ton/yr; and

h. The monthly and aggregate annual VOM and HAP emissions from the affected chambers based on the sterilant gas usage and air pollution control equipment efficiencies, with supporting calculations.

7.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected chamber with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10 (e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and

control equipment shall notify the Illinois EPA of any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Reporting of Malfunctions and Breakdowns for Willowbrook I Acid-Water Scrubber #1

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of an affected chamber subject to Conditions 7.1.3(c) and (d) during malfunction or breakdown of the control features of the Willowbrook I Acid-Water Scrubber #1.

i. The Permittee shall notify the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three (3) days, upon the occurrence of noncompliance due to malfunction, or breakdown.

ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected chambers was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the affected chambers were taken out of service.

iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide

a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the affected chambers will be taken out of service.

d. Emissions of VOM in excess of limits in Condition 7.1.6 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

7.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.1.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.1.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.1.3(b) (see also 40 CFR 63.362) shall comply with the performance testing requirements in 40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.1.12(a) through (c) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Efficiency at the sterilization chamber vent*. Pursuant to 40 CFR 63.365(b), the following procedures shall be used to determine the efficiency of all types of control devices used to comply with Condition 7.1.3 (b)(i) (see also 40 CFR 63.362(c)), sterilization chamber vent standard.

i. *First evacuation of the sterilization chamber*. This procedure shall be performed on an empty sterilizer for the duration of the first evacuation under normal operating conditions (i.e., sterilization cycle pressure and temperature) and charging a typical amount of ethylene oxide to the sterilization chamber [40 CFR 63.365(b)(1)].

A. Pursuant to 40 CFR 63.365(b)(1)(i), the amount of ethylene oxide loaded into the sterilizer (W_c) shall be determined by either:

I. Weighing the ethylene oxide gas cylinder(s) used to charge the sterilizer before and after charging. Record these weights to the nearest 45 g (0.1 lb). Multiply the total mass of gas charged by the weight percent ethylene oxide present in the gas [40 CFR 63.365 (b)(1)(i)(A)].

II. Pursuant to 40 CFR 63.365 (b)(1)(i)(B), installing calibrated rotameters at the sterilizer inlet and measuring flow rate and duration of sterilizer charge. Use the

following equation to convert flow rate to weight of ethylene oxide:

$$W_c = F_v \times t \times \%EO_v \times \left(\frac{MW}{SV}\right)$$

where:

W_c = weight of ethylene oxide charged, g (lb)

F_v = volumetric flow rate, liters per minute (L/min) corrected to 20°C and 101.325 kilopascals (kPa) (scf per minute [scfm] corrected to 68°F and 1 atmosphere of pressure [atm]); the flowrate must be constant during time (t)

t = time, min

$\%EO_v$ = volume fraction ethylene oxide

SV = standard volume, 24.05 liters per mole (L/mole) = 22.414 L/mole ideal gas law constant corrected to 20 C and 101.325 kPa (385.32 scf per mole [scf/mole] = 359 scf/mole ideal gas law constant corrected to 68 F and 1 atm).

MW = molecular weight of ethylene oxide, 44.05 grams per gram-mole (g/g-mole) (44.05 pounds per pound-mole (lb/lb-mole)), or

III. Pursuant to 40 CFR 63.365 (b)(1)(i)(C), calculating the mass based on the conditions of the chamber immediately after it has been charged using the following equation:

$$W_c = \frac{MW \times \%EO_v \times P \times V}{R \times T}$$

where:

P = chamber pressure, kPa (psia)

V = chamber volume, liters (L) (ft^3)

R = gas constant, 8.313 l kPa/g-mole K (10.73 psia ft^3/mole R)

T = temperature, K (R)

NOTE: If the ethylene oxide concentration is in weight percent, use the following equation to calculate mole fraction:

$$\%EO_v = \frac{W_{EO}}{W_{EO} + \left(W_X \times \frac{MW}{MW_X}\right)}$$

where:

W_{EO} = weight percent of ethylene oxide

W_x = weight percent of compound in the balance of the mixture

MW_x = molecular weight of compound in the balance gas mixture

B. Pursuant to 40 CFR 63.365(b)(1)(ii), the residual mass of ethylene oxide in the sterilizer shall be determined by recording the chamber temperature, pressure, and volume after the completion of the first evacuation and using the following equation:

$$W_r = \frac{MW \times \%EO_V \times P \times V}{R \times T}$$

where:

W_r = weight of ethylene oxide remaining in chamber (after the first evacuation), in g (lb)

C. Calculate the total mass of ethylene oxide at the inlet to the control device (W_i) by subtracting the residual mass (W_r) calculated in Condition 7.1.12(b)(i)(B) (see also 40 CFR 63.365(b)(1)(ii)) from the charged weight (W_c) calculated in Condition 7.1.12(b)(i)(A) (see also 40 CFR 63.365(b)(1)(i)) [40 CFR 63.365 (b)(1)(iii)].

D. Pursuant to 40 CFR 63.365(b)(1)(iv), the mass of ethylene oxide emitted from the control device outlet (W_o) shall be calculated by continuously monitoring the flow rate and concentration using the following procedure.

I. Measure the flow rate through the control device exhaust continuously during the first evacuation using the procedure found in 40 CFR part 60, appendix A, Test Methods 2, 2A, 2C, or 2D, as appropriate. Method 2D (using orifice plates or Rootstype meters) is recommended for measuring flow rates from sterilizer control devices.) Record the flow rate at 1-minute intervals throughout the test cycle, taking the first reading within 15 seconds after time zero. Time zero is defined as the moment when the pressure in the sterilizer is released. Correct the flow to standard conditions (20°C and 101.325 kPa (68°F and 1 atm)) and determine the flow rate for the run as outlined in the test methods listed in Condition 7.1.12(b) (see

also 40 CFR 63.365(b)) [40 CFR 63.365(b)(1)(iv)(A)].

II. Pursuant to 40 CFR 63.365 (b)(1)(iv)(B), the Tedlar bag sampling procedure in section 7.1 of Test Method 18, 40 CFR part 60, appendix A (hereafter referred to as Method 18) shall be used to collect samples of exhaust gas throughout the test cycle. Follow the procedures in Condition 7.1.12 (b)(i)(D)(II)(1) or (2) (see also 40 CFR 63.365(b)(1)(iv)(B)(1) or (2)).

(1) Pursuant to 40 CFR 63.365 (b)(1)(iv)(B)(1), continuously sample a slipstream of the control device outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag.

(a) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365(b)(1)(iv)(B)(1)(i)].

(b) Prepare a graph of volumetric flow rate versus time corresponding to the period each bag was sampled. Integrate the area under the curve to determine the volume[40 CFR 63.365 (b)(1)(iv)(B)(1)(ii)].

(c) Pursuant to 40 CFR 63.365(b)(1)(iv)(B)(1)(iii), calculate the mass of ethylene oxide for each bag by using the following equation:

$$W_b = C \times V \times \frac{MW}{SV} \times \frac{1}{10^6}$$

where:

W_b = Mass of ethylene oxide for each bag, g (lb)

C = concentration of ethylene oxide in ppmv

V = volume of gas exiting the control device corresponding to each bag sample corrected to standard conditions, L (ft^3)

$1/10^6$ = correction factor $L_{EO}/10^6\ L_{TOTAL\ GAS}$ ($ft^3_{EO}/10^6\ ft^3_{TOTAL\ GAS}$)

Sum the mass corresponding to each bag (W_b) used during the evacuation to calculate the total mass (W_o).

(d) Calculate the efficiency by the equation in Condition 7.1.12 (b)(i)(E) (see also 40 CFR 63.365(b)(1)(v)) [40 CFR 63.365 (b)(1)(iv)(B)(1)(iv)].

(2) Pursuant to 40 CFR 63.365 (b)(1)(iv)(B)(2), collect a Tedlar bag (or equivalent collection device) sample at 1-minute intervals throughout the test cycle. (The first bag must be in place and sampling at t = 15 seconds. A fresh bag shall be in place and sampling exhaust gas at each 1-minute mark after time zero.) Collect enough sample gas in each bag to complete the analysis. Each bag sample shall be labeled with the sampling time and run number.

(a) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection. (Syringe samples should be analyzed within 4 hours.) [40 CFR 63.365 (b)(1)(iv)(B)(2)(i)]

(b) Plot a concentration versus time curve using the average concentration, in ppmv, determined in each bag sample. Prepare another graph of volumetric flow rate versus time. Calculate the mass flow at each 1-minute interval point by selecting the concentration (C) and volumetric flow rate corrected to standard conditions (F_v) at each 1-min point [40 CFR 63.365(b)(1)(iv)(B)(2)(ii)].

(c) Pursuant to 40 CFR 63.365(b)(1)(iv)(B)(2)(iii), use the following equation to determine the mass flow rate of ethylene oxide exiting the control device:

$$W_t = C \times F_v \times \frac{MW}{SV} \times \frac{1}{10^6}$$

where:
W_t = mass flow rate of ethylene oxide

(d) Plot a curve of mass flow rate versus time and integrate for total mass of ethylene oxide for the control device outlet (W_o) [40 CFR 63.365(b)(1)(iv)(B)(2)(iv)].

(e) Calculate efficiency by the equations in Conditions 7.1.12 (b)(i)(E) and (F) (see also 40 CFR 63.365 (b)(1)(v) and (vi)) [40 CFR 63.365 (b)(1)(iv)(B)(2)(v)].

III. Pursuant to 40 CFR 63.365 (b)(1)(iv)(C), as an alternative to Condition 7.1.12(b)(i)(B) (see also 40 CFR 63.365(b)(1)(ii)), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a gas chromatograph with flame ionization detector (GC/FID) or photoionization detector (GC/PID). This procedure may be used only if a vent sample may be sampled and analyzed by the GC/FID or GC/PID at least once per minute.

(1) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(b)(1)(iv)(C)(1)].

(2) Follow the procedures in Conditions 7.1.12 (b)(i)(D)(II)(1)(b) through (e) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through (v)) [40 CFR 63.365 (b)(1)(iv)(C)(2)].

E. Pursuant to 40 CFR 63.365(b)(1)(v), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

F. Repeat the procedures in Conditions 7.1.12 (b)(i)(A) through (E) (see also 40 CFR 63.365(b)(1)(i) through (v)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365(b)(1)(vi)].

ii. *Last evacuation of the sterilization chamber*. Pursuant to 40 CFR 63.365(b)(2), one of the following procedures (Condition 7.1.12(b)(ii)(A) or (B) (see also 40 CFR 63.365(b)(2)(i) or (ii))) shall be performed during the last evacuation of the sterilization chamber:

A. Pursuant to 40 CFR 63.365(b)(2)(i), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; this procedure may be used only if a vent may be sampled and analyzed by the GC/FID or GC/PID once per minute for the duration of the last cycle.

I. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for

the analysis of the sample [40 CFR 63.365(b)(2)(i)(A)].

II. Follow the procedures in Conditions 7.1.12(b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(b)(2)(i)(B)].

III. Pursuant to 40 CFR 63.365 (b)(2)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:
%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

IV. Repeat the procedures in Conditions 7.1.12(b)(ii)(A)(I) through (III) (see also 40 CFR 63.365(b)(2)(i)(A) through (C)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (b)(2)(i)(D)].

B. The Tedlar bag sampling procedure in section 7.1 of Method 18, may be used to collect samples of inlet and exhaust gas for the duration of the last cycle [40 CFR 63.365(b)(2)(ii)].

I. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for

the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365(b)(2)(ii)(A)].

II. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365 (b)(2)(ii)(B)].

III. Follow the procedures in Conditions 7.1.12(b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(b)(2)(ii)(C)].

IV. Determine control device efficiency (%Eff) using the equation in Condition 7.1.12(b)(ii)(A)(III) (see also 40 CFR 63.365(b)(2)(i)(C)) [40 CFR 63.365(b)(2)(ii)(D)].

V. Repeat the procedures in Condition 7.1.12(b)(ii)(B)(I) through (IV) (see also 40 CFR 63.365(b)(2)(ii)(A) through (D)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (b)(2)(ii)(E)].

C. In the event that the outlet concentration from the control device is below the detection limit for ethylene oxide for determining the efficiency in Condition 7.1.12(b)(ii)(A)(III) or (B)(IV) (see also

40 CFR 63.365(b)(2)(i)(C) or (ii)(D)), the owner or operator shall assume the control device is meeting the standard in Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362(e)(1)) if the inlet ethylene oxide concentration is at or below approximately 50 ppmv [40 CFR 63.365(b)(2)(iii)].

c. *Determination of baseline parameters for acid-water scrubbers*. Pursuant to 40 CFR 63.365(e), the procedures in this Condition shall be used to determine the monitored parameters established in Condition 7.1.7(b) (see also 40 CFR 63.363(b)) for acid-water scrubbers and to monitor the parameters as established in Condition 7.1.8(b) (see also 40 CFR 63.364(b)).

i. *Ethylene glycol concentration*. For determining the ethylene glycol concentration, the facility owner or operator shall establish the maximum ethylene glycol concentration as the ethylene glycol concentration averaged over three test runs; the sampling and analysis procedures in ASTM D 3695-88, Standard Test Method for Volatile Alcohols in Water By Direct Aqueous-Injection Gas Chromatography, shall be used to determine the ethylene glycol concentration [40 CFR 63.365(e)(1)].

ii. *Scrubber liquor tank level*. For determining the scrubber liquor tank level, the sterilization facility owner or operator shall establish the maximum liquor tank level based on a single measurement of the liquor tank level during one test run [40 CFR 63.365(e)(2)].

d. To determine compliance with Conditions 5.5.1, 7.1.3(c)(i), and 7.1.6, VOM emissions from the affected chambers shall be calculated based on the following:

VOM Emissions (lb) = (Sterilant Gas Usage, lb) x [1 - (0.05 lb Loss to Aeration Chamber/lb Sterilant Gas Usage)] x [1 - (Overall Acid Water

Scrubber or Acid Water Scrubber/Dry Bed Reactor Efficiency* (%)/100)]

*As specified by manufacturer or vendor of the acid water scrubbers and dry bed reactor or testing pursuant to Condition 7.1.7.

7.2 Units SC-4 Willowbrook II Sterilization Chambers
Controls WBII-S/DBR Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.2.1 Description

There are five chambers with a capacity of thirteen pallets at Willowbrook II. The emissions from the Willowbrook II sterilization chambers will be routed to the combined acid-water scrubber and dry bed system. The emissions streams are first routed to the acid scrubber and then to the dry bed reactant system. The acid scrubber system, consisting of a packed scrubber, converts the ethylene oxide to ethylene glycol by reacting ethylene oxide with sulfuric acid. The dry cell system contains a patented dry reactant that will absorb the remaining ethylene oxide in the scrubber exhaust.

7.2.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
SC-4	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook II)	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.2.3 Applicability Provisions and Applicable Regulations

a. The Ethylene Oxide/Propylene Oxide Sterilization Chambers listed in Condition 7.2.2 are “affected chambers” for the purpose of these unit-specific conditions.

b. The affected chambers are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996. Pursuant to 40 CFR 63.362, the owner or operator of the affected chambers shall comply with the following:

i. The emission limitations of Condition 7.2.3 (b)(ii) (see also 40 CFR 63.362(c)) apply

during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

ii. Each owner or operator of a sterilization source using 1 ton shall reduce ethylene oxide emissions to the atmosphere by at least 99 percent from each sterilization chamber vent [40 CFR 63.362(c)].

c. The affected chambers are subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:

i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.2.3 (c)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

ii. Emissions of organic material in excess of those permitted by Condition 7.2.3(c)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by any other air pollution control equipment approved by the Illinois EPA and approved by the USEPA as a SIP revision capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere [35 IAC 218.302(c)].

d. The affected chambers are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.2.3 (d)(i), (ii), or (iii) (see also 35 IAC 218.986 (a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled

VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)]; or

iii. Pursuant to 35 IAC 218.986(e), any leaks from components subject to the control requirements of 35 IAC 218 Subpart TT shall be subject to the following control measures by March 15, 1995:

Repair any component from which a leak of VOL can be observed. The repair shall be completed as soon as practicable but no later than 15 days after the leak is found, unless the leaking component cannot be repaired until the process unit is shut down, in which case the leaking component must be repaired before the unit is restarted [35 IAC 218.986(e)(1)].

7.2.4 Non-Applicability of Regulations of Concern

None

7.2.5 Operational and Production Limits and Work Practices

a. Malfunction and Breakdown Provisions

In the event of a malfunction or breakdown of the Willowbrook II Acid-Water Scrubber, the Permittee is authorized to continue operation of the affected chambers in violation of the applicable requirement of 35 IAC Part 218, Subparts G and TT, as necessary to prevent risk of injury to personnel or severe damage to equipment. This authorization is subject to the following requirements:

i. The Permittee shall repair the damaged feature(s) of the Willowbrook II Acid-Water Scrubber or remove the affected chambers from sterilization service as soon as practicable. This shall be accomplished within 24 hours

unless the feature(s) cannot be repaired within 24 hours and the affected chambers cannot be removed from sterilization service within 48 hours, and the Permittee obtains an extension, for up to 48 hours, from the Illinois EPA. The request for such an extension must document that the Willowbrook II Acid-Water Scrubber is unavailable and specify a schedule of actions the Permittee will take that will assure the feature(s) will be repaired or the affected chambers will be removed from service as soon as possible.

ii. The Permittee shall fulfill applicable recordkeeping and reporting requirements of Conditions 7.2.9(e) and 7.2.10(c).

b. The Permittee shall follow good operating practices for the scrubber and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

c. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall exhaust no more than three (3) of the affected chambers to the acid water scrubbers and dry bed reactor during the first evacuation. This is the maximum number of chambers evacuated at which compliance with Condition 7.2.3(b)(ii) (see also 40 CFR 63.362(c)) was demonstrated during the most recent compliance test.

7.2.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected chambers are subject to the following:

a. Emissions and operation of the five (5) sterilization chambers shall not exceed the following limits:

	Material Usage		VOM Emissions	
Material	(Ton/mo)	(Ton/yr)	(Ton/mo)	(Ton/yr)
Ethylene Oxide	25.00	150.00	0.25	1.50

Propylene Oxide	0.17	1.00	0.01	0.01
Totals				1.51

Material	HAP Emissions (e.g., ethylene oxide, propylene oxide) (Ton/mo)	(Ton/yr)
Ethylene Oxide	0.25	1.50
Propylene Oxide	0.01	0.01
Totals		1.51

These limits are based on representations of the maximum actual emissions based on the maximum sterilant gas usage and a minimum overall control efficiency of 99% for the acid scrubber and dry bed system.

b. The above limitations were established in Permit 99040046, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

c. The emissions of Hazardous Air Pollutants (HAP) as listed in Section 112(b) of the CAA from the five (5) sterilization chambers and the two (2) aeration rooms shall be less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result of this condition, this permit is issued based on the emissions from the five (5) sterilization chambers and the two (2) aeration rooms not triggering the requirements of Section 112(g) of the CAA.

d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

7.2.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.2.3(b) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed

in 40 CFR 63.7 according to the applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.2.12(a) through (c) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after initial startup of the source (the compliance date for the specific source as determined in 40 CFR 63.360(g)) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(b), the following procedures shall be used to determine compliance with the emission limits under Condition 7.2.3(b)(ii) (see also 40 CFR 63.362(c)), the sterilization chamber vent standard:

i. Pursuant to 40 CFR 63.363(b)(1)(i), during the performance test required in Condition 7.2.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine the efficiency of control devices used to comply with Condition 7.2.3(b)(ii) (see also 40 CFR 63.362(c)) using the test methods and procedures in Condition 7.2.12(b)(i) (see also 40 CFR 63.365(b)(1)). The owner or operator shall also, for facilities with acid-water scrubbers, establish as a site-specific operating parameter during the test methods and procedures in Condition 7.2.12(b)(i) (see also 40 CFR 63.365(b)(1)) either:

A. The maximum ethylene glycol concentration using the procedures described in Condition 7.2.12(c)(i) (see also 40 CFR 63.365(e)(1)) [40 CFR 63.363(b)(1)(i)(A)]; or

B. The maximum liquor tank level using the procedures described in Condition 7.2.12 (c)(ii) (see also 40 CFR 63.365(e)(2)) [40 CFR 63.363(b)(1)(i)(B)].

ii. Following the date on which the initial performance test is completed, operation of the facility (with acid-water scrubbers) with an ethylene glycol concentration in the scrubber liquor in excess of the maximum ethylene glycol concentration or the liquor tank level in excess of the maximum liquor tank level shall constitute a violation of the sterilization chamber vent standard [40 CFR 63.363(b)(2)(i)].

c. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.2.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

d. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60, Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA

determine that process variables dictate shorter sampling times [35 IAC 218.105(f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and volumetric flow rates [35 IAC 218.105 (f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105 (f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.2.7 (c)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.2.7(c)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate

compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.2.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.2.3(b) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. Pursuant to 40 CFR 63.364(b), for sterilization facilities complying with Condition 7.2.7(b) (see also 40 CFR 63.363(b)) through the use of an acid-water scrubber, the owner or operator shall either:

i. Sample the scrubber liquor and analyze and record once per week the ethylene glycol concentration of the scrubber liquor using the test methods and procedures in Condition 7.2.12 (c)(i) (see also 40 CFR 63.365(e)(1)).

Monitoring is required during a week only if the scrubber unit has been operated [40 CFR 63.364 (b)(1)]; or

ii. Measure and record once per week the level of the scrubber liquor in the recirculation tank. The owner or operator shall install, maintain, and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.) [40 CFR 63.364(b)(2)].

c. Pursuant to 35 IAC 218.105(g), leak detection methods for volatile organic material owners or operators required by 35 IAC Part 218 to carry out a leak detection monitoring program shall comply with the following requirements:

i. Leak Detection Monitoring:

A. Monitoring shall comply with 40 CFR 60, Appendix A, Method 21 [35 IAC 218.105 (g)(1)(A)];

B. The detection instrument shall meet the performance criteria of Method 21 [35 IAC 218.105(g)(1)(B)];

C. The instrument shall be calibrated before use on each day of its use by the methods specified in Method 21 [35 IAC 218.105 (g)(1)(C)];

D. Calibration gases shall be:

I. Zero air (less than 10 ppm of hydrocarbon in air) [35 IAC 218.105 (g)(1)(D)(i)]; and

II. A mixture of methane or n-hexane and air at a concentration of approximately, but no less than, 10,000 ppm methane or n-hexane [35 IAC 218.105(g)(1)(D)(ii)].

E. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21 [35 IAC 218.105 (g)(1)(E)].

ii. Pursuant to 35 IAC 218.105(g)(2), when equipment is tested for compliance with no detectable emissions as required, the test shall comply with the following requirements:

A. The requirements of Conditions 7.2.8 (c)(i)(A) through (e)(i)(E) (see also 35 IAC 218.105(g)(1)(A) through (g)(1)(E)) above shall apply [35 IAC 218.105 (g)(2)(A)]; and

B. The background level shall be determined as set forth in Method 21 [35 IAC 218.105 (g)(2)(B)].

iii. Pursuant to 35 IAC 218.105(g)(3),leak detection tests shall be performed consistent with:

A. "APTI Course SI 417 controlling Volatile Organic Compound Emissions from Leaking Process Equipment", EPA-450/2-82-015 [35 IAC 218.105(g)(3)(A)];

B. "Portable Instrument User's Manual for Monitoring VOC Sources", EPA-340/1-86-015 [35 IAC 218.105(g)(3)(B)];

C. "Protocols for Generating Unit-Specific Emission Estimates for Equipment Leaks of VOC and VHAP", EPA-450/3-88-010 [35 IAC 218.105(g)(3)(C)]; and/or

D. "Petroleum Refinery Enforcement Manual", EPA-340/1-80-008 [35 IAC 218.105 (g)(3)(D)].

7.2.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected chamber to demonstrate compliance with Conditions 5.5.1, 7.2.3, and 7.2.6, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.2.3(b) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.2.7, which include the following [Section 39.5(7)(e) of the Act]:

   i. The date, place and time of sampling or measurements;

   ii. The date(s) analyses were performed;

   iii. The company or entity that performed the analyses;

   iv. The analytical techniques or methods used;

   v. The results of such analyses; and

   vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.986(e)(2), any leaks from components subject to the control requirements of 35 IAC 218 Subpart TT shall be subject to the following control measures by March 15, 1995:

   For any leak which cannot be readily repaired within one hour after detection, the following records, as set forth in this subsection, shall be kept. These records shall be maintained by the owner or operator for a minimum of two years after the date on which they are made. Copies of the records shall be made

available to the Illinois EPA or the USEPA upon verbal or written request.

i. The name and identification of the leaking component [35 IAC 218.986(e)(2)(A)];

ii. The date and time the leak is detected [35 IAC 218.986(e)(2)(B)];

iii. The action taken to repair the leak [35 IAC 218.986(e)(2)(C)]; and

iv. The date and time the leak is repaired [35 IAC 218.986(e)(2)(D)].

d. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

i. Control device monitoring data [35 IAC 218.991 (a)(2)(A)];

ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991 (a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages [35 IAC 218.991 (a)(2)(C)].

e. Records for Malfunctions and Breakdowns of Willowbrook II Acid-Water Scrubber

The Permittee shall maintain records, pursuant to 35 IAC 201.263, of continued operation of an affected chamber subject to 35 IAC Part 218, Subparts G and TT during malfunctions and breakdown of the control

features of the Willowbrook II Acid-Water Scrubber, which as a minimum, shall include:

i. Date and duration of malfunction or breakdown;

ii. A detailed explanation of the malfunction or breakdown;

iii. An explanation why the damaged feature(s) could not be immediately repaired or the affected chambers could not be removed from service without risk of injury to personnel or severe damage to equipment;

f. Records addressing use of good operating practices for the acid water scrubber and dry bed reactor:

i. Records for periodic inspection of the acid water scrubber and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

g. The type and amount of sterilant gas used for each affected chamber, ton/mo and ton/yr; and

h. The monthly and aggregate annual VOM and HAP emissions from the affected chambers based on the sterilant gas usage and air pollution control equipment efficiencies, with supporting calculations.

7.2.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected chamber with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess

emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10 (e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and control equipment shall notify the Illinois EPA of any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Reporting of Malfunctions and Breakdowns for Willowbrook II Acid-Water Scrubber

The Permittee shall provide the following notification and reports to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to 35 IAC 201.263, concerning continued operation of an affected chamber subject to Conditions 7.2.3(c) and (d) during malfunction or breakdown of the control features of the Willowbrook II Acid-Water Scrubber.

i. The Permittee shall notify the Illinois EPA’s regional office by telephone as soon as possible during normal working hours, but no

later than three (3) days, upon the occurrence of noncompliance due to malfunction, or breakdown.

ii. Upon achievement of compliance, the Permittee shall give a written follow-up notice to the Illinois EPA, Compliance Section and Regional Field Office, providing a detailed explanation of the event, an explanation why continued operation of the affected chambers was necessary, the length of time during which operation continued under such conditions, the measures taken by the Permittee to minimize and correct deficiencies with chronology, and when the repairs were completed or when the affected chambers were taken out of service.

iii. If compliance is not achieved within 5 working days of the occurrence, the Permittee shall submit interim status reports to the Illinois EPA, Compliance Section and Regional Field Office, within 5 days of the occurrence and every 14 days thereafter, until compliance is achieved. These interim reports shall provide a brief explanation of the nature of the malfunction or breakdown, corrective actions accomplished to date, actions anticipated to occur with schedule, and the expected date on which repairs will be complete or the affected chambers will be taken out of service.

d. Emissions of VOM in excess of limits in Condition 7.2.6 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

7.2.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.2.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.2.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.2.3(b) (see also 40 CFR 63.362) shall comply with the performance testing requirements in 40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.2.12(a) through (c) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Efficiency at the sterilization chamber vent*. Pursuant to 40 CFR 63.365(b), the following procedures shall be used to determine the efficiency of all types of control devices used to comply with Condition 7.2.3 (b)(i) (see also 40 CFR 63.362(c)), sterilization chamber vent standard.

i. *First evacuation of the sterilization chamber*. This procedure shall be performed on an empty sterilizer for the duration of the first evacuation under normal operating conditions (i.e., sterilization cycle pressure and temperature) and charging a typical amount of ethylene oxide to the sterilization chamber [40 CFR 63.365(b)(1)].

A. Pursuant to 40 CFR 63.365(b)(1)(i), the amount of ethylene oxide loaded into the sterilizer (W_c) shall be determined by either:

I. Weighing the ethylene oxide gas cylinder(s) used to charge the sterilizer before and after charging. Record these weights to the nearest 45 g (0.1 lb). Multiply the total mass of gas charged by the weight percent ethylene oxide present in the gas [40 CFR 63.365 (b)(1)(i)(A)].

II. Pursuant to 40 CFR 63.365 (b)(1)(i)(B), installing calibrated rotameters at the sterilizer inlet and measuring flow rate and duration of sterilizer charge. Use the

following equation to convert flow rate to weight of ethylene oxide:

$$W_c = F_v \times t \times \%EO_v \times \left(\frac{MW}{SV}\right)$$

where:

W_c = weight of ethylene oxide charged, g (lb)

F_v = volumetric flow rate, liters per minute (L/min) corrected to 20°C and 101.325 kilopascals (kPa) (scf per minute [scfm] corrected to 68°F and 1 atmosphere of pressure [atm]); the flowrate must be constant during time (t)

t = time, min

$\%EO_v$ = volume fraction ethylene oxide

SV = standard volume, 24.05 liters per mole (L/mole) = 22.414 L/mole ideal gas law constant corrected to 20 C and 101.325 kPa (385.32 scf per mole [scf/mole] = 359 scf/mole ideal gas law constant corrected to 68 F and 1 atm).

MW = molecular weight of ethylene oxide, 44.05 grams per gram-mole (g/g-mole) (44.05 pounds per pound-mole (lb/lb-mole)), or

III. Pursuant to 40 CFR 63.365 (b)(1)(i)(C), calculating the mass based on the conditions of the chamber immediately after it has

been charged using the following equation:

$$W_c = \frac{MW \times \%EO_v \times P \times V}{R \times T}$$

where:

P = chamber pressure, kPa (psia)

V = chamber volume, liters (L) (ft^3)

R = gas constant, 8.313 l kPa/g-mole K (10.73 psia ft^3/mole R)

T = temperature, K (R)

NOTE: If the ethylene oxide concentration is in weight percent, use the following equation to calculate mole fraction:

$$\%EO_v = \frac{W_{EO}}{W_{EO} + \left(W_X \times \frac{MW}{MW_X}\right)}$$

where:

W_{EO} = weight percent of ethylene oxide

W_x = weight percent of compound in the balance of the mixture

MW_x = molecular weight of compound in the balance gas mixture

B. Pursuant to 40 CFR 63.365(b)(1)(ii), the residual mass of ethylene oxide in the sterilizer shall be determined by recording the chamber temperature, pressure, and volume after the completion

of the first evacuation and using the following equation:

$$W_r = \frac{MW \times \%EO_V \times P \times V}{R \times T}$$

where:

W_r = weight of ethylene oxide remaining in chamber (after the first evacuation), in g (lb)

C. Calculate the total mass of ethylene oxide at the inlet to the control device (W_i) by subtracting the residual mass (W_r) calculated in Condition 7.2.12(b)(i)(B) (see also 40 CFR 63.365(b)(1)(ii)) from the charged weight (W_c) calculated in Condition 7.2.12(b)(i)(A) (see also 40 CFR 63.365(b)(1)(i)) [40 CFR 63.365 (b)(1)(iii)].

D. Pursuant to 40 CFR 63.365(b)(1)(iv), the mass of ethylene oxide emitted from the control device outlet (W_o) shall be calculated by continuously monitoring the flow rate and concentration using the following procedure.

I. Measure the flow rate through the control device exhaust continuously during the first evacuation using the procedure found in 40 CFR part 60, appendix A, Test Methods 2, 2A, 2C, or 2D, as appropriate. Method 2D (using orifice plates or Rootstype meters) is recommended for measuring flow rates from sterilizer control devices.) Record the flow rate at 1-minute intervals throughout the test cycle, taking the first reading within 15 seconds after time zero. Time zero is defined as the moment when the pressure in the sterilizer is released. Correct the flow to

standard conditions (20°C and 101.325 kPa (68°F and 1 atm)) and determine the flow rate for the run as outlined in the test methods listed in Condition 7.2.12(b) (see also 40 CFR 63.365(b)) [40 CFR 63.365(b)(1)(iv)(A)].

II. Pursuant to 40 CFR 63.365 (b)(1)(iv)(B), the Tedlar bag sampling procedure in section 7.1 of Test Method 18, 40 CFR part 60, appendix A (hereafter referred to as Method 18) shall be used to collect samples of exhaust gas throughout the test cycle. Follow the procedures in Condition 7.2.12 (b)(i)(D)(II)(1) or (2) (see also 40 CFR 63.365(b)(1)(iv)(B)(1) or (2)).

(1) Pursuant to 40 CFR 63.365 (b)(1)(iv)(B)(1), continuously sample a slipstream of the control device outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag.

(a) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours

of collection [40 CFR 63.365(b)(1)(iv)(B)(1)(i)].

(b) Prepare a graph of volumetric flow rate versus time corresponding to the period each bag was sampled. Integrate the area under the curve to determine the volume[40 CFR 63.365 (b)(1)(iv)(B)(1)(ii)].

(c) Pursuant to 40 CFR 63.365(b)(1)(iv)(B)(1)(iii), calculate the mass of ethylene oxide for each bag by using the following equation:

$$W_b = C \times V \times \frac{MW}{SV} \times \frac{1}{10^6}$$

where:

W_b = Mass of ethylene oxide for each bag, g (lb)

C = concentration of ethylene oxide in ppmv

V = volume of gas exiting the control device corresponding to each bag sample corrected to standard conditions, L (ft^3)

$1/10^6$ = correction factor $L_{EO}/10^6$ $L_{TOTAL\ GAS}$ ($ft^3_{EO}/10^6$ $ft^3_{TOTAL\ GAS}$)

Sum the mass corresponding to each bag (W_b) used during the evacuation to calculate the total mass (W_o).

(d) Calculate the efficiency by the equation in Condition 7.2.12 (b)(i)(E) (see also 40 CFR 63.365(b)(1)(v)) [40 CFR 63.365 (b)(1)(iv)(B)(1)(iv)].

(2) Pursuant to 40 CFR 63.365 (b)(1)(iv)(B)(2), collect a Tedlar bag (or equivalent collection device) sample at 1-minute intervals throughout the test cycle. (The first bag must be in place and sampling at t = 15 seconds. A fresh bag shall be in place and sampling exhaust gas at each 1-minute mark after time zero.) Collect enough sample gas in each bag to complete the analysis. Each bag sample shall be labeled with the sampling time and run number.

(a) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours

of collection. (Syringe samples should be analyzed within 4 hours.) [40 CFR 63.365 (b)(1)(iv)(B)(2)(i)]

(b) Plot a concentration versus time curve using the average concentration, in ppmv, determined in each bag sample. Prepare another graph of volumetric flow rate versus time. Calculate the mass flow at each 1-minute interval point by selecting the concentration (C) and volumetric flow rate corrected to standard conditions (F_v) at each 1-min point [40 CFR 63.365(b)(1)(iv)(B)(2)(ii)].

(c) Pursuant to 40 CFR 63.365(b)(1)(iv)(B)(2)(iii), use the following equation to determine the mass flow rate of ethylene oxide exiting the control device:

$$W_t = C \times F_v \times \frac{MW}{SV} \times \frac{1}{10^6}$$

where:

W_t = mass flow rate of ethylene oxide

(d) Plot a curve of mass flow rate versus time and integrate for total mass of ethylene oxide

for the control device outlet (W_o) [40 CFR 63.365(b)(1)(iv)(B)(2)(iv)].

(e) Calculate efficiency by the equations in Conditions 7.2.12 (b)(i)(E) and (F) (see also 40 CFR 63.365 (b)(1)(v) and (vi)) [40 CFR 63.365 (b)(1)(iv)(B)(2)(v)].

III. Pursuant to 40 CFR 63.365 (b)(1)(iv)(C), as an alternative to Condition 7.2.12(b)(i)(B) (see also 40 CFR 63.365(b)(1)(ii)), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a gas chromatograph with flame ionization detector (GC/FID) or photoionization detector (GC/PID). This procedure may be used only if a vent sample may be sampled and analyzed by the GC/FID or GC/PID at least once per minute.

(1) Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(b)(1)(iv)(C)(1)].

(2) Follow the procedures in Conditions 7.2.12 (b)(i)(D)(II)(1)(b) through (e) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through

(v)) [40 CFR 63.365 (b)(1)(iv)(C)(2)].

E. Pursuant to 40 CFR 63.365(b)(1)(v), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

F. Repeat the procedures in Conditions 7.2.12 (b)(i)(A) through (E) (see also 40 CFR 63.365(b)(1)(i) through (v)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365(b)(1)(vi)].

ii. *Last evacuation of the sterilization chamber*. Pursuant to 40 CFR 63.365(b)(2), one of the following procedures (Condition 7.2.12(b)(ii)(A) or (B) (see also 40 CFR 63.365(b)(2)(i) or (ii))) shall be performed during the last evacuation of the sterilization chamber:

A. Pursuant to 40 CFR 63.365(b)(2)(i), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; this procedure may be used only if a vent may be sampled and

analyzed by the GC/FID or GC/PID once per minute for the duration of the last cycle.

I. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(b)(2)(i)(A)].

II. Follow the procedures in Conditions 7.2.12(b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(b)(2)(i)(B)].

III. Pursuant to 40 CFR 63.365 (b)(2)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:
%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

IV. Repeat the procedures in Conditions 7.2.12(b)(ii)(A)(I) through (III) (see also 40 CFR 63.365(b)(2)(i)(A) through (C)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (b)(2)(i)(D)].

B. The Tedlar bag sampling procedure in section 7.1 of Method 18, may be used to collect samples of inlet and exhaust gas

for the duration of the last cycle [40 CFR 63.365(b)(2)(ii)].

I. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365(b)(2)(ii)(A)].

II. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365 (b)(2)(ii)(B)].

III. Follow the procedures in Conditions 7.2.12(b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365 (b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(b)(2)(ii)(C)].

IV. Determine control device efficiency (%Eff) using the equation in Condition 7.2.12(b)(ii)(A)(III) (see also 40 CFR 63.365(b)(2)(i)(C)) [40 CFR 63.365(b)(2)(ii)(D)].

V. Repeat the procedures in Condition 7.2.12(b)(ii)(B)(I) through (IV) (see also 40 CFR 63.365(b)(2)(ii)(A) through (D)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of

the control device [40 CFR 63.365 (b)(2)(ii)(E)].

C. In the event that the outlet concentration from the control device is below the detection limit for ethylene oxide for determining the efficiency in Condition 7.2.12(b)(ii)(A)(III) or (B)(IV) (see also 40 CFR 63.365(b)(2)(i)(C) or (ii)(D)), the owner or operator shall assume the control device is meeting the standard in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362(e)(1)) if the inlet ethylene oxide concentration is at or below approximately 50 ppmv [40 CFR 63.365(b)(2)(iii)].

c. *Determination of baseline parameters for acid-water scrubbers*. Pursuant to 40 CFR 63.365(e), the procedures in this Condition shall be used to determine the monitored parameters established in Condition 7.2.7(b) (see also 40 CFR 63.363(b)) for acid-water scrubbers and to monitor the parameters as established in Condition 7.2.8(b) (see also 40 CFR 63.364(b)).

i. *Ethylene glycol concentration*. For determining the ethylene glycol concentration, the facility owner or operator shall establish the maximum ethylene glycol concentration as the ethylene glycol concentration averaged over three test runs; the sampling and analysis procedures in ASTM D 3695-88, Standard Test Method for Volatile Alcohols in Water By Direct Aqueous-Injection Gas Chromatography, shall be used to determine the ethylene glycol concentration [40 CFR 63.365(e)(1)].

ii. *Scrubber liquor tank level*. For determining the scrubber liquor tank level, the sterilization facility owner or operator shall establish the maximum liquor tank level based on a single measurement of the liquor tank level during one test run [40 CFR 63.365(e)(2)].

d. To determine compliance with Conditions 5.5.1, 7.2.3(c)(i), and 7.2.6, VOM emissions from the affected chambers shall be calculated based on the following:

VOM Emissions (lb) = (Sterilant Gas Usage, lb) x [1 - (0.05 lb Loss to Aeration Chamber/lb Sterilant Gas Usage)] x [1 - (Overall Acid Water Scrubber/Dry Bed Reactor Efficiency* (%)/100)]

*As specified by manufacturer or vendor of the acid water scrubber and dry bed reactor or testing pursuant to Condition 7.2.7.

7.3 Units SV-1, SV-2, SV-3 Willowbrook I Sterilization Chamber Back Vents
Controls AWS#2/DBR Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.3.1 Description

At the conclusion of the sterilizing cycle, the sterilizing chamber is returned to ambient temperature and back up to atmospheric pressure. The chamber door is then opened, enabling the chamber exhausts to automatically activate. This chamber air exhaust or "back vent" is an exhaust system that forcefully ventilates the chamber with fresh air. Indoor air is ventilated into the front open door through the chamber and to the back exhaust, and some chambers may have a smaller front "hood" vent as well. This chamber exhaust is responsible for removing sterilant gas from the void space in the sterilizer chamber. This chamber exhaust assists in providing fresh indoor air through the front door into the chamber. This chamber air exhaust system operates not only during unloading sterilized product, but also during re-loading with new, nonsterile product without any sterilant gas. The chamber exhaust consists of a butterfly valve in the ductwork that opens and a blower that automatically switches on and pulls fresh air through the chamber. This can be triggered only by opening the chamber door (front). A chamber face velocity on the order of 100 feet per minute air flow rate can be maintained, producing chamber exhaust flow rates of 2,000 to 3,500 cubic feet per minute.

7.3.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
SV-1	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Six (6) Pallet Capacity Sterilization Chambers, Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-2	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

SV-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vent (Three (3) Pallet Capacity Sterilization Chamber, Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.3.3 Applicability Provisions and Applicable Regulations

a. The Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents listed in Condition 7.3.2 are "affected chamber exhaust vents" for the purpose of these unit-specific conditions.

b. The affected chamber exhaust vents are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996.

i. Pursuant to 40 CFR 63.360(g), the owner or operator shall comply with the provisions of 40 CFR 63 Subpart O as follows:

All chamber exhaust vents subject to the emissions standards in Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) with an initial startup date before December 6, 2001, no later than December 6, 2001 [40 CFR 63.360(g)(7)].

ii. Pursuant to 40 CFR 63.362, the owner or operator of the affected chamber exhaust vents shall comply with the following:

A. The emission limitations of Condition 7.3.3(b)(ii) (see also 40 CFR 63.362(e)) apply during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

B. Each owner or operator of a sterilization source using 10 tons shall reduce ethylene oxide emissions to the atmosphere by manifolding emissions from each chamber exhaust vent to a control device used to comply with Conditions 7.1.3(b)(ii) or 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(c) or (d)) or shall reduce ethylene oxide emissions by at least 99 percent from each chamber exhaust vent (without manifolding) [40 CFR 63.362(e)(1)].

c. The affected chamber exhaust vents are subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:

i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.3.3 (c)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

ii. Emissions of organic material in excess of those permitted by Condition 7.3.3(c)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by any other air pollution control equipment approved by the Illinois EPA and approved by the USEPA as a SIP revision capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere [35 IAC 218.302(c)].

d. The affected chamber exhaust vents are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.3.3(d)(i) or (ii) (see also 35 IAC 218.986(a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)].

7.3.4 Non-Applicability of Regulations of Concern

None

7.3.5 Operational and Production Limits and Work Practices

The Permittee shall follow good operating practices for the acid water scrubber and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

7.3.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include these units.

7.3.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed in 40 CFR 63.7 according to the applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.3.12(a) through (e) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after initial startup of the source (the compliance date for the specific source as determined in Condition 7.3.3(b)(i) (see also 40 CFR 63.360(g))) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(d), the following procedures shall be used to determine compliance with the emission limits under Condition 7.3.3(b)(ii)(B), (see also 40 CFR 63.362(e)(1)), the chamber exhaust vent standard for sources using 10 tons:

i. For facilities manifolding emissions from the chamber exhaust vent to a control device controlling emissions from the sterilization chamber vent and/or the aeration room vent, the owner or operator shall comply with the

appropriate compliance provisions for that vent type and control device (see Conditions 7.1.7(b) and 7.5.7(b) (see also 40 CFR 63.363(b) and (c))) [40 CFR 63.363(d)(1)].

ii. Pursuant to 40 CFR 63.363(d)(2), for facilities not manifolding emissions from the chamber exhaust vent (to a control device used to comply with Condition 7.1.3(b)(ii) or 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(c) or (d)), the owner or operator shall comply with the following:

A. Pursuant to 40 CFR 63.363(d)(2)(i)(A), during the performance test required in Condition 7.3.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine the efficiency of control devices used to comply with Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362 (e)(1)) using the test methods and procedures in Condition 7.3.12(b) (see also 63.365(d)(2)) as well as for facilities with acid-water scrubbers, the owner or operator shall establish as a site-specific operating parameter either:

I. The maximum ethylene glycol concentration using the procedures described in Condition 7.3.12(c)(i) (see also 63.365(e)(1)) [40 CFR 63.363(d)(2)(i)(A)(1)]; or

II. The maximum liquor tank level using the procedures described in Condition 7.3.12(c)(ii) (see also 40 CFR 63.365(e)(2)) [40 CFR 63.363 (d)(2)(i)(A)(2)].

B. Pursuant to 40 CFR 63.363(d)(2)(ii), following the date on which the initial performance test is completed, the owner or operator of a facility shall comply with the following provision:

For facilities with acid-water scrubbers, operation of the facility with an ethylene glycol concentration in the scrubber liquor in excess of the maximum ethylene glycol concentration or the liquor tank level in excess of the maximum liquor tank level shall constitute a violation of the chamber exhaust vent standard for sources using 10 tons [40 CFR 63.363(d)(2)(ii)(A)].

c. Pursuant to 40 CFR 63.363(f), for facilities complying with the emissions limits under Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) with a control technology other than acid- water scrubbers or catalytic or thermal oxidizers:

i. The owner or operator of the facility shall provide to the Illinois EPA or the USEPA information describing the design and operation of the air pollution control system including recommendations for the operating parameters to be monitored to indicated proper operation and maintenance of the air pollution control system. Based on this information, the Illinois EPA or the USEPA will determine the site-specific operating parameter(s) to be established during the performance test. During the performance test required in Condition 7.3.7(a) (see also 40 CFR 63.363(a)) using the methods approved in Condition 7.3.12(d) (see also 40 CFR 63.365(g)), the owner or operator shall determine the site-specific operating parameter(s) approved by the Illinois EPA or the USEPA [40 CFR 63.363(f)(1)].

ii. Operation of the facility in a manner that exceeds a site-specific parameter established as a maximum requirement or falls below a site-specific parameter established as a minimum requirement (depending on the parameters monitored) shall constitute a violation of the applicable emissions standard

under Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) [40 CFR 63.363(f)(2)].

d. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.3.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

e. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60, Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA determine that process variables dictate shorter sampling times [35 IAC 218.105 (f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and volumetric flow rates [35 IAC 218.105 (f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105 (f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.3.7 (e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.3.7(e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the

USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.3.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. Pursuant to 40 CFR 63.364(b), for sterilization facilities complying with Condition 7.3.7(b) (see also 40 CFR 63.363(d)) through the use of an acid-water scrubber, the owner or operator shall either:

i. Sample the scrubber liquor and analyze and record once per week the ethylene glycol concentration of the scrubber liquor using the test methods and procedures in Condition 7.3.12 (c)(i) (see also 40 CFR 63.365(e)(1)). Monitoring is required during a week only if the scrubber unit has been operated [40 CFR 63.364 (b)(1)]; or

ii. Measure and record once per week the level of the scrubber liquor in the recirculation tank. The owner or operator shall install, maintain,

and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.) [40 CFR 63.364(b)(2)].

c. For sterilization facilities complying with Condition 7.3.7(b) (see also 40 CFR 63.363(d)) through the use of a control device other than acid-water scrubbers or catalytic or thermal oxidizers, the owner or operator shall monitor the parameters as approved by the Illinois EPA or the USEPA using the methods and procedures in Condition 7.3.12(d) (see also 40 CFR 63.365(g)) [40 CFR 63.364(d)].

d. For sterilization facilities complying with Condition 7.3.7(b)(i) (see also 40 CFR 63.363(d)(1)) by manifolding emissions from the chamber exhaust vent to a control device controlling emissions from another vent type, the owner or operator shall monitor the control device to which emissions from the chamber exhaust vent are manifolded using the appropriate monitoring requirements in Conditions 7.3.8(a) through (c) (see also 40 CFR 63.364(a) through (e)) of this Condition (see also 40 CFR 63.364) and record the monitoring data [40 CFR 63.364(f)].

7.3.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected chamber exhaust vent to demonstrate compliance with Conditions 5.5.1 and 7.3.3, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to

Condition 7.3.7, which include the following [Section 39.5(7)(e) of the Act]:

i. The date, place and time of sampling or measurements;

ii. The date(s) analyses were performed;

iii. The company or entity that performed the analyses;

iv. The analytical techniques or methods used;

v. The results of such analyses; and

vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

i. Control device monitoring data [35 IAC 218.991 (a)(2)(A)];

ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991 (a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages [35 IAC 218.991 (a)(2)(C)].

d. Records addressing use of good operating practices for the acid water scrubber and dry bed reactor:

i. Records for periodic inspection of the acid water scrubber and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

7.3.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected chamber exhaust vent with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10 (e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and control equipment shall notify the Illinois EPA of

any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Continued operation of an affected chamber with a defect in the acid water scrubber that may result in emissions in excess of limits in Condition 7.3.3(c)(i) within 30 days of such an occurrence.

7.3.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.3.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.3.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.3.3(b)(ii) (see also 40 CFR 63.362) shall comply with the performance testing requirements in 40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.3.12(a) through (e) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Efficiency determination at the chamber exhaust vent (not manifolded)*. Pursuant to 40 CFR 63.365(d)(2), the following procedures shall be used to determine the efficiency of a control device used to comply with Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362(e)), the chamber exhaust vent standards (without manifolding the chamber exhaust vent emissions to another vent type). For determining the efficiency of non-manifolded chamber exhaust vent control devices, either of the following test methods (Conditions 7.3.12(b)(i) or (ii) (see also 40 CFR 63.365(d)(2)(i) or (ii))) may be used:

i. Pursuant to 40 CFR 63.365(d)(2)(i), the direct interface sampling and analysis procedures described in Method 18, section 7.2 or 7.3,

may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; these procedures may be used only if a vent may be sampled and analyzed by the GC/FID or GC/PID once per minute for the duration of each cycle when the chamber exhaust vent is operated.

A. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(d)(2)(i)(A)].

B. Follow the procedures in Conditions 7.1.12 (b)(i)(D)(II)(2)(a) through (d) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(2)(i)(B)].

C. Pursuant to 40 CFR 63.365(d)(2)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

D. Repeat the procedures in Conditions 7.3.12 (b)(i)(A) through (C) (see also 40 CFR 63.365(d)(2)(i)(A) through (C)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(2)(i)(D)].

ii. Pursuant to 40 CFR 63.365(d)(2)(ii), the Tedlar bag sampling procedure in section 7.1 of Method 18 may be used to collect samples of inlet and exhaust gas for the duration of each cycle when the chamber exhaust vent is operated.

A. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365 (d)(2)(ii)(A)].

B. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365(d)(2)(ii)(B)].

C. Follow the procedures in Conditions 7.1.12 (b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(2)(ii)(C)].

D. Determine control device efficiency (%Eff) using the equation in Condition 7.3.12 (b)(i)(C) (see also 40 CFR 63.365 (d)(2)(i)(C)) [40 CFR 63.365 (d)(2)(ii)(D)].

E. Repeat the procedures in Conditions 7.3.12 (b)(ii)(A) through (D) (see also 40 CFR 63.365(d)(2)(ii)(A) through (D)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(2)(ii)(E)].

iii. In the event that the outlet concentration from the control device is below the detection limit for ethylene oxide for determining the efficiency in Condition 7.3.12(b)(i)(C) or (ii)(D) (see also 40 CFR 63.365(d)(2)(i)(C) or (ii)(D)), the owner or operator shall assume the control device is meeting the standard in Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362(e)(1)) if the inlet ethylene oxide concentration is at or below approximately 50 ppmv [40 CFR 63.365(d)(2)(iii)].

c. *Determination of baseline parameters for acid-water scrubbers*. Pursuant to 40 CFR 63.365(e), the procedures in this Condition shall be used to determine the monitored parameters established in Condition 7.3.7(b) (see also 40 CFR 63.363(d)) for acid-water scrubbers and to monitor the parameters as established in Condition 7.3.8(b) (see also 40 CFR 63.364(b)).

i. *Ethylene glycol concentration*. For determining the ethylene glycol concentration, the facility owner or operator shall establish the maximum ethylene glycol concentration as the ethylene glycol concentration averaged over three test runs; the sampling and analysis procedures in ASTM D 3695-88, Standard Test Method for Volatile Alcohols in Water By Direct Aqueous-Injection Gas Chromatography, shall be used to determine the ethylene glycol concentration [40 CFR 63.365(e)(1)].

ii. *Scrubber liquor tank level*. For determining the scrubber liquor tank level, the sterilization facility owner or operator shall establish the maximum liquor tank level based on a single measurement of the liquor tank level during one test run [40 CFR 63.365(e)(2)].

d. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362(e)) with a control device other than an acid-

water scrubber or catalytic or thermal oxidation unit shall provide to the Illinois EPA or the USEPA the information requested under Condition 7.3.7(c) (see also 40 CFR 63.363(f)). The owner or operator shall submit: a description of the device; test results collected in accordance with Condition 7.3.7(c) (see also 40 CFR 63.363(f)) verifying the performance of the device for controlling ethylene oxide emissions to the atmosphere to the levels required by the applicable standards; the appropriate operating parameters that will be monitored; and the frequency of measuring and recording to establish continuous compliance with the standards. The monitoring plan submitted identifying the compliance monitoring is subject to the Illinois EPA's or USEPA's approval. The owner or operator of the sterilization facility shall install, calibrate, operate, and maintain the monitor(s) approved by the Illinois EPA or the USEPA based on the information submitted by the owner or operator. The owner or operator shall include in the information submitted to the Illinois EPA or the USEPA proposed performance specifications and quality assurance procedures for their monitors. The Illinois EPA or the USEPA may request further information and shall approve appropriate test methods and procedures [40 CFR 63.365(g)].

e. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.3.3(b)(ii)(B) (see also 40 CFR 63.362(e)) with a monitoring device or procedure other than a gas chromatograph shall provide to the Illinois EPA or the USEPA information describing the operation of the monitoring device or procedure and the parameter(s) that would indicate proper operation and maintenance of the device or procedure. The Illinois EPA or the USEPA may request further information and will specify appropriate test methods and procedures [40 CFR 63.365(h)].

f. Compliance with Condition 7.3.3(c) is assumed to be achieved by proper operation of the acid water scrubber and dry bed reactor, as addressed by Conditions 7.3.5 and 7.3.9(d).

7.4 Units SV-4 Willowbrook II Sterilization Chamber Back Vents
Controls WBII-S/DBR Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.4.1 Description

At the conclusion of the sterilizing cycle, the sterilizing chamber is returned to ambient temperature and back up to atmospheric pressure. The chamber door is then opened, enabling the chamber exhausts to automatically activate. This chamber air exhaust or "back vent" is an exhaust system that forcefully ventilates the chamber with fresh air. Indoor air is ventilated into the front open door through the chamber and to the back exhaust, and some chambers may have a smaller front "hood" vent as well. This chamber exhaust is responsible for removing sterilant gas from the void space in the sterilizer chamber. This chamber exhaust assists in providing fresh indoor air through the front door into the chamber. This chamber air exhaust system operates not only during unloading sterilized product, but also during re-loading with new, nonsterile product without any sterilant gas. The chamber exhaust consists of a butterfly valve in the ductwork that opens and a blower that automatically switches on and pulls fresh air through the chamber. This can be triggered only by opening the chamber door (front). A chamber face velocity on the order of 100 feet per minute air flow rate can be maintained, producing chamber exhaust flow rates of 2,000 to 3,500 cubic feet per minute.

7.4.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
SV-4	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook II)	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.4.3 Applicability Provisions and Applicable Regulations

a. The Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents listed in Condition 7.4.2 are

"affected chamber exhaust vents" for the purpose of these unit-specific conditions.

b. The affected chamber exhaust vents are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996.

i. Pursuant to 40 CFR 63.360(g), the owner or operator shall comply with the provisions of 40 CFR 63 Subpart O as follows:

All chamber exhaust vents subject to the emissions standards in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) with an initial startup date before December 6, 2001, no later than December 6, 2001 [40 CFR 63.360(g)(7)].

ii. Pursuant to 40 CFR 63.362, the owner or operator of the affected chamber exhaust vents shall comply with the following:

A. The emission limitations of Condition 7.4.3(b)(ii) (see also 40 CFR 63.362(e)) apply during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

B. Each owner or operator of a sterilization source using 10 tons shall reduce ethylene oxide emissions to the atmosphere by manifolding emissions from each chamber exhaust vent to a control device used to comply with Conditions 7.2.3(b)(ii) or 7.6.3(b)(ii) (see also 40 CFR 63.362(c) or (d)) or shall reduce ethylene oxide emissions by at least 99 percent from each chamber exhaust vent (without manifolding) [40 CFR 63.362(e)(1)].

c. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 218.302, 218.303, 218.304 and the following

exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

d. The affected chamber exhaust vents are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.4.3(d)(i) or (ii) (see also 35 IAC 218.986(a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)].

7.4.4 Non-Applicability of Regulations of Concern

None

7.4.5 Operational and Production Limits and Work Practices

The Permittee shall follow good operating practices for the acid water scrubber and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

7.4.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include these units.

7.4.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed in 40 CFR 63.7 according to the

applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.4.12(a) through (e) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after initial startup of the source (the compliance date for the specific source as determined in Condition 7.4.3(b)(i) (see also 40 CFR 63.360(g))) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(d), the following procedures shall be used to determine compliance with the emission limits under Condition 7.4.3(b)(ii)(B), (see also 40 CFR 63.362(e)(1)), the chamber exhaust vent standard for sources using 10 tons:

i. For facilities manifolding emissions from the chamber exhaust vent to a control device controlling emissions from the sterilization chamber vent and/or the aeration room vent, the owner or operator shall comply with the appropriate compliance provisions for that vent type and control device (see Conditions 7.2.7(b) and 7.6.7(b) (see also 40 CFR 63.363(b) and (c))) [40 CFR 63.363(d)(1)].

ii. Pursuant to 40 CFR 63.363(d)(2), for facilities not manifolding emissions from the chamber exhaust vent (to a control device used to comply with Condition 7.2.3(b)(ii) or 7.6.3(b)(ii) (see also 40 CFR 63.362(c) or (d)), the owner or operator shall comply with the following:

A. Pursuant to 40 CFR 63.363(d)(2)(i)(A), during the performance test required in Condition 7.4.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine the efficiency of control devices used to comply with Condition 7.4.3(b)(ii)(B) (see also 40 CFR 63.362 (e)(1)) using the test methods and

procedures in Condition 7.4.12(b) (see also 63.365(d)(2)) as well as for facilities with acid-water scrubbers, the owner or operator shall establish as a site-specific operating parameter either:

I. The maximum ethylene glycol concentration using the procedures described in Condition 7.4.12(c)(i) (see also 63.365(e)(1)) [40 CFR 63.363(d)(2)(i)(A)(1)]; or

II. The maximum liquor tank level using the procedures described in Condition 7.4.12(c)(ii) (see also 40 CFR 63.365(e)(2)) [40 CFR 63.363 (d)(2)(i)(A)(2)].

B. Pursuant to 40 CFR 63.363(d)(2)(ii), following the date on which the initial performance test is completed, the owner or operator of a facility shall comply with one of the following provisions:

For facilities with acid-water scrubbers, operation of the facility with an ethylene glycol concentration in the scrubber liquor in excess of the maximum ethylene glycol concentration or the liquor tank level in excess of the maximum liquor tank level shall constitute a violation of the chamber exhaust vent standard for sources using 10 tons [40 CFR 63.363(d)(2)(ii)(A)].

c. Pursuant to 40 CFR 63.363(f), for facilities complying with the emissions limits under Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) with a control technology other than acid- water scrubbers or catalytic or thermal oxidizers:

i. The owner or operator of the facility shall provide to the Illinois EPA or the USEPA information describing the design and operation of the air pollution control system

including recommendations for the operating parameters to be monitored to indicated proper operation and maintenance of the air pollution control system. Based on this information, the Illinois EPA or the USEPA will determine the site-specific operating parameter(s) to be established during the performance test. During the performance test required in Condition 7.4.7(a) (see also 40 CFR 63.363(a)) using the methods approved in Condition 7.4.12(d) (see also 40 CFR 63.365(g)), the owner or operator shall determine the site-specific operating parameter(s) approved by the Illinois EPA or the USEPA [40 CFR 63.363(f)(1)].

ii. Operation of the facility in a manner that exceeds a site-specific parameter established as a maximum requirement or falls below a site-specific parameter established as a minimum requirement (depending on the parameters monitored) shall constitute a violation of the applicable emissions standard under Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) [40 CFR 63.363(f)(2)].

d. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.4.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

e. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60,

Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA determine that process variables dictate shorter sampling times [35 IAC 218.105 (f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and volumetric flow rates [35 IAC 218.105 (f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105 (f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.4.7 (e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless

approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.4.7(e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.4.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion

of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. Pursuant to 40 CFR 63.364(b), for sterilization facilities complying with Condition 7.4.7(b) (see also 40 CFR 63.363(d)) through the use of an acid-water scrubber, the owner or operator shall either:

i. Sample the scrubber liquor and analyze and record once per week the ethylene glycol concentration of the scrubber liquor using the test methods and procedures in Condition 7.4.12 (c)(i) (see also 40 CFR 63.365(e)(1)). Monitoring is required during a week only if the scrubber unit has been operated [40 CFR 63.364 (b)(1)]; or

ii. Measure and record once per week the level of the scrubber liquor in the recirculation tank. The owner or operator shall install, maintain, and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.) [40 CFR 63.364(b)(2)].

c. For sterilization facilities complying with Condition 7.4.7(b) (see also 40 CFR 63.363(d)) through the use of a control device other than acid-water scrubbers or catalytic or thermal oxidizers, the owner or operator shall monitor the parameters as approved by the Illinois EPA or the USEPA using the methods and procedures in Condition 7.4.12(d) (see also 40 CFR 63.365(g)) [40 CFR 63.364(d)].

d. For sterilization facilities complying with Condition 7.4.7(b)(i) (see also 40 CFR 63.363(d)(1)) by manifolding emissions from the chamber exhaust vent to a control device controlling emissions from another vent type, the owner or operator shall monitor the control device to which emissions from the chamber exhaust vent are manifolded using the appropriate monitoring requirements in Conditions 7.4.8(a) through (c) (see also 40 CFR 63.364(a) through (e)) of this Condition (see also 40 CFR

63.364) and record the monitoring data [40 CFR 63.364(f)].

7.4.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected chamber exhaust vent to demonstrate compliance with Conditions 5.5.1 and 7.4.3, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.4.7, which include the following [Section 39.5(7)(e) of the Act]:

   i. The date, place and time of sampling or measurements;

   ii. The date(s) analyses were performed;

   iii. The company or entity that performed the analyses;

   iv. The analytical techniques or methods used;

   v. The results of such analyses; and

   vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the

information at the source for a period of three years:

i. Control device monitoring data [35 IAC 218.991 (a)(2)(A)];

ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991 (a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages [35 IAC 218.991 (a)(2)(C)].

d. Records addressing use of good operating practices for the acid water scrubber and dry bed reactor:

i. Records for periodic inspection of the acid water scrubber and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

7.4.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected chamber exhaust vent with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10 (e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each

calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and control equipment shall notify the Illinois EPA of any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Continued operation of an affected chamber with a defect in the acid water scrubber that may result in emissions in excess of limits in Condition 7.4.3(c)(i) within 30 days of such an occurrence.

7.4.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.4.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.4.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.4.3(b)(ii) (see also 40 CFR 63.362) shall comply with the performance testing requirements in

40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.4.12(a) through (e) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Efficiency determination at the chamber exhaust vent (not manifolded)*. Pursuant to 40 CFR 63.365(d)(2), the following procedures shall be used to determine the efficiency of a control device used to comply with Condition 7.4.3(b)(ii)(B) (see also 40 CFR 63.362(e)), the chamber exhaust vent standards (without manifolding the chamber exhaust vent emissions to another vent type). For determining the efficiency of non-manifolded chamber exhaust vent control devices, either of the following test methods (Conditions 7.4.12(b)(i) or (ii) (see also 40 CFR 63.365(d)(2)(i) or (ii))) may be used:

i. Pursuant to 40 CFR 63.365(d)(2)(i), the direct interface sampling and analysis procedures described in Method 18, section 7.2 or 7.3, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; these procedures may be used only if a vent may be sampled and analyzed by the GC/FID or GC/PID once per minute for the duration of each cycle when the chamber exhaust vent is operated.

A. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(d)(2)(i)(A)].

B. Follow the procedures in Conditions 7.2.12 (b)(i)(D)(II)(2)(a) through (c) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(2)(i)(B)].

C. Pursuant to 40 CFR 63.365(d)(2)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

D. Repeat the procedures in Conditions 7.4.12 (b)(i)(A) through (C) (see also 40 CFR 63.365(d)(2)(i)(A) through (C)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(2)(i)(D)].

ii. Pursuant to 40 CFR 63.365(d)(2)(ii), the Tedlar bag sampling procedure in section 7.1 of Method 18 may be used to collect samples of inlet and exhaust gas for the duration of each cycle when the chamber exhaust vent is operated.

A. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365 (d)(2)(ii)(A)].

B. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples

shall be analyzed within 8 hours of collection [40 CFR 63.365(d)(2)(ii)(B)].

C. Follow the procedures in Conditions 7.2.12 (b)(i)(D)(II)(2)(b) through (c) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(2)(ii)(C)].

D. Determine control device efficiency (%Eff) using the equation in Condition 7.4.12 (b)(i)(C) (see also 40 CFR 63.365 (d)(2)(i)(C)) [40 CFR 63.365 (d)(2)(ii)(D)].

E. Repeat the procedures in Conditions 7.4.12 (b)(ii)(A) through (D) (see also 40 CFR 63.365(d)(2)(ii)(A) through (D)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(2)(ii)(E)].

iii. In the event that the outlet concentration from the control device is below the detection limit for ethylene oxide for determining the efficiency in Condition 7.4.12(b)(i)(C) or (ii)(D) (see also 40 CFR 63.365(d)(2)(i)(C) or (ii)(D)), the owner or operator shall assume the control device is meeting the standard in Condition 7.4.3(b)(ii)(B) (see also 40 CFR 63.362(e)(1)) if the inlet ethylene oxide concentration is at or below approximately 50 ppmv [40 CFR 63.365(d)(2)(iii)].

c. *Determination of baseline parameters for acid-water scrubbers*. Pursuant to 40 CFR 63.365(e), the procedures in this Condition shall be used to determine the monitored parameters established in Condition 7.4.7(b) (see also 40 CFR 63.363(d)) for acid-water scrubbers and to monitor the parameters as established in Condition 7.4.8(b) (see also 40 CFR 63.364(b)).

i. *Ethylene glycol concentration*. For determining the ethylene glycol concentration, the

facility owner or operator shall establish the maximum ethylene glycol concentration as the ethylene glycol concentration averaged over three test runs; the sampling and analysis procedures in ASTM D 3695-88, Standard Test Method for Volatile Alcohols in Water By Direct Aqueous-Injection Gas Chromatography, shall be used to determine the ethylene glycol concentration [40 CFR 63.365(e)(1)].

ii. *Scrubber liquor tank level*. For determining the scrubber liquor tank level, the sterilization facility owner or operator shall establish the maximum liquor tank level based on a single measurement of the liquor tank level during one test run [40 CFR 63.365(e)(2)].

d. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.4.3(b)(ii)(B) (see also 40 CFR 63.362(e)) with a control device other than an acid-water scrubber or catalytic or thermal oxidation unit shall provide to the Illinois EPA or the USEPA the information requested under Condition 7.4.7(c) (see also 40 CFR 63.363(f)). The owner or operator shall submit: a description of the device; test results collected in accordance with Condition 7.4.7(c) (see also 40 CFR 63.363(f)) verifying the performance of the device for controlling ethylene oxide emissions to the atmosphere to the levels required by the applicable standards; the appropriate operating parameters that will be monitored; and the frequency of measuring and recording to establish continuous compliance with the standards. The monitoring plan submitted identifying the compliance monitoring is subject to the Illinois EPA's or USEPA's approval. The owner or operator of the sterilization facility shall install, calibrate, operate, and maintain the monitor(s) approved by the Illinois EPA or the USEPA based on the information submitted by the owner or operator. The owner or operator shall include in the information submitted to the Illinois EPA or the USEPA proposed performance specifications and quality assurance procedures for their monitors. The Illinois EPA or the USEPA may request further information and

shall approve appropriate test methods and procedures [40 CFR 63.365(g)].

e. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.4.3(b)(ii)(B) (see also 40 CFR 63.362(e)) with a monitoring device or procedure other than a gas chromatograph shall provide to the Illinois EPA or the USEPA information describing the operation of the monitoring device or procedure and the parameter(s) that would indicate proper operation and maintenance of the device or procedure. The Illinois EPA or the USEPA may request further information and will specify appropriate test methods and procedures [40 CFR 63.365(h)].

f. Compliance with Condition 7.4.3(c) is assumed to be achieved by proper operation of the acid water scrubber and dry bed reactor, as addressed by Conditions 7.4.5 and 7.4.9(d).

7.5 Units AC & AR Willowbrook I Aeration Chambers and Aeration Rooms
Controls AWS#2/DBR Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.5.1 Description

After the medical products are loaded onto forklifts, they are transferred to aeration rooms or cells. The sterile products are placed in these heated rooms to allow diffusion of any residual sterilant gas from the products prior to quarantine or shipping. This source's aeration rooms are designed to exhaust 10% of the air volume that is recirculated within the room. The sterile products are maintained in the aeration rooms for at least 18 to 24 hours. Following aeration, the product is moved to a post-production or post-aeration storage area awaiting shipment out by the customer.

7.5.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
AC	Eight (8) Aeration Chambers (Fourteen (14) Pallet Capacity, Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
AR	Three (3) Aeration Rooms (Willowbrook I)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

7.5.3 Applicability Provisions and Applicable Regulations

a. The Aeration Chambers and Aeration Rooms listed in Condition 7.5.2 are “affected aeration rooms” for the purpose of these unit-specific conditions.

b. The affected aeration rooms are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996.

i. Pursuant to 40 CFR 63.360(g), the owner or operator shall comply with the provisions of 40 CFR 63 Subpart O as follows:

All aeration room vents subject to the emissions standards in Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) with an initial startup date before December 6, 2000, no later than December 6, 2000 [40 CFR 63.360(g)(4)].

ii. Pursuant to 40 CFR 63.362, the owner or operator of the affected aeration rooms shall comply with the following:

A. The emission limitations of Condition 7.5.3(b)(ii) (see also 40 CFR 63.362(e)) apply during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

B. Each owner or operator of a sterilization source using 10 tons shall reduce ethylene oxide emissions to the atmosphere from each aeration room vent to a maximum concentration of 1 ppmv or by at least 99 percent, whichever is less stringent, from each aeration room vent. [40 CFR 63.362(d)].

c. The affected aeration rooms are subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:

i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.5.3 (c)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

ii. Emissions of organic material in excess of those permitted by Condition 7.5.3(c)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by any other air pollution control equipment approved by the Illinois EPA and approved by the USEPA as a

SIP revision capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere [35 IAC 218.302(c)].

d. The affected aeration rooms are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.5.3 (d)(i) or (ii) (see also 35 IAC 218.986(a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)].

7.5.4 Non-Applicability of Regulations of Concern

None

7.5.5 Operational and Production Limits and Work Practices

a. The Permittee shall follow good operating practices for the acid water scrubber and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

b. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall not operate the affected aeration rooms with a level of scrubber liquor in the recirculation tank which exceeds 159 inches. This is the liquor tank level at which compliance with Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d)) was demonstrated during the most recent compliance test.

7.5.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected aeration rooms are subject to the following:

a. Emissions and operation of equipment shall not exceed the following limits:

Item of Equipment	Operating Hours (Hours/year)	Volatile Organic Material Emissions lb/hr	Volatile Organic Material Emissions Tons/year
West Aeration Cell	8,760	3.6	15.77

These limits are based on the maximum operating hours and maximum emissions.

b. The above limitations were established in Permit 96120054, pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD). These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 [T1].

c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

7.5.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed in 40 CFR 63.7 according to the applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.5.12(a) through (f) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after

initial startup of the source (the compliance date for the specific source as determined in 40 CFR 63.360(g)) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(c), the following procedures shall be used to determine compliance with the emission limits under Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d)), the aeration room vent standard:

i. Pursuant to 40 CFR 63.363(c)(1), during the performance test required in Condition 7.5.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine either:

A. The concentration of ethylene oxide emitted from the aeration room into the atmosphere (after any control device used to comply with Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d))) using the methods in Condition 7.5.12(b)(i) (see also 40 CFR 63.365(c)(1)) [40 CFR 63.363 (c)(1)(i)]; or

B. The efficiency of the control device used to comply with Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d)) using the test methods and procedures in Condition 7.5.12(c) (see also 40 CFR 63.365(d)(1)) [40 CFR 63.363(c)(1)(ii)].

ii. For facilities seeking to comply with Condition 7.5.7(b)(i)(B) (see also 40 CFR 63.363 (c)(1)(ii)) with catalytic oxidizers or thermal oxidizers, the owner or operator must also establish as a site-specific operating parameter the baseline temperature using the procedures described in Condition 7.5.12(d) (see also 40 CFR 63.365(f)(2)) [40 CFR 63.363(c)(2)].

iii. Pursuant to 40 CFR 63.363(c)(3), following the date on which the initial performance test is completed, the owner or operator of a facility shall comply with the following provision:

For facilities continuously measuring the ethylene oxide concentration emitted from the aeration room (after any control device), operation of the facility with a 3-hour average ethylene oxide concentration in excess of the 1 ppmv ethylene oxide concentration limit shall constitute a violation of the aeration room vent standard [40 CFR 63.363 (c)(3)(i)].

c. Pursuant to 40 CFR 63.363(f), for facilities complying with the emissions limits under Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) with a control technology other than acid- water scrubbers or catalytic or thermal oxidizers:

i. The owner or operator of the facility shall provide to the Illinois EPA or the USEPA information describing the design and operation of the air pollution control system including recommendations for the operating parameters to be monitored to indicated proper operation and maintenance of the air pollution control system. Based on this information, the Illinois EPA or the USEPA will determine the site-specific operating parameter(s) to be established during the performance test. During the performance test required in Condition 7.5.7(a) (see also 40 CFR 63.363(a)) using the methods approved in Condition 7.5.12(d) (see also 40 CFR 63.365(g)), the owner or operator shall determine the site-specific operating parameter(s) approved by the Illinois EPA or the USEPA [40 CFR 63.363(f)(1)].

ii. Operation of the facility in a manner that exceeds a site-specific parameter established as a maximum requirement or falls below a site-specific parameter established as a minimum requirement (depending on the parameters monitored) shall constitute a violation of the applicable emissions standard under Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) [40 CFR 63.363(f)(2)].

d. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.5.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

e. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60, Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA determine that process variables dictate shorter sampling times [35 IAC 218.105 (f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and

volumetric flow rates [35 IAC 218.105 (f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105 (f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.5.7 (e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.5.7(e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.5.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. For sterilization facilities complying with Condition 7.5.7(b) (see also 40 CFR 63.363(c)) through the use of a control device other than acid-water scrubbers or catalytic or thermal oxidizers, the owner or operator shall monitor the parameters as approved by the Illinois EPA or the USEPA using the methods and procedures in Condition 7.5.12(e) (see also 40 CFR 63.365(g)) [40 CFR 63.364(d)].

c. Pursuant to 40 CFR 63.364(e), for sterilization facilities complying with Condition 7.5.7(c)(iii)(A) (see also 40 CFR 63.363(c)(3)(i)) through the use of direct measurement of ethylene oxide concentration, the owner or operator shall follow either Condition 7.5.8(c)(i) or (ii) (see also 40 CFR 63.364(e)(1) or (2)):

i. Measure and record once per hour the ethylene oxide concentration at the outlet to the atmosphere from the aeration room vent after

any control device according to the procedures specified in Condition 7.5.12(b)(i) (see also 40 CFR 63.365(c)(1)). The owner or operator shall compute and record a 3-hour average every third hour. The owner or operator will install, calibrate, operate, and maintain a gas chromatograph consistent with the requirements of performance specification (PS) 9 in 40 CFR part 60, Appendix B, to measure ethylene oxide. The daily calibration requirements of section 7.2 of PS 9 are required only on days when ethylene oxide emissions are vented to the control device from the aeration room vent [40 CFR 63.364(e)(1)].

ii. Measure and record the ethylene oxide concentration in the sterilization chamber immediately before the chamber exhaust is activated according to the procedures specified in Condition 7.5.12(b)(ii) (see also 40 CFR 63.365(c)(2)). The owner or operator shall install, calibrate, operate, and maintain a gas chromatograph consistent with the requirements of PS 9 to measure ethylene oxide concentration. The daily calibration requirements of section 7.2 of PS 9 are required only on days when the chamber exhaust is activated [40 CFR 63.364 (e)(2)].

d. Pursuant to Sections 39.5(7)(b) and (d) of the Act and 40 CFR 63.363(f)(1) and 63.364(d), the Permittee shall measure and record once per week the level of the scrubber liquor in the recirculation tank. The Permittee shall install, maintain, and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.).

7.5.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected aeration room to demonstrate compliance with Conditions 5.5.1 and 7.5.3, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.5.7, which include the following [Section 39.5(7)(e) of the Act]:

   i. The date, place and time of sampling or measurements;

   ii. The date(s) analyses were performed;

   iii. The company or entity that performed the analyses;

   iv. The analytical techniques or methods used;

   v. The results of such analyses; and

   vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

   i. Control device monitoring data [35 IAC 218.991 (a)(2)(A)];

   ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991 (a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages [35 IAC 218.991 (a)(2)(C)].

d. Records addressing use of good operating practices for the acid water scrubber and dry bed reactor:

i. Records for periodic inspection of the acid water scrubber and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

iii. The level of the scrubber liquor in the recirculation tank shall be recorded once per week.

e. The type and amount of sterilant gas used for each sterilization chamber associated with the affected aeration rooms, lb/mo and ton/yr; and

f. The monthly and aggregate annual VOM and HAP emissions from the affected aeration rooms based on the sterilant gas usage and air pollution control equipment efficiencies, with supporting calculations.

7.5.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected aeration room with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10

(e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and control equipment shall notify the Illinois EPA of any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Continued operation of an affected chamber with a defect in the acid water scrubber that may result in emissions in excess of limits in Conditions 7.5.3 (c)(i) and/or 7.5.6 within 30 days of such an occurrence.

d. Emissions of VOM in excess of limits in Condition 7.5.6 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

7.5.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.5.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.5.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.5.3(b)(ii) (see also 40 CFR 63.362) shall comply with the performance testing requirements in 40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.5.12(a) through (f) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Concentration determination*. Pursuant to 40 CFR 63.365(c), the following procedures shall be used to determine the ethylene oxide concentration as the monitored parameter established in Condition 7.5.7(b) (see also 40 CFR 63.363(c)) for aeration room emissions and to continuously monitor the ethylene oxide concentration for aeration room vents as established in Condition 7.5.8(c)(i) (see also 40 CFR 63.364(e)(1)) and to monitor the ethylene oxide concentration before activation of the chamber exhaust for chamber exhaust vents as established in Condition 7.5.8(c)(ii) (see also 40 CFR 63.364(e)(2)).

i. *Aeration room vent.* For determining the ethylene oxide concentration for aeration room emissions, the procedures outlined in section 7.2 of Method 18 shall be used. Repeat these procedures three times. The arithmetic average of the ethylene oxide concentration of the three test runs shall determine the overall outlet ethylene oxide concentration from the control device. Compliance testing of gas chromatographs shall be performed using PS 9 in 40 CFR part 60 [40 CFR 63.365(c)(1)].

ii. *Sterilization chamber prior to activation of the chamber exhaust*. For determining the ethylene oxide concentration in the sterilization chamber before activation of the chamber exhaust, the procedures outlined in sections 7.2 or 7.3 of Method 18 shall be used. The ethylene oxide concentration from

one test run shall determine the outlet ethylene oxide concentration from the chamber exhaust vent. Compliance testing of gas chromatographs shall be performed using PS 9 in 40 CFR part 60 [40 CFR 63.365(c)(2)].

c. *Efficiency determination at the aeration room vent*. Pursuant to 40 CFR 63.365(d)(1), the following procedures shall be used to determine the efficiency of a control device used to comply with Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d)), the aeration room vent standard. For determining the efficiency of aeration room vent control devices, either of the following test methods (Condition 7.5.12 (c)(i) or (ii) (see also 40 CFR 63.365(d)(1)(i) or (ii))) may be used:

i. Pursuant to 40 CFR 63.365(d)(1)(i), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; this procedure may be used only if a vent may be sampled and analyzed by the GC/FID or GC/PID once every 5 minutes throughout a 1-hour test run.

A. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(d)(1)(i)(A)].

B. Follow the procedures in Conditions 7.1.12 (b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(1)(i)(B)].

C. Pursuant to 40 CFR 63.365(d)(1)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

D. Repeat the procedures in Conditions 7.5.12 (c)(i)(A) through (C) (see also 40 CFR 63.365(d)(1)(i)(A) through (C)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(1)(i)(D)].

ii. Pursuant to 40 CFR 63.365(d)(1)(ii), the Tedlar bag sampling procedure in section 7.1 of Method 18 may be used to collect samples of inlet and exhaust gas throughout a 1-hour test run.

A. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365 (d)(1)(ii)(A)].

B. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365(d)(1)(ii)(B)].

C. Follow the procedures in Conditions 7.1.12 (b)(i)(D)(II)(2)(b) through (d) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(1)(ii)(C)].

D. Determine control device efficiency (%Eff) using the equation in Condition 7.5.12 (c)(i)(C) (see also 40 CFR 63.365 (d)(1)(i)(C)) [40 CFR 63.365 (d)(1)(ii)(D)].

E. Repeat the procedures in Conditions 7.5.12 (c)(ii)(A) through (D) (see also 40 CFR 63.365(d)(1)(ii)(A) through (D)) three times. The arithmetic average percent efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(1)(ii)(E)].

d. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.5.3(b)(ii)(B) (see also 40 CFR 63.362(d)) with a control device other than an acid-water scrubber or catalytic or thermal oxidation unit shall provide to the Illinois EPA or the USEPA the information requested under Condition 7.5.7(d) (see also 40 CFR 63.363(f)). The owner or operator shall submit: a description of the device; test results collected in accordance with Condition 7.5.7(d) (see also 40 CFR 63.363(f)) verifying the performance of the device for controlling ethylene oxide emissions to the atmosphere to the levels required by the applicable standards; the appropriate operating parameters that will be monitored; and the frequency of measuring and recording to establish continuous compliance with the standards. The monitoring plan submitted identifying the compliance monitoring is subject to the Illinois EPA's or USEPA's approval. The owner or operator of the sterilization facility shall install, calibrate, operate, and maintain the monitor(s) approved by the Illinois EPA or the USEPA based on the information submitted by the owner or operator. The owner or operator shall include in the information submitted to the Illinois EPA or the USEPA proposed performance specifications and quality

assurance procedures for their monitors. The Illinois EPA or the USEPA may request further information and shall approve appropriate test methods and procedures [40 CFR 63.365(g)].

e. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.5.7(b)(ii) (see also 40 CFR 63.362(d)) with a monitoring device or procedure other than a gas chromatograph shall provide to the Illinois EPA or the USEPA information describing the operation of the monitoring device or procedure and the parameter(s) that would indicate proper operation and maintenance of the device or procedure. The Illinois EPA or the USEPA may request further information and will specify appropriate test methods and procedures [40 CFR 63.365(h)].

f. To determine compliance with Conditions 5.5.1, 7.5.3(c), and 7.5.6, VOM emissions from the affected aeration rooms shall be calculated based on the following:

VOM Emissions (lb) = (Sterilant Gas Usage, lb) x (0.05 lb Loss to Aeration Rooms/lb Sterilant Gas Usage) x [1 - (Overall Acid Water Scrubber/Dry Bed Reactor Efficiency* (%)/100)]

*As specified by manufacturer or vendor of the acid water scrubber and dry bed reactor or testing pursuant to Condition 7.5.7.

7.6 Units WBII-AC & WBII-AR Willowbrook II Aeration Rooms
Controls WBII-S/DBR Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.6.1 Description

After the medical products are loaded onto forklifts, they are transferred to one of sixteen aeration rooms or cells. The sterile products are placed in these heated rooms to allow diffusion of any residual sterilant gas from the products prior to quarantine or shipping. This source's aeration rooms are designed to exhaust 10% of the air volume that is recirculated within the room. The sterile products are maintained in the aeration rooms for at least 18 to 24 hours. Following aeration, the product is moved to a post-production or post-aeration storage area awaiting shipment out by the customer.

7.6.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
WBII-AR	Two (2) Aeration Rooms (Willowbrook II)	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor

7.6.3 Applicability Provisions and Applicable Regulations

a. The Aeration Room listed in Condition 7.6.2 are “affected aeration rooms” for the purpose of these unit-specific conditions.

b. The affected aeration rooms are subject to the NESHAP for Ethylene Oxide Emissions Standards for Sterilization Facilities, 40 CFR 63 Subparts A and O because the source uses 907 kg (1 ton) or more of ethylene oxide within any consecutive 12-month period after December 6, 1996.

i. Pursuant to 40 CFR 63.360(g), the owner or operator shall comply with the provisions of 40 CFR 63 Subpart O as follows:

All aeration room vents subject to the emissions standards in Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) with an initial

startup date before December 6, 2000, no later than December 6, 2000 [40 CFR 63.360(g)(4)].

ii. Pursuant to 40 CFR 63.362, the owner or operator of the affected aeration rooms shall comply with the following:

A. The emission limitations of Condition 7.6.3(b)(ii) (see also 40 CFR 63.362(e)) apply during sterilization operation. The emissions limitations do not apply during periods of malfunction [40 CFR 63.362(b)].

B. Each owner or operator of a sterilization source using 10 tons shall reduce ethylene oxide emissions to the atmosphere from each aeration room vent to a maximum concentration of 1 ppmv or by at least 99 percent, whichever is less stringent, from each aeration room vent. [40 CFR 63.362(d)].

c. The affected aeration rooms are subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:

i. No person shall cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 7.6.3 (c)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of 35 IAC 218 Subpart G shall apply only to photochemically reactive material [35 IAC 218.301].

ii. Emissions of organic material in excess of those permitted by Condition 7.6.3(c)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by any other air pollution control equipment approved by the Illinois EPA and approved by the USEPA as a SIP revision capable of reducing by 85 percent or more the uncontrolled organic material that would be otherwise emitted to the atmosphere [35 IAC 218.302(c)].

d. The affected aeration rooms are subject to 35 IAC 218 Subpart TT, Other Emission Units, which provides that, pursuant to 35 IAC 218.986, every owner or operator of an emission unit subject to 35 IAC 218 Subpart TT shall comply with the requirements of Conditions 7.6.3 (d)(i) or (ii) (see also 35 IAC 218.986(a), (b), (c), (d) or (e)):

i. Emission capture and control equipment which achieves an overall reduction in uncontrolled VOM emissions of at least 81 percent from each emission unit [35 IAC 218.986(a)]; or

ii. An equivalent alternative control plan which has been approved by the Illinois EPA and USEPA in a federally enforceable permit or as a SIP revision [35 IAC 218.986(c)].

7.6.4 Non-Applicability of Regulations of Concern

None

7.6.5 Operational and Production Limits and Work Practices

a. The Permittee shall follow good operating practices for the acid water scrubber and dry bed reactor, including periodic inspection, routine maintenance and prompt repair of defects.

b. Pursuant to Section 39.5(7)(a) of the Act, the Permittee shall not:

i. Operate the affected aeration rooms with a level of scrubber liquor in the recirculation tank which exceeds 202 inches. This is the liquor tank level at which compliance with Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)) was demonstrated during the most recent compliance test.

ii. Exhaust more than one (1) of the affected aeration rooms to the acid water scrubber and dry bed reactor at a time. This is the maximum number of aeration rooms exhausted into the acid water scrubber and dry bed

reactor at which compliance with Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)) was demonstrated during the most recent compliance test.

7.6.6 Emission Limitations

In addition to Condition 5.2.2 and the source wide emission limitations in Condition 5.5, the affected aeration rooms are subject to the following:

a. Emissions and operation of the two (2) aeration rooms shall not exceed the following limits:

	Material Usage		VOM Emissions	
Material	(lb/mo)	(Ton/yr)	(lb/mo)	(Ton/yr)
Ethylene Oxide	2,000	6.00	20.00	0.06
Propylene Oxide	13.33	0.04	0.13	0.01
Totals				0.07

	HAP Emissions (e.g., ethylene oxide, propylene oxide)	
Material	lb/mo	Ton/yr
Ethylene Oxide	20.00	0.06
Propylene Oxide	0.13	0.01
Totals		0.07

These limits are based on representations of the maximum actual emissions based on the maximum sterilant gas usage and a minimum overall control efficiency of 99% for the acid scrubber and dry bed system.

b. The above limitations were established in Permit 99040046, pursuant to 35 IAC Part 203. These limits ensure that the construction and/or modification addressed in the aforementioned permit does not constitute a new major source or major modification pursuant to Title I of the CAA, specifically 35 IAC Part 203 [T1].

c. The emissions of Hazardous Air Pollutants (HAP) as listed in Section 112(b) of the CAA from the five (5) sterilization chambers and the two (2) aeration rooms

shall be less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result of this condition, this permit is issued based on the emissions from the five (5) sterilization chambers and the two (2) aeration rooms not triggering the requirements of Section 112(g) of the CAA.

d. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

7.6.7 Testing Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) shall conduct an initial performance test using the procedures listed in 40 CFR 63.7 according to the applicability in Table 1 of 40 CFR 63.360, the procedures listed in this Condition (see also 40 CFR 63.363), and the test methods listed in Condition 7.6.12(a) through (f) (see also 40 CFR 63.365) [40 CFR 63.363(a)(1)].

ii. The owner or operator of all sources subject to these emissions standards shall complete the performance test within 180 days after initial startup of the source (the compliance date for the specific source as determined in 40 CFR 63.360(g)) [40 CFR 63.363(a)(2)].

b. Pursuant to 40 CFR 63.363(c), the following procedures shall be used to determine compliance with the emission limits under Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)), the aeration room vent standard:

i. Pursuant to 40 CFR 63.363(c)(1), during the performance test required in Condition 7.6.7(a) (see also 40 CFR 63.363(a)), the owner or operator shall determine either:

A. The concentration of ethylene oxide emitted from the aeration room into the

atmosphere (after any control device used to comply with Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d))) using the methods in Condition 7.6.12(b)(i) (see also 40 CFR 63.365(c)(1)) [40 CFR 63.363 (c)(1)(i)]; or

B. The efficiency of the control device used to comply with Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)) using the test methods and procedures in Condition 7.6.12(c) (see also 40 CFR 63.365(d)(1)) [40 CFR 63.363(c)(1)(ii)].

ii. For facilities seeking to comply with Condition 7.6.7(b)(i)(B) (see also 40 CFR 63.363 (c)(1)(ii)) with catalytic oxidizers or thermal oxidizers, the owner or operator must also establish as a site-specific operating parameter the baseline temperature using the procedures described in Condition 7.6.12(d) (see also 40 CFR 63.365(f)(2)) [40 CFR 63.363(c)(2)].

iii. Pursuant to 40 CFR 63.363(c)(3), following the date on which the initial performance test is completed, the owner or operator of a facility shall comply with the following provision:

For facilities continuously measuring the ethylene oxide concentration emitted from the aeration room (after any control device), operation of the facility with a 3-hour average ethylene oxide concentration in excess of the 1 ppmv ethylene oxide concentration limit shall constitute a violation of the aeration room vent standard [40 CFR 63.363 (c)(3)(i)].

c. Pursuant to 40 CFR 63.363(f), for facilities complying with the emissions limits under Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) with a control technology other than acid- water scrubbers or catalytic or thermal oxidizers:

i. The owner or operator of the facility shall provide to the Illinois EPA or the USEPA information describing the design and operation of the air pollution control system including recommendations for the operating parameters to be monitored to indicated proper operation and maintenance of the air pollution control system. Based on this information, the Illinois EPA or the USEPA will determine the site-specific operating parameter(s) to be established during the performance test. During the performance test required in Condition 7.6.7(a) (see also 40 CFR 63.363(a)) using the methods approved in Condition 7.6.12(d) (see also 40 CFR 63.365(g)), the owner or operator shall determine the site-specific operating parameter(s) approved by the Illinois EPA or the USEPA [40 CFR 63.363(f)(1)].

ii. Operation of the facility in a manner that exceeds a site-specific parameter established as a maximum requirement or falls below a site-specific parameter established as a minimum requirement (depending on the parameters monitored) shall constitute a violation of the applicable emissions standard under Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) [40 CFR 63.363(f)(2)].

d. When in the opinion of the Illinois EPA it is necessary to conduct testing to demonstrate compliance with Condition 7.6.3(d) (see also 35 IAC 218.986), the owner or operator of a VOM emission unit subject to the requirements of 35 IAC 218 Subpart TT shall, at his own expense, conduct such tests in accordance with the applicable test methods and procedures specified in 35 IAC 218.105 [35 IAC 218.968(a)].

e. Pursuant to 35 IAC 218.105(d)(1) and Section 39.5(7)(b) of the Act, the control device efficiency shall be determined by simultaneously measuring the inlet and outlet gas phase VOM concentrations and gas volumetric flow rates in accordance with the gas

phase test methods specified below (see also 35 IAC 218.105(f)):

i. Volatile Organic Material Gas Phase Source Test Methods The methods in 40 CFR Part 60, Appendix A, delineated below shall be used to determine control device efficiencies [35 IAC 218.105(f)].

A. CFR Part 60, Appendix A, Method 18, 25 or 25A, as appropriate to the conditions at the site, shall be used to determine VOM concentration. Method selection shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. The test shall consist of three separate runs, each lasting a minimum of 60 min, unless the Illinois EPA and the USEPA determine that process variables dictate shorter sampling times [35 IAC 218.105 (f)(1)].

B. 40 CFR Part 60, Appendix A, Method 1 or 1A shall be used for sample and velocity traverses [35 IAC 218.105(f)(2)].

C. 40 CFR Part 60, Appendix A, Method 2, 2A, 2C or 2D shall be used for velocity and volumetric flow rates [35 IAC 218.105 (f)(3)].

D. 40 CFR Part 60, Appendix A, Method 3 shall be used for gas analysis [35 IAC 218.105 (f)(4)].

E. 40 CFR Part 60, Appendix A, Method 4 shall be used for stack gas moisture [35 IAC 218.105(f)(5)].

F. 40 CFR Part 60, Appendix A, Methods 2, 2A, 2C, 2D, 3 and 4 shall be performed, as applicable, at least twice during each test run [35 IAC 218.105(f)(6)].

G. Use of an adaptation to any of the test methods specified in Conditions 7.6.7 (e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) may not be used unless approved by the Illinois EPA and the USEPA on a case by case basis. An owner or operator must submit sufficient documentation for the Illinois EPA and the USEPA to find that the test methods specified in Conditions 7.6.7(e)(i)(A), (B), (C), (D), (E) and (F) (see also 35 IAC 218.105(f)(1), (2), (3), (4), (5) and (6)) will yield inaccurate results and that the proposed adaptation is appropriate [35 IAC 218.105(f)(7)].

ii. Notwithstanding other requirements of 35 IAC Part 218, upon request of the Illinois EPA where it is necessary to demonstrate compliance, an owner or operator of an emission unit which is subject to 35 IAC Part 218 shall, at his own expense, conduct tests in accordance with the applicable test methods and procedures specific in 35 IAC Part 218. Nothing in this Condition (see also 35 IAC 218.105) shall limit the authority of the USEPA pursuant to the CAA, as amended, to require testing [35 IAC 218.105(i)].

7.6.8 Monitoring Requirements

a. i. The owner or operator of a source subject to emissions standards in Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) shall comply with the monitoring requirements in 40 CFR 63.8, according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.364) [40 CFR 63.364(a)(1)].

ii. Each owner or operator of an ethylene oxide sterilization facility subject to these emissions standards shall monitor the parameters specified in this Condition (see also 40 CFR 63.364). All monitoring equipment shall be installed such that representative

measurements of emissions or process parameters from the source are obtained. For monitoring equipment purchased from a vendor, verification of the operational status of the monitoring equipment shall include completion of the manufacturer's written specifications or recommendations for installation, operation, and calibration of the system [40 CFR 63.364(a)(2)].

b. For sterilization facilities complying with Condition 7.6.7(b) (see also 40 CFR 63.363(c)) through the use of a control device other than acid-water scrubbers or catalytic or thermal oxidizers, the owner or operator shall monitor the parameters as approved by the Illinois EPA or the USEPA using the methods and procedures in Condition 7.6.12(e) (see also 40 CFR 63.365(g)) [40 CFR 63.364(d)].

c. Pursuant to 40 CFR 63.364(e), for sterilization facilities complying with Condition 7.6.7(c)(iii)(A) (see also 40 CFR 63.363(c)(3)(i)) through the use of direct measurement of ethylene oxide concentration, the owner or operator shall follow either Condition 7.6.8(c)(i) or (ii) (see also 40 CFR 63.364(e)(1) or (2)):

i. Measure and record once per hour the ethylene oxide concentration at the outlet to the atmosphere from the aeration room vent after any control device according to the procedures specified in Condition 7.6.12(b)(i) (see also 40 CFR 63.365(c)(1)). The owner or operator shall compute and record a 3-hour average every third hour. The owner or operator will install, calibrate, operate, and maintain a gas chromatograph consistent with the requirements of performance specification (PS) 9 in 40 CFR part 60, Appendix B, to measure ethylene oxide. The daily calibration requirements of section 7.2 of PS 9 are required only on days when ethylene oxide emissions are vented to the control device from the aeration room vent [40 CFR 63.364(e)(1)].

ii. Measure and record the ethylene oxide concentration in the sterilization chamber immediately before the chamber exhaust is activated according to the procedures specified in Condition 7.6.12(b)(ii) (see also 40 CFR 63.365(c)(2)). The owner or operator shall install, calibrate, operate, and maintain a gas chromatograph consistent with the requirements of PS 9 to measure ethylene oxide concentration. The daily calibration requirements of section 7.2 of PS 9 are required only on days when the chamber exhaust is activated [40 CFR 63.364(e)(2)].

d. Pursuant to Section 39.5(7)(d) of the Act and 40 CFR 63.363(f)(1) and 63.364(d), the Permittee shall measure and record once per week the level of the scrubber liquor in the recirculation tank. The Permittee shall install, maintain, and use a liquid level indicator to measure the scrubber liquor tank level (i.e., a marker on the tank wall, a dipstick, a magnetic indicator, etc.).

7.6.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected aeration room to demonstrate compliance with Conditions 5.5.1 and 7.6.3, pursuant to Section 39.5(7)(b) of the Act:

a. The owner or operator of a source subject to the emissions standards in Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) shall comply with the recordkeeping requirements in 40 CFR 63.10(b) and (c), according to the applicability in Table 1 of 40 CFR 63.360, and in this Condition (see also 40 CFR 63.367) [40 CFR 63.367(a)].

b. Records of the testing of the efficiency of each capture system and control device pursuant to Condition 7.6.7, which include the following [Section 39.5(7)(e) of the Act]:

i. The date, place and time of sampling or measurements;

ii. The date(s) analyses were performed;

iii. The company or entity that performed the analyses;

iv. The analytical techniques or methods used;

v. The results of such analyses; and

vi. The operating conditions as existing at the time of sampling or measurement.

c. Pursuant to 35 IAC 218.991(a)(2), any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart, TT and complying by the use of emission capture and control equipment shall collect and record all of the following information each day and maintain the information at the source for a period of three years:

i. Control device monitoring data [35 IAC 218.991(a)(2)(A)];

ii. A log of operating time for the capture system, control device, monitoring equipment and the associated emission source [35 IAC 218.991(a)(2)(B)]; and

iii. A maintenance log for the capture system, control device and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages [35 IAC 218.991(a)(2)(C)].

d. Records addressing use of good operating practices for the acid water scrubber and dry bed reactor:

i. Records for periodic inspection of the acid water scrubber and dry bed reactor with date, individual performing the inspection, and nature of inspection; and

ii. Records for prompt repair of defects, with identification and description of defect, effect on emissions, date identified, date repaired, and nature of repair.

iii. The level of the scrubber liquor in the recirculation tank shall be recorded once per week.

e. The type and amount of sterilant gas used for each sterilization chamber associated with the affected aeration rooms, lb/mo and ton/yr; and

f. The monthly and aggregate annual VOM and HAP emissions from the affected aeration rooms based on the sterilant gas usage and air pollution control equipment efficiencies, with supporting calculations.

7.6.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected aeration room with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

a. *Content and submittal dates for excess emissions and monitoring system performance reports*. All excess emissions and monitoring system performance reports and all summary reports, if required per 40 CFR 63.10 (e)(3)(vii) and (viii), shall be delivered or postmarked within 30 days following the end of each calendar half or quarter as appropriate (see 40 CFR 63.10(e)(3)(i) through (iv) for applicability). Written reports of excess emissions or exceedances of process or control system parameters shall include all information required in 40 CFR 63.10(c)(5) through (13) as applicable in Table 1 of 40 CFR 63.360 and information from any calibration tests in which the monitoring equipment is not in compliance with PS-9 or the method used for temperature calibration. The written report shall also include the name, title, and signature of the responsible official who is certifying the accuracy of the report. When no excess emissions or exceedances have

occurred or monitoring equipment has not been inoperative, repaired, or adjusted, such information shall be stated in the report [40 CFR 63.366(a)(3)].

b. Any owner or operator of a VOM emission unit which is subject to the requirements of 35 IAC 218 Subpart TT and complying by the use of emission capture and control equipment shall notify the Illinois EPA of any violation of the requirements of 35 IAC 218 Subpart TT by sending a copy of any record showing a violation to the Illinois EPA within 30 days following the occurrence of the violation [35 IAC 218.991(a)(3)(A)];

c. Continued operation of an affected chamber with a defect in the acid water scrubber that may result in emissions in excess of limits in Conditions 7.6.3 (c)(i) and/or 7.6.6 within 30 days of such an occurrence.

d. Emissions of VOM in excess of limits in Condition 7.6.6 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

7.6.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.6.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.6.9 and the emission factors and formulas listed below:

a. *Performance testing*. The owner or operator of a source subject to the emissions standards in Condition 7.6.3(b)(ii) (see also 40 CFR 63.362) shall comply with the performance testing requirements in 40 CFR 63.7, according to the applicability in Table 1 of 40 CFR 63.360, and in Condition 7.6.12(a) through (f) (see also 40 CFR 63.365) [40 CFR 63.365(a)].

b. *Concentration determination*. Pursuant to 40 CFR 63.365(c), the following procedures shall be used to

determine the ethylene oxide concentration as the monitored parameter established in Condition 7.6.7(b) (see also 40 CFR 63.363(c)) for aeration room emissions and to continuously monitor the ethylene oxide concentration for aeration room vents as established in Condition 7.6.8(c)(i) (see also 40 CFR 63.364(e)(1)) and to monitor the ethylene oxide concentration before activation of the chamber exhaust for chamber exhaust vents as established in Condition 7.6.8(c)(ii) (see also 40 CFR 63.364(e)(2)).

i. *Aeration room vent.* For determining the ethylene oxide concentration for aeration room emissions, the procedures outlined in section 7.2 of Method 18 shall be used. Repeat these procedures three times. The arithmetic average of the ethylene oxide concentration of the three test runs shall determine the overall outlet ethylene oxide concentration from the control device. Compliance testing of gas chromatographs shall be performed using PS 9 in 40 CFR part 60 [40 CFR 63.365(c)(1)].

ii. *Sterilization chamber prior to activation of the chamber exhaust*. For determining the ethylene oxide concentration in the sterilization chamber before activation of the chamber exhaust, the procedures outlined in sections 7.2 or 7.3 of Method 18 shall be used. The ethylene oxide concentration from one test run shall determine the outlet ethylene oxide concentration from the chamber exhaust vent. Compliance testing of gas chromatographs shall be performed using PS 9 in 40 CFR part 60 [40 CFR 63.365(c)(2)].

c. *Efficiency determination at the aeration room vent*. Pursuant to 40 CFR 63.365(d)(1), the following procedures shall be used to determine the efficiency of a control device used to comply with Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)), the aeration room vent standard. For determining the efficiency of aeration room vent control devices, either of the following test methods (Condition

7.6.12 (c)(i) or (ii) (see also 40 CFR 63.365(d)(1)(i) or (ii))) may be used:

i. Pursuant to 40 CFR 63.365(d)(1)(i), the direct interface sampling and analysis procedure described in Method 18, section 7.2, may be used to continuously monitor ethylene oxide concentration at the inlet and outlet of the control device using a GC/FID or GC/PID; this procedure may be used only if a vent may be sampled and analyzed by the GC/FID or GC/PID once every 5 minutes throughout a 1-hour test run.

A. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the sample [40 CFR 63.365(d)(1)(i)(A)].

B. Follow the procedures in Conditions 7.2.12 (b)(i)(D)(II)(2)(b) through (c) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(1)(i)(B)].

C. Pursuant to 40 CFR 63.365(d)(1)(i)(C), determine control device efficiency (%Eff) using the following equation:

$$\%Eff = \frac{W_i - W_o}{W_i} \times 100$$

where:

%Eff = percent efficiency

W_i = mass flow rate into the control device

W_o = mass flow rate out of the control device

D. Repeat the procedures in Conditions 7.6.12 (c)(i)(A) through (C) (see also 40 CFR 63.365(d)(1)(i)(A) through (C)) three times. The arithmetic average percent

efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(1)(i)(D)].

ii. Pursuant to 40 CFR 63.365(d)(1)(ii), the Tedlar bag sampling procedure in section 7.1 of Method 18 may be used to collect samples of inlet and exhaust gas throughout a 1-hour test run.

A. Continuously sample a slipstream of the control device inlet and outlet into a Tedlar bag by having a Tedlar bag attached to the slipstream for the entire duration of the run for an integrated bag sample. Whenever a Tedlar bag is full, a new bag must be reattached immediately. Note the time the bag is changed so the sample time and corresponding flow rates can be determined for each bag [40 CFR 63.365 (d)(1)(ii)(A)].

B. Follow the procedures in section 6 of Method 18 and choose the appropriate column, analytical apparatus, and calibration gases for the analysis of the bag samples collected. The bag samples shall be analyzed within 8 hours of collection [40 CFR 63.365(d)(1)(ii)(B)].

C. Follow the procedures in Conditions 7.2.12 (b)(i)(D)(II)(2)(b) through (c) (see also 40 CFR 63.365(b)(1)(iv)(B)(2)(ii) through (iv)) [40 CFR 63.365(d)(1)(ii)(C)].

D. Determine control device efficiency (%Eff) using the equation in Condition 7.6.12 (c)(i)(C) (see also 40 CFR 63.365 (d)(1)(i)(C)) [40 CFR 63.365 (d)(1)(ii)(D)].

E. Repeat the procedures in Conditions 7.6.12 (c)(ii)(A) through (D) (see also 40 CFR 63.365(d)(1)(ii)(A) through (D)) three times. The arithmetic average percent

efficiency of the three runs shall determine the overall efficiency of the control device [40 CFR 63.365 (d)(1)(ii)(E)].

d. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.6.3(b)(ii)(B) (see also 40 CFR 63.362(d)) with a control device other than an acid-water scrubber or catalytic or thermal oxidation unit shall provide to the Illinois EPA or the USEPA the information requested under Condition 7.6.7(d) (see also 40 CFR 63.363(f)). The owner or operator shall submit: a description of the device; test results collected in accordance with Condition 7.6.7(d) (see also 40 CFR 63.363(f)) verifying the performance of the device for controlling ethylene oxide emissions to the atmosphere to the levels required by the applicable standards; the appropriate operating parameters that will be monitored; and the frequency of measuring and recording to establish continuous compliance with the standards. The monitoring plan submitted identifying the compliance monitoring is subject to the Illinois EPA's or USEPA's approval. The owner or operator of the sterilization facility shall install, calibrate, operate, and maintain the monitor(s) approved by the Illinois EPA or the USEPA based on the information submitted by the owner or operator. The owner or operator shall include in the information submitted to the Illinois EPA or the USEPA proposed performance specifications and quality assurance procedures for their monitors. The Illinois EPA or the USEPA may request further information and shall approve appropriate test methods and procedures [40 CFR 63.365(g)].

e. An owner or operator of a sterilization facility seeking to demonstrate compliance with the standards found at Condition 7.6.7(b)(ii) (see also 40 CFR 63.362(d)) with a monitoring device or procedure other than a gas chromatograph shall provide to the Illinois EPA or the USEPA information describing the operation of the monitoring device or procedure and the parameter(s) that would indicate proper operation and maintenance of the device or procedure. The Illinois EPA or the USEPA may request further

information and will specify appropriate test methods and procedures [40 CFR 63.365(h)].

f. To determine compliance with Conditions 5.5.1, 7.6.3(c), and 7.6.6, VOM emissions from the affected aeration rooms shall be calculated based on the following:

VOM Emissions (lb) = (Sterilant Gas Usage, lb) x (0.05 lb Loss to Aeration Rooms/lb Sterilant Gas Usage) x [1 - (Overall Acid Water Scrubber/Dry Bed Reactor Efficiency* (%)/100)]

*As specified by manufacturer or vendor of the acid water scrubber and dry bed reactor or testing pursuant to Condition 7.6.7.

7.7 Unit WBI-BOILER-1 Willowbrook I Boiler #1

7.7.1 Description

A natural gas-fired boiler is used at the source to generate steam for use in sterilization of medical supplies and spices.

7.7.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Boiler-1	Lattner Model HRT-60 Natural Gas-Fired Boiler (Boiler-1, 2.5 mmBtu/hr, Willowbrook I)	None

7.7.3 Applicability Provisions and Applicable Regulations

a. Boiler-1 is an “affected boilers” for the purpose of these unit-specific conditions.

b. The affected boiler is subject to the emission limits identified in Condition 5.2.2.

7.7.4 Non-Applicability of Regulations of Concern

a. The New Source Performance Standard for Small-Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc, applies to units that have a maximum design heat input capacity of 29 MW (100 mmBtu/hr) or less, but greater than or equal to 2.9 MW (10 mmBtu/hr). The affected boiler has a maximum design heat input capacity of less than 2.9 MW (10 mmBtu/hr), therefore, this regulation does not apply.

b. The affected boiler is not subject to 35 IAC 216.121, emissions of carbon monoxide from fuel combustion emission units, because the actual heat input of the affected boiler is less than 2.9 MW (10 mmBtu/hr).

c. The affected boiler is not subject to 35 IAC 217.121, emissions of nitrogen oxides from new fuel combustion emission sources, because the actual heat input of

the affected boiler is less than 73.2 MW (250 mmBtu/hr).

d. Pursuant to 35 IAC 218.303, fuel combustion emission units are not subject to 35 IAC 218.301, use of organic material.

7.7.5 Operational and Production Limits and Work Practices

The affected boiler shall only be operated with natural gas as the fuel.

7.7.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include these units.

7.7.7 Testing Requirements

None

7.7.8 Monitoring Requirements

None

7.7.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for the affected boiler to demonstrate compliance with Conditions 5.5.1 and 7.7.3, pursuant to Section 39.5(7)(b) of the Act:

a. Records of the fuel usage for the affected boiler, Mft^3/mo and Mft^3/yr; and

b. Records of the monthly and annual aggregate NO_x, PM, SO_2, and VOM emissions from the affected boiler shall be maintained, based on fuel consumption and the applicable emission factors, with supporting calculations.

7.7.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected boiler with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

N/A

7.7.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.7.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.7.9 and the emission factors and formulas listed below:

To determine compliance with Condition 5.5.1, emissions from the affected boiler shall be calculated based on the following emission factors:

Pollutant	Emission Factor (lb/Mft^3)
NO_x	100
PM	7.6
SO_2	0.6
VOM	5.5

These are the emission factors for uncontrolled natural gas combustion in small boilers (< 100 mmBtu/hr), Tables 1.4-1 and 1.4-2, AP-42, Volume I, Fifth Edition, Supplement D, March, 1998.

Boiler Emissions (lb) = (Natural Gas Consumed, Mft^3)
x (The Appropriate Emission Factor, lb/Mft^3)

7.8 Units WBII-BOILERS Willowbrook II Boiler #1 and #2

7.8.1 Description

Natural gas-fired boilers are used at the source to generate steam for use in sterilization of medical supplies and spices.

7.8.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
WBII-Boiler-1	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-1, 3.3 mmBtu/hr, Willowbrook II)	None
WBII-Boiler-2	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-2, 3.3 mmBtu/hr, Willowbrook II)	None

7.8.3 Applicability Provisions and Applicable Regulations

a. Willowbrook II Boiler-1 and Willowbrook II Boiler-2, are “affected boilers” for the purpose of these unit-specific conditions.

b. Each affected boiler is subject to the emission limits identified in Condition 5.2.2.

7.8.4 Non-Applicability of Regulations of Concern

a. The New Source Performance Standard for Small-Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart Dc, applies to units that have a maximum design heat input capacity of 29 MW (100 mmBtu/hr) or less, but greater than or equal to 2.9 MW (10 mmBtu/hr). Each affected boiler has a maximum design heat input capacity of less than 2.9 MW (10 mmBtu/hr), therefore, this regulation does not apply.

b. The affected boilers are not subject to 35 IAC 216.121, emissions of carbon monoxide from fuel combustion emission units, because the actual heat input of each affected boiler is less than 2.9 MW (10 mmBtu/hr).

c. The affected boilers are not subject to 35 IAC 217.121, emissions of nitrogen oxides from new fuel combustion emission sources, because the actual heat input of each affected boiler is less than 73.2 MW (250 mmBtu/hr).

d. Pursuant to 35 IAC 218.303, fuel combustion emission units are not subject to 35 IAC 218.301, use of organic material.

7.8.5 Operational and Production Limits and Work Practices

The affected boilers shall only be operated with natural gas as the fuel.

7.8.6 Emission Limitations

There are no specific emission limitations for these units, however, there are source wide emission limitations in Condition 5.5 that include these units.

7.8.7 Testing Requirements

None

7.8.8 Monitoring Requirements

None

7.8.9 Recordkeeping Requirements

In addition to the records required by Condition 5.6, the Permittee shall maintain records of the following items for each affected boiler to demonstrate compliance with Conditions 5.5.1 and 7.8.3, pursuant to Section 39.5(7)(b) of the Act:

a. Records of the fuel usage for the affected boilers, Mft^3/mo and Mft^3/yr; and

b. Records of the monthly and annual aggregate NO_x, PM, SO_2, and VOM emissions from the affected boilers shall be maintained, based on fuel consumption and the applicable emission factors, with supporting calculations.

7.8.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of deviations of an affected boiler with the permit requirements as follows, pursuant to Section 39.5(7)(f)(ii) of the Act. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

N/A

7.8.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

7.8.12 Compliance Procedures

Compliance with the emission limits shall be based on the recordkeeping requirements in Condition 7.8.9 and the emission factors and formulas listed below:

To determine compliance with Condition 5.5.1, emissions from the affected boilers shall be calculated based on the following emission factors:

Pollutant	Emission Factor (lb/Mft^3)
NO_x	100
PM	7.6
SO_2	0.6
VOM	5.5

These are the emission factors for uncontrolled natural gas combustion in small boilers (< 100 mmBtu/hr), Tables 1.4-1 and 1.4-2, AP-42, Volume I, Fifth Edition, Supplement D, March, 1998.

Boiler Emissions (lb) = (Natural Gas Consumed, Mft^3) x (The Appropriate Emission Factor, lb/Mft^3)

8.0 GENERAL PERMIT CONDITIONS

8.1 Permit Shield

Pursuant to Section 39.5(7)(j) of the Act, the Permittee has requested and has been granted a permit shield. This permit shield provides that compliance with the conditions of this permit shall be deemed compliance with applicable requirements which were applicable as of the date the proposed permit for this source was issued, provided that either the applicable requirements are specifically identified within this permit, or the Illinois EPA, in acting on this permit application, has determined that other requirements specifically identified are not applicable to this source and this determination (or a concise summary thereof) is included in this permit.

This permit shield does not extend to applicable requirements which are promulgated after _____**{insert public notice start date}** (the date of issuance of the draft permit) unless this permit has been modified to reflect such new requirements.

8.2 Applicability of Title IV Requirements (Acid Deposition Control)

This source is not an affected source under Title IV of the CAA and is not subject to requirements pursuant to Title IV of the CAA.

8.3 Emissions Trading Programs

No permit revision shall be required for increases in emissions allowed under any USEPA approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for elsewhere in this permit and that are authorized by the applicable requirement [Section 39.5(7)(o)(vii) of the Act].

8.4 Operational Flexibility/Anticipated Operating Scenarios

8.4.1 Changes Specifically Addressed by Permit

Physical or operational changes specifically addressed by the Conditions of this permit that have been identified as not requiring Illinois EPA notification may be implemented without prior notice to the Illinois EPA.

8.4.2 Changes Requiring Prior Notification

The Permittee is authorized to make physical or operational changes that contravene express permit terms without applying for or obtaining an amendment to this permit, provided that [Section 39.5(12)(a)(i) of the Act]:

a. The changes do not violate applicable requirements;

b. The changes do not contravene federally enforceable permit terms or conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements;

c. The changes do not constitute a modification under Title I of the CAA;

d. Emissions will not exceed the emissions allowed under this permit following implementation of the physical or operational change; and

e. The Permittee provides written notice to the Illinois EPA, Division of Air Pollution Control, Permit Section, at least 7 days before commencement of the change. This notice shall:

   i. Describe the physical or operational change;

   ii. Identify the schedule for implementing the physical or operational change;

   iii. Provide a statement of whether or not any New Source Performance Standard (NSPS) is applicable to the physical or operational change and the reason why the NSPS does or does not apply;

   iv. Provide emission calculations which demonstrate that the physical or operational change will not result in a modification; and

   v. Provide a certification that the physical or operational change will not result in emissions greater than authorized under the Conditions of this permit.

8.5 Testing Procedures

Tests conducted to measure composition of materials, efficiency of pollution control devices, emissions from process or control equipment, or other parameters shall be conducted using standard test methods. Documentation of the test date, conditions, methodologies, calculations, and test results shall be retained pursuant to the recordkeeping procedures of this permit. Reports of any tests conducted as required by this permit or as the result of a request by the Illinois EPA shall be submitted as specified in Condition 8.6.

8.6 Reporting Requirements

8.6.1 Monitoring Reports

If monitoring is required by any applicable requirements or conditions of this permit, a report summarizing the required monitoring results, as specified in the conditions of this permit, shall be submitted to the Air Compliance Section of the Illinois EPA every six months as follows [Section 39.5(7)(f) of the Act]:

Monitoring Period	Report Due Date
January - June	September 1
July - December	March 1

All instances of deviations from permit requirements must be clearly identified in such reports. All such reports shall be certified in accordance with Condition 9.9.

8.6.2 Test Notifications

Unless otherwise specified elsewhere in this permit, a written test plan for any test required by this permit shall be submitted to the Illinois EPA for review at least 60 days prior to the testing pursuant to Section 39.5(7)(a) of the Act. The notification shall include at a minimum:

a. The name and identification of the affected unit(s);

b. The person(s) who will be performing sampling and analysis and their experience with similar tests;

c. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the source and any control equipment will be determined;

d. The specific determination of emissions and operation which are intended to be made, including sampling and monitoring locations;

e. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods;

f. Any minor changes in standard methodology proposed to accommodate the specific circumstances of testing, with justification; and

g. Any proposed use of an alternative test method, with detailed justification.

8.6.3 Test Reports

Unless otherwise specified elsewhere in this permit, the results of any test required by this permit shall be submitted to the Illinois EPA within 60 days of completion of the testing. The test report shall include at a minimum [Section 39.5(7)(e)(i) of the Act]:

a. The name and identification of the affected unit(s);

b. The date and time of the sampling or measurements;

c. The date any analyses were performed;

d. The name of the company that performed the tests and/or analyses;

e. The test and analytical methodologies used;

f. The results of the tests including raw data, and/or analyses including sample calculations;

g. The operating conditions at the time of the sampling or measurements; and

h. The name of any relevant observers present including the testing company’s representatives, any Illinois EPA or USEPA representatives, and the representatives of the source.

8.6.4 Reporting Addresses

a. The following addresses should be utilized for the submittal of reports, notifications, and renewals:

i. Illinois EPA - Air Compliance Section

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (MC 40)
P.O. Box 19276
Springfield, Illinois 62794-9276

ii. Illinois EPA - Air Regional Field Office

Illinois Environmental Protection Agency
Division of Air Pollution Control
Eisenhower Tower
1701 First Avenue
Maywood, Illinois 60153

iii. Illinois EPA - Air Permit Section (MC 11)

Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

iv. USEPA Region 5 - Air Branch

USEPA (AR - 17J)
Air & Radiation Division
77 West Jackson Boulevard
Chicago, Illinois 60604

b. Unless otherwise specified in the particular provision of this permit, reports shall be sent to the Illinois EPA - Air Compliance Section with a copy sent to the Illinois EPA - Air Regional Field Office.

8.7 Obligation to Comply with Title I Requirements

Any term, condition, or requirement identified in this permit by T1, T1R, or T1N is established or revised pursuant to 35 IAC Part 203 or 40 CFR 52.21 (“Title I provisions”) and incorporated into this permit pursuant to both Section 39.5 and Title I provisions. Notwithstanding the expiration date on the first page of this permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

9.0 STANDARD PERMIT CONDITIONS

9.1 Effect of Permit

9.1.1 The issuance of this permit does not release the Permittee from compliance with State and Federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or applicable ordinances, except as specifically stated in this permit and as allowed by law and rule [Section 39.5(7)(j)(iv) of the Act].

9.1.2 In particular, this permit does not alter or affect the following:

a. The provisions of Section 303 (emergency powers) of the CAA, including USEPA's authority under that Section;

b. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

c. The applicable requirements of the acid rain program consistent with Section 408(a) of the CAA; and

d. The ability of USEPA to obtain information from a source pursuant to Section 114 (inspections, monitoring, and entry) of the CAA.

9.1.3 Notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

9.2 General Obligations of Permittee

9.2.1 Duty to Comply

The Permittee must comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the CAA and the Act, and is grounds for any or all of the following: enforcement action, permit termination, revocation and reissuance, modification, or

denial of a permit renewal application [Section 39.5(7)(o)(i) of the Act].

The Permittee shall meet applicable requirements that become effective during the permit term in a timely manner unless an alternate schedule for compliance with the applicable requirement is established.

9.2.2 Duty to Maintain Equipment

The Permittee shall maintain all equipment covered under this permit in such a manner that the performance or operation of such equipment shall not cause a violation of applicable requirements.

9.2.3 Duty to Cease Operation

No person shall cause, threaten or allow the continued operation of any emission unit during malfunction or breakdown of the emission unit or related air pollution control equipment if such operation would cause a violation of an applicable emission standard, regulatory requirement, ambient air quality standard or permit limitation unless such malfunction or breakdown is allowed by a permit condition [Section 39.5(6)(c) of the Act].

9.2.4 Disposal Operations

The source shall be operated in such a manner that the disposal of air contaminants collected by the equipment operations, or activities shall not cause a violation of the Act or regulations promulgated thereunder.

9.2.5 Duty to Pay Fees

The Permittee must pay fees to the Illinois EPA consistent with the fee schedule approved pursuant to Section 39.5(18) of the Act, and submit any information relevant thereto [Section 39.5(7)(o)(vi) of the Act]. The check should be payable to "Treasurer, State of Illinois" and sent to: Fiscal Services Section, Illinois Environmental Protection Agency, P.O. Box 19276, Springfield, Illinois 62794-9276.

9.3 Obligation to Allow Illinois EPA Surveillance

Upon presentation of proper credentials and other documents, the Permittee shall allow the Illinois EPA, or an authorized representative to perform the following [Section 39.5(7)(a) and (p)(ii) of the Act and 415 ILCS 5/4]:

a. Enter upon the Permittee's premises where an actual or potential emission unit is located; where any regulated equipment, operation, or activity is located or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect during hours of operation any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

d. Sample or monitor any substances or parameters at any location:

   i. At reasonable times, for the purposes of assuring permit compliance; or

   ii. As otherwise authorized by the CAA, or the Act.

e. Obtain and remove samples of any discharge or emission of pollutants authorized by this permit; and

f. Enter and utilize any photographic, recording, testing, monitoring, or other equipment for the purposes of preserving, testing, monitoring, or recording any activity, discharge or emission at the source authorized by this permit.

9.4 Obligation to Comply With Other Requirements

The issuance of this permit does not release the Permittee from applicable State and Federal laws and regulations, and applicable local ordinances addressing subjects other than air pollution control.

9.5 Liability

9.5.1 Title

This permit shall not be considered as in any manner affecting the title of the premises upon which the permitted source is located.

9.5.2 Liability of Permittee

This permit does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the sources.

9.5.3 Structural Stability

This permit does not take into consideration or attest to the structural stability of any unit or part of the source.

9.5.4 Illinois EPA Liability

This permit in no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the source.

9.5.5 Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege [Section 39.5(7)(o)(iv) of the Act].

9.6 Recordkeeping

9.6.1 Control Equipment Maintenance Records

A maintenance record shall be kept on the premises for each item of air pollution control equipment. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9.6.2 Records of Changes in Operation

A record shall be kept describing changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under this permit, and the emissions resulting from those changes [Section 39.5(12)(b)(iv) of the Act].

9.6.3 Retention of Records

a. Records of all monitoring data and support information shall be retained for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit [Section 39.5(7)(e)(ii) of the Act].

b. Other records required by this permit shall be retained for a period of at least 5 years from the

date of entry unless a longer period is specified by a particular permit provision.

9.7 Annual Emissions Report

The Permittee shall submit an annual emissions report to the Illinois EPA, Compliance Section no later than May 1 of the following year, as required by 35 IAC Part 254.

9.8 Requirements for Compliance Certification

Pursuant to Section 39.5(7)(p)(v) of the Act, the Permittee shall submit annual compliance certifications. The compliance certifications shall be submitted no later than May 1 or more frequently as specified in the applicable requirements or by permit condition. The compliance certifications shall be submitted to the Air Compliance Section, Air Regional Field Office, and USEPA Region 5 – Air Branch. The addresses for the submittal of the compliance certifications are provided in Condition 8.6.4 of this permit.

a. The certification shall include the identification of each term or condition of this permit that is the basis of the certification; the compliance status; whether compliance was continuous or intermittent; the method(s) used for determining the compliance status of the source, both currently and over the reporting period consistent with the conditions of this permit.

b. All compliance certifications shall be submitted to USEPA Region 5 in Chicago as well as to the Illinois EPA.

c. All compliance reports required to be submitted shall include a certification in accordance with Condition 9.9.

9.9 Certification

Any document (including reports) required to be submitted by this permit shall contain a certification by a responsible official of the Permittee that meets the requirements of Section 39.5(5) of the Act [Section 39.5(7)(p)(i) of the Act]. An example Certification by a Responsible Official is included as an attachment to this permit.

9.10 Defense to Enforcement Actions

9.10.1 Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit [Section 39.5(7)(o)(ii) of the Act].

9.10.2 Emergency Provision

a. An emergency shall be an affirmative defense to an action brought for noncompliance with the technology-based emission limitations under this permit if the following conditions are met through properly signed, contemporaneous operating logs, or other relevant evidence:

i. An emergency occurred as provided in Section 39.5(7)(k) of the Act and the Permittee can identify the cause(s) of the emergency. Normally, an act of God such as lightning or flood is considered an emergency;

ii. The permitted source was at the time being properly operated;

iii. The Permittee submitted notice of the emergency to the Illinois EPA within two working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken; and

iv. During the period of the emergency the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission limitations, standards, or regulations in this permit.

b. This provision is in addition to any emergency or upset provision contained in any applicable requirement. This provision does not relieve a Permittee of any reporting obligations under existing federal or state laws or regulations.

9.11 Permanent Shutdown

This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s)

or permanently shut down. This permit expires if all equipment is removed from the permitted location(s), notwithstanding the expiration date specified on this permit.

9.12 Reopening and Reissuing Permit for Cause

9.12.1 Permit Actions

This permit may be modified, reopened, and reissued, for cause pursuant to Section 39.5(15) of the Act. The filing of a request by the Permittee for a permit modification, revocation, and reissuance, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition [Section 39.5(7)(o)(iii) of the Act].

9.12.2 Reopening and Revision

This permit must be reopened and revised if any of the following occur [Section 39.5(15)(a) of the Act]:

a. Additional requirements become applicable to the equipment covered by this permit and three or more years remain before expiration of this permit;

b. Additional requirements become applicable to an affected source for acid deposition under the acid rain program;

c. The Illinois EPA or USEPA determines that this permit contains a material mistake or inaccurate statement when establishing the emission standards or limitations, or other terms or conditions of this permit; and

d. The Illinois EPA or USEPA determines that this permit must be revised to ensure compliance with the applicable requirements of the Act.

9.12.3 Inaccurate Application

The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be grounds for revocation under Section 39.5(15)(b) of the Act.

9.12.4 Duty to Provide Information

The Permittee shall furnish to the Illinois EPA, within a reasonable time specified by the Illinois EPA any information that the Illinois EPA may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to the Illinois EPA copies of records required to be kept by this permit, or for information claimed to be confidential, the Permittee may furnish such records directly to USEPA along with a claim of confidentiality [Section 39.5(7)(o)(v) of the Act].

9.13 Severability Clause

The provisions of this permit are severable, and should any one or more be determined to be illegal or unenforceable, the validity of the other provisions shall not be affected. The rights and obligations of the Permittee shall be construed and enforced as if this permit did not contain the particular provisions held to be invalid and the applicable requirements underlying these provisions shall remain in force [Section 39.5(7)(i) of the Act].

9.14 Permit Expiration and Renewal

The right to operate terminates on the expiration date unless the Permittee has submitted a timely and complete renewal application. For a renewal to be timely it must be submitted no later than 9 and no sooner than 12 months prior to expiration. The equipment may continue to operate during the renewal period until final action is taken by the Illinois EPA, in accordance with the original permit conditions [Section 39.5(5)(l), (n), and (o) of the Act].

10.0 ATTACHMENTS

10.1 Attachment 1 Example Certification by a Responsible Official

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____

Name _____

Official Title _____

Telephone No. _____

Date Signed _____

RWB:psj

I. INTRODUCTION

This source has applied for a Clean Air Act Permit Program (CAAPP) operating permit for its existing operation. The CAAPP is the program established in Illinois for the operating permits for significant stationary sources required by the federal Clean Air Act, as amended in 1990. The conditions in a CAAPP permit are enforceable by both the Illinois Environmental Protection Agency (Illinois EPA) and the USEPA.

Griffith Micro Science, Inc. is located at 7775 Quincy Street and at 830 Midway Drive in Willowbrook. The source is a medical sterilization facility. This sterilization only facility receives and processes primarily medical supplies and pharmaceuticals in addition to treating spices. The sterilization facility utilizes ethylene oxide as the principle sterilant gas, although propylene oxide is sometimes used. All sterilizer vacuum pumps exhaust to a wet (acid) scrubber. After leaving the sterilizing chambers, the product aerates or degasses without any vacuum in one of the aeration rooms or compartments. The product remains in aeration for approximately 18 hours then is moved to a segregated post-processing area.

II. EMISSION UNITS

Significant emission units at this source are as follows:

Emission Unit	Description	Date Constructed	Emission Control Equipment
AC	Eight (8) Aeration Chambers (Fourteen (14) Pallet Capacity, Willowbrook I)	June, 1984 (Modified March, 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
AR	Three (3) Aeration Rooms (Willowbrook I)	June, 1984 (Modified March, 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
Boiler-1	Lattner Model HRT-60 Natural Gas-Fired Boiler (Boiler-1, 2.5 mmBtu/hr, Willowbrook I)	Unknown	None
SC-1	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Six (6) Pallet Capacity, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-2	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook I)	June, 1984 (Modified 1998)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SC-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber (Three (3) Pallet Capacity, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #1) or Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor

Emission Unit	Description	Date Constructed	Emission Control Equipment
SC-4	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chambers (Thirteen (13) Pallet Capacity, Willowbrook II)	July, 1999	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor
SV-1	Six (6) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Six (6) Pallet Capacity Sterilization Chambers, Willowbrook I)	June, 1984 (Modified November, 1990)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-2	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook I)	June, 1984 (Modified 1998)	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-3	One (1) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vent (Three (3) Pallet Capacity Sterilization Chamber, Willowbrook I)	June, 1984	Acid Water Scrubber (Scrubber #2) with Dry Bed Reactor
SV-4	Five (5) Ethylene Oxide/Propylene Oxide Sterilization Chamber Back Vents (Thirteen (13) Pallet Capacity Sterilization Chambers, Willowbrook II)	July, 1999	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor
WBII-AR	Two (2) Aeration Rooms (Willowbrook II)	July, 1999	Willowbrook II Scrubber (WBII-Scrubber) and Dry Bed Reactor
WBII-Boiler-1	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-1, 3.3 mmBtu/hr, Willowbrook II)	July, 1999	None
WBII-Boiler-2	Kewanee Model L35-80-G Natural Gas-Fired Boiler (WBII - Boiler-2, 3.3 mmBtu/hr, Willowbrook II)	July, 1999	None
Fugitive VOM/HAP Emissions	Pumps, Seals, Flanges, etc.	-	None

III. EMISSIONS

This source is required to have a CAAPP permit since it is a major source of emissions.

For purposes of fees, the source is allowed the following emissions:

Permitted Emissions of Regulated Pollutants

Pollutant	Tons/Year
Nitrogen Oxides (NO_x)	3.45
Particulate Matter (PM)	0.26
Sulfur Dioxide (SO_2)	0.03
Volatile Organic Material (VOM)	10.73
HAP, not included in VOM or PM	--
TOTAL	14.47

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board’s emission standards. The Board's emission standards represent the basic requirements for sources in Illinois.

All emission sources in Illinois must comply with the federal New Source Performance Standards (NSPS). The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

All emission sources in Illinois must comply with the federal National Emission Standards for Hazardous Air Pollutants (NESHAP). The Illinois EPA is administering NESHAP in Illinois on behalf of the United States EPA under a delegation agreement.

V. PROPOSED PERMIT

CAAPP

A CAAPP permit contains all conditions that apply to a source and a listing of the applicable state and federal air pollution control regulations that are the origin of the conditions. The permit also contains emission limits and appropriate compliance procedures. The appropriate compliance procedures may include inspections, work practices, monitoring, record keeping, and reporting to show compliance with these requirements. The Permittee must carry out these procedures on an on-going basis.

Title I

A combined Title I/CAAPP permit contains terms and conditions established by the Illinois EPA pursuant to authority found in Title I provisions, e.g., 40 CFR 52.21 - federal Prevention of Significant Deterioration (PSD) and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Notwithstanding the expiration date on

the first page of the permit, the Title I conditions remain in effect pursuant to Title I provisions until the Illinois EPA deletes or revises them in accordance with Title I procedures.

VI. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that this source’s permit application meets the standards for issuance of a CAAPP permit. The Illinois EPA is therefore proposing to issue a CAAPP permit, subject to the conditions proposed in the draft permit.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 Ill. Adm. Code Part 164.

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