Emerald Kalama Chemical, LLC

Title V Basis Statement

Issued: August 24, 2010

Southwest Clean Air Agency
11815 NE 99th Street, Suite 1294
Vancouver, WA 98682-2322
Telephone: (360) 574-3058

PERMIT #:	SW99-10-R1A
PREPARED FOR:	Emerald Kalama Chemical, LLC 1296 Third St NW Kalama, WA 98625
PLANT SITE:	Emerald Kalama Chemical, LLC 1296 Third St NW Kalama, WA 98625
PERMIT ENGINEER:	John St.Clair, Air Quality Engineer
REVIEWED BY:	Paul T. Mairose, Chief Engineer PTM

TABLE OF CONTENTS

I. General Information and Certification 1

II. Emission Unit Descriptions 4

III. Explanation of Insignificant Emission Unit Determinations 26

IV. Explanation of Operating Terms and Conditions 29

V. Explanation of Obsolete and Future Requirements 39

VI. Explanation of Monitoring Terms and Conditions 49

VII. Explanation of Recordkeeping Terms and Conditions 73

VIII. Explanation of Reporting Terms and Conditions 74

IX. Compliance History 77

X. Permit Actions 78

I. GENERAL INFORMATION and CERTIFICATION

1. **Company Name:** Emerald Kalama Chemical, LLC

2. **Facility Name:** Emerald Kalama Chemical, LLC

3. **Responsible Official:** Paul Cartier, Plant Manager

4. **Inspection Contact Person:** Chris Wrobel; Environmental, Health, Safety, and Security Manager

5. **Unified Business Identification Number:** 600-034-919

6. **SIC Number:** 2869 (NAICS 325199)

7. **Basis for Title V Applicability:**
The Emerald Kalama Chemical, LLC (EKC) facility has the potential to emit (PTE) more than 100 tons per year (tpy) of nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and particulate matter (PM) less than 10 microns (PM_{10}), which are regulated air pollutants listed under Section 302 of the Federal Clean Air Act. In addition, the facility emits hazardous air pollutants (HAPs) listed under Section 112 of the Clean Air Act, but is not considered major for HAP.

The facilitywide PTE for each of the following air pollutants is listed below:

Pollutant	PTE (tpy)
NO_X	147.6
CO	292.0
VOC	121.4
SO_2	110.1
PM	110.8
PM_{10}	110.8
$PM_{2.5}$	110.8
HAP	9.5 single/24.0 combined

8. **Current Permitting Action**
This is an administrative amendment to SW99-10-R1, which incorporates the following:

TITLE V PERMIT

- Added Permit Renewal Application due date on cover sheet;
- Added the definition of PTE;
- *Section II: Regulatory Basis table.* Removed Reference to SWCAA 400-111 and SWCAA 400-113 as they are not directly applicable to the facility. SWCAA 400-110 specifies the requirements for the new source review process, which includes additional requirements bases on whether the source is located in a maintenance plan area (SWCAA 400-111), a non-attainment area (SWCAA 400-112) or an attainment area (SWCAA 400-

113). The only directly applicable regulation is SWCAA 400-110, so references to the other regulations were removed. Also removed duplicate entries from minor NSR program table;

- *Section IV: Permit Provisions*
  - Requirement P5 Insignificant Emission Unit was renumbered to P3;
  - Requirement P9 was removed as it was located in the wrong section (it should be in Section V) and was a repeat of requirement G8;
  - The requirements under this section were renumbered accordingly; and
- *Section V: General Terms and Conditions*
  - Section G8 was split into three requirements for clarity. The first requirement for Permit Renewal was left as requirement G8. The second requirement for Permit Expiration and the third requirement for Permit Revocation were moved into the Permit Provisions section. The language was not changed in any of the requirements. The original requirement was split for clarity. The subsequent requirements under this section were renumbered accordingly; and
  - Typographical errors were corrected:
    - Req-038 should refer to ADP 09-2885 Condition 85;
    - Req-180 omitted the language from the originating permit term and should include "as a 12-month rolling average;"
    - Req-261 had the incorrect unit for the limit, which should be "gph" instead of "gpm;" and
    - Req-294 had the incorrect unit for the limit, which should be "lb/hr," instead of "lb/MMBtu;" and
- *Appendices.* Several appendices were from earlier drafts and were not reordered properly. There references to specific appendices within the Title V Permit did not change; however, some of the appendices were in the incorrect order or referred to an incorrect appendix.

TITLE V BASIS STATEMENT

- *Section I: General Information and Certification.* A clarification statement for all pollutants for which the facility is major was added in the first paragraph. In addition, a table of the potential to emit for criteria air pollutants and hazardous air pollutants was added.

9. Attainment Area:
The facility is located in an area which is in attainment for all criteria pollutants.

10. Facility Description:
The chemical manufacturing facility is located at 1296 Third Street NW, Kalama, Washington and has 77 emission units (EU) designated as EU-01 through EU-77. EKC is a synthetic organic chemical manufacturer of specialty and fine chemicals. The products manufactured serve a range of industries including wood products, flavor, fragrance, food, beverage, paint, pharmaceutical, and photographic industries. Final products are shipped in railcars, tank trucks, drums, and dry bags. There are several broad categories of activities and processes in operation at the facility. These categories are listed below with additional detail provided in Section II.

<u>Toluene Storage</u>

The primary raw material at EKC is toluene, which is stored in tanks T-70, T-71, and T-42.

Boilers and Hot Oil Heaters

EKC operates eight boilers and four hot oil heaters to provide heat and steam to various processes. Specific information pertaining to the boilers and hot oil heaters is given in Section II. The majority of the boilers and hot oil heaters burn natural gas as the primary fuel. In addition to natural gas, other fuels are also approved to use in specific boilers or hot oil heaters, including: #2 fuel oil, #6 fuel oil, Resource Conservation and Recovery Act (RCRA)-classified hazardous waste, waste tar (non-RCRA waste), and octanal bottoms (non-RCRA waste)

Chemical Manufacture

Using toluene directly, or oxidizing toluene to benzoic acid or benzaldehyde, almost all of the chemicals produced on-site are derived from one of these three compounds. A variety of physical and chemical processes are used to produce the final products. Reactants are generally combined in reactor vessels or tanks, allowed to react, and then distilled in a continuous or batch distillation columns. Emissions from the reactors, tanks, and columns are controlled using several different control technologies, including scrubbers, chilled water coolers, carbon adsorption, and regenerative thermal oxidation.

The main production areas are listed below, with additional detail about specific EUs in Section II:

- Benzoic Acid and Benzaldehyde Production
- Fragrance and Specialty Plants
- Hexyl Cinnamic Aldehyde (HCA) Plant
- Benzoate Plant
- Plasticizer Plant

Wastewater Treatment

EKC operates both aerobic and an anaerobic wastewater operations. Wastewater is collected from a variety of process throughout the plant, including stormwater and groundwater sources and treated in either or both of the wastewater systems.

Miscellaneous Storage Tanks.

There are a large number of storage tanks on-site storing a variety of substances, including reactants, intermediary chemicals and final products, fuels, process water, and wastewater. Tanks may be subject to 40 CFR 61 Subpart FF, 40 CFR 63 Subpart G, or 40 CFR 63 Subpart EEEE.

II. EMISSION UNIT DESCRIPTIONS

New EU#	Generating Equipment	Emission Control
Toluene Storage Tanks		
EU-01	Tanks T-42, T-70, and T-71	Glycol Chillers and Vent Header System
EU-02	Tanks T-42, T-70, and T-71, Bypass Vent Header System	Glycol Chillers
EU-03	Tanks T-42, T-70, and T-71, Bypass Glycol Chillers and Vent Header System	None
Combustion Units		
EU-04	Hot Oil Heater U-1	None
EU-05	Steam Boiler U-2	1) Baghouse F-13; 2) Baghouse F-14; or 3) None
EU-06	Steam Boiler U-3	1) Baghouse F-13; or 2) None
EU-07	Steam Boiler U-7	1) Baghouse F-14; or 2) None
EU-08	Steam Boiler U-9	Flue Gas Recirculation
EU-09	Steam Boiler U-10	None
EU-10	Steam Boiler U-11	None
EU-11	Hot Oil Heater U-12	None
EU-12	Hot Oil Heater U-14	Low-NO_x Burner
EU-13	Steam Boiler U-15	Low-NO_x Burner
EU-14	Hot Oil Heater U-16	Low NO_x-Burner
EU-15	Steam Boiler U-17	Low-NO_x Burner
EU-16	Temporary Engines	None
EU-17	Emergency Generator Engine	None
EU-18	Emergency Fire Water Pump	None
Benzoic Acid and Benzaldehyde Production		
EU-19	Vent Header System	1) Carbon Beds T-120A/T-120B and RTO X-100 or 2) Carbon Beds T-180/T-181and RTO X-150
EU-20	Vent Header System, bypass RTOs	1) Carbon Beds T-120A/T-120B; or 2) Carbon Beds T-180/T-181
EU-21	Vent Header System, bypass carbon beds and RTOs	None
EU-22	Toluene Oxidizer R-101	Vent Header System
EU-23	Toluene Oxidizer R-151	Vent Header System
EU-24	Benzoic Acid Chipper	Baghouse
EU-25	Tank T-54	River Water Heat Exchanger
EU-26	Tanks T-61, T-62, T-64, and T-65	Scrubber V-61
EU-27	Tank T-313	T-313 Scrubber

New EU#	Generating Equipment	Emission Control
EU-28	Tank T-313A	Vent Header System
Fragrance and Specialty Plants		
EU-29	Batch Distillation Column C-1101 (SDU Column)	Condenser E-1111 and Vent Condenser E-1112
EU-30	Batch Distillation Column C-1151 (FIF Column)	1) Condenser E-1153 and Vent Condenser E-1156; or 2) Condenser E-1153, Vent Condenser E-1156, and Scrubber C-1265
EU-31	Batch Distillation Column C-1181 (KFC Column)	Condenser E-1183 and Vent Condenser E-1184
EU-32	Batch Distillation Column C-1191 (MPS Column)	Condenser E-1193 and Vent Condenser E-1196
EU-33	Batch Distillation Column C-1211 (SDU Column)	Condenser E-1213 and Vent Condenser E-1214
EU-34	Batch Reactor R-1101	1) Condenser E-1100A and seal pot; or 2) Condenser E-1100A and FIF Scrubber C-1180
EU-35	Batch Reactor R-1141	1) Condenser E-1141 and seal pot; 2) Condenser E-1141 and FIF Scrubber C-1180; or 3) Condenser E-1141 and Scrubber C-1265
EU-36	Batch Reactor R-1171	1) Condenser E-1171 and Chilled Water Condenser E-1173; 2) Condenser E-1171, Chilled Water Condenser E-1173, and FIF Scrubber C-1180; or 3) Reflux Column C-1171 (used as a scrubber), Condenser E-1171, and Chilled Water Condenser E-1173
EU-37	Continuous Tube Reactor R-2150	Vent Condenser E-2154
EU-38	Tanks T-1213 and T-1216	Conservation/Emergency Vents
EU-39	Tank T-1115	1) Scrubber C-1265 (when storing methanol); 2) Seal Pot and Conservation/Emergency Vents (when not storing methanol)
EU-40	Tank T-1144	Tank T-1146 and FIF Scrubber C-1180
EU-41	Batch Distillation Column C-8502	Condenser E-8502 and Vent Condenser E-8504
EU-42	Batch Reactor R-8501	Reactor cooled with cooling tower water
EU-43	Batch Reactor R-8502	Seal pot
EU-44	Batch Reactor R-8521	Reactor cooled with cooling tower water (benzyl alcohol and Lilience™ production)

New EU#	Generating Equipment	Emission Control
EU-45	Continuous Distillation Column C-801	Condenser E-805
EU-46	Reactor R-801	Heat Exchangers E-806A/E-806B and Condensers E-812A/E-812B
Hexyl Cinnamic Aldehyde (HCA) Plant		
EU-47	Batch Distillation Column V-1270	1) Condenser E-1271, Chilled Water Vent Condenser E-1273, and Scrubber C-1265; or 2) Condenser E-1271 and Chilled Water Vent Condenser E-1273
EU-48	Continuous Tube Reactor R-1250A	Vent Condenser E-1254
EU-49	Batch Reactor R-1260	Condenser E-1260 and Scrubber C-1265
EU-50	Crude HCA Distillation Column C-1280	Condenser E-1281 and Scrubber C-1265
EU-51	Aldehyde Distillation Column C-1290	Column Condenser E-1291 and Decant Tank Condenser E-1299
EU-52	Tank T-1121	Scrubber C-1265
EU-53	Tank T-1263	Scrubber C-1265
Benzoate Plant		
EU-54	Benzoate Dryer D-901	Scrubber C-901
EU-55	Benzoate Dryer D-902	Scrubber C-902A
EU-56	Benzoate Dryer D-903	Scrubber C-901
EU-57	Benzoate Dryer D-904	Scrubber C-904
EU-58	Benzoate Dryer D-905	Scrubber C-905
EU-59	Benzoate Dryer D-906	Scrubber C-906
EU-60	Benzoate Dryer D-907	Scrubber C-907
EU-61	Benzoate Dryer D-908	Scrubber C-907
EU-62	Benzoate Dryer D-909	Scrubber C-909
EU-63	Benzoate Fluidized Bed Extruder	Baghouse
EU-64	Benzoate Pneumatic Conveyors X-932, X-936, X-937, X-950, X-958, and X-960	Cartridge Filters
EU-65	Benzoate Plant, Fugitives	Scrubber C-920
Plasticizer Plant		
EU-66	Plasticizer Reactor R-8621	Refrigerated Chiller E-8623
EU-67	Plasticizer Reactor R-8601A	Refrigerated Chiller E-8603
Wastewater Treatment		
EU-68	Aerobic Wastewater Treatment System	None
EU-69	Anaerobic Wastewater Treatment System	Flare X-86B
EU-70	Anaerobic Wastewater Treatment System, bypass flare	None
EU-71	Tanks T-104, T-141, T-164, and T-182	Vent Header System
EU-72	Tanks T-21B and T-21D	Non-regenerative Activated Carbon

New EU#	Generating Equipment	Emission Control
Benzene Transfer Operations		
EU-73	Benzene Transfer Rack	Non-regenerative Activated Carbon
Miscellaneous Storage Tanks		
EU-74	Miscellaneous Tanks, Not Elsewhere Classified, Intermediates Plant	Conservation/Emergency Vents
EU-75	Miscellaneous Tanks, Not Elsewhere Classified, Fragrance and Specialty Plants	Conservation/Emergency Vents
EU-76	Miscellaneous Tanks, Not Elsewhere Classified, Benzoate Plant	Conservation/Emergency Vents
EU-77	Miscellaneous Tanks, Not Elsewhere Classified, Wastewater Treatment	Conservation/Emergency Vents

EU-1, EU-2, and EU-3: Tanks T-42, T-70, and T-71
Toluene is stored in tanks T-70, T-71, and T-42, which have capacities of 3,382,157 gal, 3,382,157 gal, and 845,539 gal, respectively. Prior to April 2006, the tanks were inerted with a process gas to maintain an oxygen free environment in the tank and equipped with refrigerated condensers followed by pressure relief devices to control emissions from tank venting. Condensed toluene vapor was returned to the tank. The condensers are tube and fin type with stainless liners, copper tubes, and aluminum fins. Both condensers are supplied with refrigerant from a single Edwards model CE 109 with a cooling capacity of 60,000 Btu/hr based on a 30°F outlet temperature and a 95°F ambient temperature. The chiller cools 40 gpm of a glycol solution by direct expansion of R-22 refrigerant.

In April 2006, the headspaces of the toluene tanks were tied into the vent header system. The process gas is introduced into the tanks (minimum of +0.5 iwc) to provide a low-oxygen environment (<6% O_2). The vent header is activated if the pressure in the tanks exceeds +1.0 iwc until the pressure falls to less than +0.9 iwc. In situations where oxygen levels become too high, the pad from the process gas can be switched to a nitrogen pad. The condensers are still in place.

The addition of the vent header essentially reduces the working and breathing losses from the tanks to zero. However, each tank is equipped with conservation and emergency vents. The conservation vents open at +1.8 iwc and the emergency vents at +2.5 iwc. The vent manufacturer estimates that the vents have a maximum leakage rate of 1 ft^3/hr. T-70 and T-71 have two conservation vents and two emergency vents each, and T-42 has one conservation vent and one emergency vent. The three tanks combined have a total of ten vents. The vents are the only direct source of emissions from the tanks.

These tanks are subject to 40 CFR 63 Subpart EEEE.

EU-4: Hot Oil Heater U-1
Hot oil heater U-1 supplies 572°F hot oil to processes at the facility. Heater U-1 has multiple burners which can each be fueled independently on either natural gas, which is the primary fuel, or fuel oil. Heater U-1 is equipped with an oxygen trim to limit NO_x emissions; during the 1998

source test the oxygen level was set at 1.5%. Heater U-1 emits carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and volatile organic compounds (VOCs). VOCs include both federally-listed hazardous air pollutants (HAPs), state-listed toxic air pollutants (TAPs), and other organic and inorganic compounds that are neither HAPs nor TAPs. Heater U-1 is approved to operate 8,760 hr/yr. Heater U-1 has no add-on control device so compliance assurance monitoring (CAM) does not apply. No construction, reconstruction, or modification has occurred since installation.

Make: .....Struthers-Wells
Model: 16CV40-8
Maximum Heating Rates: .....50.5 MMBtu/hr (Natural gas) and 50.2 MMBtu/hr (Fuel oil)
Installation Date: .....Prior to 1968
Allowable Fuels: .....Natural gas and Fuel oil (≤1.75% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....February 8, 1995 (Natural gas) and not tested on Fuel oil
Most Recent Source Test(s): .....March 18, 2009 (Natural gas) and not tested on Fuel oil

EU-5: Steam Boiler U-2
Boiler U-2 is a water tube stream boiler that supplies steam at less than 150 psi to various processes in the facility. Boiler U-2 is normally fueled on waste tar or natural gas and has the capability to use fuel oil; the maximum steam rate is 40,000 lb/hr, based on natural gas. Waste tar is a byproduct from the production of benzoic acid and contains no sulfur or chlorine because no sulfur or chlorinated compounds are used in the production processes. Waste tar is a non-RCRA waste and is burned in the boiler primarily for steam generation. When waste tar is burned in the boiler, emissions are routed to baghouses F-13 or F-14 for product recovery and PM control. Baghouse F-13 can receive emissions from both boilers U-2 and U-3 at the same time only while burning waste tar. Baghouse F-14 can receive emissions from both boilers U-2 and U-7 at the same time. Boiler U-2 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP). The steam boiler is approved to operate 8,760 hr/yr. No construction, reconstruction, or modification has occurred since installation.

Make: .....Keeler
Model: .....D-Type
Maximum Heating Rate: .....57.8 MMBtu/hr (natural gas)
Installation Date: .....Prior to 1968
Allowable Fuels: .....Waste tar, Natural gas, and Fuel oil (≤1.75% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....March 20, 1995 (Waste tar), March 22, 1995 (Natural Gas), and not tested on Fuel oil
Most Recent Source Test(s): .....January 28, 2009 (Waste tar), November 27, 2007 (Natural gas), and not tested on Fuel oil

EU-6: Steam Boiler U-3
Boiler U-3 is a water tube steam boiler that has a maximum steam rate of 33,000 lb/hr while firing natural gas. Boiler U-3 supplies steam at less than 150 psi to various processes in the facility. Hazardous waste, which is classified as a RCRA waste, is mostly generated in the

specialty chemical plant. When waste tar or hazardous waste is burned in the boiler, emissions are routed to baghouse F-13 for particulate control. Baghouse F-13 can receive exhaust from both boilers U-2 and U-3 at the same time while burning only waste tar. The waste tars and hazardous waste contain either none or negligible amounts of sulfur or chlorinated compounds. The facility has completed the required testing for EPA, submitted its Part B application and been issued RCRA permit #WAD092899574 from EPA. The steam boiler is approved to operate 8,760 hr/yr. U-3 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP). No construction, reconstruction, or modification has occurred since installation.

Make: .....United Iron Works
Model: .....A-Type
Maximum Heating Rate: .....41.8 MMBtu/hr (natural gas)
Installation Date: .....Prior to 1968
Allowable Fuels: .....Natural gas, Hazardous waste, Waste tar, and Fuel oil (≤1.75% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....November 4, 2005 (Natural gas), October 15, 1998 (Hazardous waste), not tested on Waste tar, and not tested on Fuel oil
Most Recent Source Test(s): .....November 4, 2005 (Natural gas), November 11, 2008 (Hazardous waste), not tested on Waste tar, and not tested on Fuel oil

EU-7: Steam Boiler U-7

Boiler U-7 is a water tube steam boiler and has a maximum steam rate of 42,000 lb/hr while firing natural gas. Boiler U-7 supplies steam at less than 150 psi to various processes in the facility and is normally fueled on waste tar or natural gas and has the capability to use fuel oil. Emissions from boiler U-7 are controlled by baghouse F-14 which has the option to receive exhaust from both boilers U-2 and U-7 at the same time. Boiler U-7 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. No construction, reconstruction, or modification has occurred since installation.

Make: .....Babcock & Wilcox
Model: FM10-57
Maximum Heating Rate: .....57.8 MMBtu/hr (Natural gas)
Installation Date: 1975
Allowable Fuels: .....Waste tar, Natural gas, and Fuel Oil (≤1.75% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....September 25, 2003 (Waste tar), November 3, 2005 (Natural gas), and not tested on Fuel oil
Most Recent Source Test(s): .....May 5, 2009 (Waste tar), November 3, 2005 (Natural gas), and not tested on Fuel oil

EU-8: Steam Boiler U-9

Boiler U-9 is a water tube steam boiler with a maximum steam rate of 33,000 lb/hr while firing natural gas and supplies steam at less than 250 psi to various processes in the facility. Boiler U-9 has flue gas recirculation controls to reduce NO_x emissions. Boiler U-9 emits CO, PM, NO_x,

SO_2, and VOCs (HAP, non-HAP, and TAP) and is permitted to operate 8,760 hr/yr. This steam boiler alone does not emit above Title V major source levels, so CAM does not apply. No construction, reconstruction, or modification has occurred since installation.

Make: .....Cleaver-Brooks
Model: D-52
Maximum Heating Rate: .....44.1 MMBtu/hr (Natural gas)
Installation Date: .....1987 (initial permit issued in 1994)
Allowable Fuels: .....Natural gas
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test: .....March 23, 1995 (Natural gas)
Most Recent Source Test: .....November 2, 2005 (Natural gas)

EU-9: Steam Boiler U-10

Boiler U-10 is a water tube steam boiler and has a maximum steam rate of 20,000 lb/hr, while firing on natural gas. The burner is designed with steam atomization to minimize emissions. Boiler U-10 is normally fueled on natural gas and has the capability to use fuel oil with 1.5%w/w sulfur or less. Boiler U-10 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. Boiler U-10 alone does not emit above Title V major source levels so CAM does not apply. No construction, reconstruction, or modification has occurred since installation.

Make: .....Trane-Murray
Model: .....SAZ 20
Maximum Heating Rate: .....29.4 MMBtu/hr (Natural gas)
Installation Date: 1988
Allowable Fuels: .....Natural gas and Fuel Oil (≤1.5% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....January 13, 1995 (Natural gas) and not tested on Fuel oil
Most Recent Source Test(s): .....April 5, 2007 (Natural gas) and not tested on Fuel oil

EU-10: Steam Boiler U-11

Boiler U-11 is a water tube steam boiler with a maximum steam rate of 25,000 lb/hr while firing natural gas. Boiler U-11 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP); emissions are uncontrolled and is approved to operate 8,760 hr/yr. U-11 alone does not emit above Title V major source levels so CAM does not apply. No construction, reconstruction, or modification has occurred since installation.

Make: .....Cleaver Brooks
Model: WT200X-BR3
Maximum Heating Rate: .....35.2 MMBtu/hr (Natural gas)
Installation Date: 1988
Allowable Fuels: .....Natural gas and Fuel oil (≤0.05% w/w S)
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test(s): .....January 24, 1996 (Natural gas) and not tested on Fuel oil
Most Recent Source Test(s): .....May 18, 2007 (Natural gas) and not tested on Fuel oil

EU-11: Hot Oil Heater U-12
Hot oil heater U-12 is a water tube hot oil heater. Heater U-12 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is permitted to operate 8,760 hr/yr. Heater U-12 alone does not emit above Title V major source levels so CAM does not apply.

Make: .....American Heating Equipment
Model: AHE-1200
Maximum Steam Rate: .....15.3 MMBtu/hr (Natural gas)
Installation Date: 1990
Allowable Fuels: .....Natural gas, Fuel oil (≤0.05% w/w S)
Subpart Dc Applicable: .....Yes; Initial Notification (April 11, 1990);
Initial Source Test(s): .....October 21, 1997 (Natural gas) and not tested on Fuel oil
Most Recent Source Test(s): .....October 21, 1997 (Natural gas) and not tested on Fuel oil

EU-12: Hot Oil Heater U-14
Heater U-14 is designed to heat 333,333 pounds of hot oil per hour at 644°F while firing natural gas. HeaterU-14 has a low-NO_x burner design and combustion controls to limit emissions. Heater U-14 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. U-14 alone does not emit above Title V major source levels so CAM does not apply.

Make: .....Struthers Wells Corporation
Model: 11CV24-6
Maximum Steam Rate: .....28.0 MMBtu/hr (Natural gas)
Installation Date: 1995
Allowable Fuels: .....Natural gas and Fuel oil (≤0.05% w/w S)
Subpart Dc Applicable: .....Yes; Initial Notification (February 22, 1995)
Initial Source Test: .....January 23, 1996 and not tested on Fuel oil
Most Recent Source Test: .....November 22, 2002 (Natural gas) and not tested on Fuel oil

EU-13: Steam Boiler U-15
Boiler U-15 has a 350 psig design pressure, produces 40,000 lb/hr of steam at maximum capacity. Boiler U-15 has a low-NO_x burner design and combustion controls to limit emissions. Boiler U-15 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. U-15 alone does not emit above Title V major source levels so CAM does not apply.

Make: .....Babcock and Wilcox
Model: FM9-57
Maximum Steam Rate: .....50.9 MMBtu/hr (Natural gas) and 48.6 MMBtu/hr (Fuel oil)
Installation Date: 1995
Allowable Fuels: .....Natural gas and Fuel oil (≤0.05% w/w S)
Subpart Dc Applicable: .....Yes; Initial Notification (February 22, 1995)
Initial Source Test: .....January 23, 1996 and not tested on Fuel oil
Most Recent Source Test: .....June 28, 2001 (Natural gas) and not tested on Fuel oil

EU-14: Hot Oil Heater U-16

Hot oil heater U-16 is designed to heat 400 gpm of oil at 581°F and is equipped with staged combustion burner is designed with a 15:1 turndown ratio. The proper air-fuel mixture is maintained by an Autoflame® (model MM500016) controller. Heater U-16 can only be fueled on natural gas and has a low-NO_x burner design and combustion controls to limit emissions. Heater U-16 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. Heater U-16 alone does not emit above Title V major source levels so CAM does not apply.

Make: .....American Heating Company
Model: AHE800
Maximum Steam Rate: .....10.5 MMBtu/hr (Natural gas)
Installation Date: .....January 19, 1997
Allowable Fuels: .....Natural gas
Subpart Dc Applicable: .....Yes; Initial Notification (November 21, 1997)
Initial Source Test: .....October 19, 1998 (Natural gas)
Most Recent Source Test: .....November 24, 2008 (Natural gas)

EU-15: Steam Boiler U-17

Boiler U-17 is a package water tube boiler. Coen Delta-NO_x Model 16 burners were installed in 2001. The boiler is capable of generating 24,000lb/hr of steam. This boiler is equipped with a low-NO_x burner design and combustion controls to minimize emissions. Boiler U-17 emits CO, PM, NO_x, SO_2, and VOCs (HAP, non-HAP, and TAP) and is approved to operate 8,760 hr/yr. Since construction, the unit has not been modified to the extent that it would trigger the modification clause of Subpart Dc.

Make: .....Zurn Industries, Inc
Model: .....#6M Keystone
Maximum Steam Rate: .....30.9 MMBtu/hr (Natural gas) and 30.1 MMBtu/hr (Fuel oil)
Installation Date: .....2000 (Built in 1979)
Allowable Fuels: .....Natural gas, Fuel oil (≤0.05% w/w S), and Octanal bottoms
Subpart Dc Applicable: .....No; constructed prior to the applicability date
Initial Source Test: .....October 25, 2001 (Natural gas), not tested on Fuel oil, and November 25, 2003 (Octanal bottoms)
Most Recent Source Test: .....December 12, 2006 (Natural gas), not tested on Fuel oil, and November 25, 2003 (Octanal bottoms)

EU-16, EU-17, and EU-18: Temporary Engines, Emergency Generator, and Emergency Fire Water Pump

The facility occasionally supplements power through the use of temporary diesel-fired engines, which are sized generally above 100 hp. A permanent diesel-fired standby generator and a diesel-fired fire water pump/engine are also located on-site. These internal combustion engines are normally fueled on #2 fuel oil and can emit CO, PM, NO_x, SO_2, and VOCs (non-HAP, and TAP). The internal combustion engines are approved to operate 8,760 hr/yr. These internal combustion engines do not emit above Title V major source levels so CAM does not apply.

EU-19, EU-20, and EU-21: Vent Header System

The majority of distillation columns and storage tanks at the facility are tied into a common vent header system. The vent header is under vacuum. Toluene oxidizer reactors R-101 and R-151 provide the motive force for the vacuum, which is about −10 to −12 inches water column (iwc). The gaseous exhaust from the vent header system is estimated at a maximum rate of 100 cfm and contains nitrogen, CO, residual oxygen, and is saturated with toluene and benzene. After the majority of the benzene, toluene, and other condensable organics have been removed, the exhaust is routed to carbon beds, and then to either Regenerative Thermal Oxidizer (RTO) X-100 or RTO X-150. Carbon beds T-120A/T-130B are used for control of emissions from the 100-side and carbon beds T–180/T–181 are used for control of emissions from the 150-side. The RTO normally requires no additional fuel to maintain its required 1,500°F bed temperature. If additional fuel is needed natural gas is added to the inlet of the RTO. In the event of malfunction or maintenance of the RTOs, the RTOs may be bypassed and the carbon beds vented to atmosphere for a maximum of 240 hr/yr, each. In the case of a catastrophic failure or a plantwide shutdown, the carbon beds may be bypassed. In this situation, all tanks and equipment connected into the vent header system would emit from the individual equipments' uncontrolled conservation or emergency vents. This source is subject to the standards promulgated in the hazardous organic NESHAP for the synthetic organic chemical manufacturing industry (40 CFR 63.100). This NESHAP was promulgated after November 15, 1990; therefore CAM does not apply.

EU-22: Toluene oxidizer (R-101)

Reactor R-101 has a maximum inlet airflow of 625,000 scfh. Process exhaust includes nitrogen, CO, and residual oxygen saturated with toluene and benzene. The liquid phase from reactor R-101 is combined with the liquid phase of reactor R-151 and purified in several distillation columns. The process exhaust from the reactors are combined with the exhausts of the columns and routed to condensers to cool the exhaust and to condense benzene and toluene. The exhaust from the condensers is normally routed to the vent header system. The toluene oxidizer is approved to operate 8,760 hr/yr. This unit is subject to the HON for the synthetic organic chemical manufacturing industry. The HON was promulgated after November 15, 1990; therefore CAM does not apply.

The columns associated with reactor R–101 are B-152, B-102, B-103, B-107, B-154, B-155, B-711, B-401, B-421, B-411, B-105, B-104, B-501, and B-511. The tanks associated with toluene oxidizers R-101 and R-151 are:

Tanks associated with R-101 and R-151

T-2	T-3	T-4	T-13	T-15	T-29B
T-42	T-44	T-48C	T-51	T-52	T-53
T-54	T-55A	T-56	T-58A	T-59	T-61
T-63	T-64	T-65	T-104	T-104E	T-105
T-107	T-110	T-112A	T-117A	T-124	T-141
T-164	T-182	T-313A	T-313F	T-421	T-714

EU-23: Toluene oxidizer (R-151)
Benzoic acid is produced by oxidizing toluene with atmospheric air in reactors R-101 and R-151. Reactor R-151 has a maximum inlet airflow of 400,000 scfh. Process exhaust includes nitrogen, CO, and residual oxygen saturated with toluene and benzene. The liquid phase from reactor R-151 is combined with the liquid phase of reactor R-101 and purified in several distillation columns. The process exhaust from the reactors are combined with the exhausts of the columns and routed to condensers to cool the exhaust and to condense benzene and toluene. The exhaust from the condensers is normally routed to the vent header system. The toluene oxidizer is approved to operate 8,760 hr/yr. This source is subject to the HON for the synthetic organic chemical manufacturing industry (40 CFR 63.100). The HON was promulgated after November 15, 1990; therefore CAM does not apply.

Toluene oxidizer R-151 uses the same columns and tanks as toluene oxidizer R-101.

EU-24: Benzoic Acid Chipper
Liquid benzoic acid is sprayed on a belt and after the benzoic acid dries, it is chipped off the belt and collected. The primary emission from the process is PM, which is controlled by a Torit Day SDF-6 cartridge collector baghouse with a flow of 1,000 acfm.

EU-25: Benzoic Acid and Benzaldehyde Production Tanks, Tank T-54
Tank T-54 receives a vent stream from columns B-501 and B-511 at approximately 20 cfm; the 500-side columns are benzaldehyde purification columns. Air is introduced to these columns at 10 cfm each to improve product quality. The vent stream is directed to the bottom of T-54 and drops out moisture, benzaldehyde, benzene, and toluene; liquid in tank T-54 is reprocessed. The tank temperature is approximately 150°F and the tank vent is controlled using cooling tower water. EKC calculates emissions based on vent flow rate, temperature, and physical characteristics of benzaldehyde. Tank T-54 is not connected to the Vent Header System as this would raise the oxygen concentration in the system and present an explosion hazard.

The vent from T-54 was never required to undergo New Source Review. Because the system has a TRE greater than 4.0, no federal requirements apply to the vent.

EU-26: Benzoic Acid Production Tanks, Tanks T-61, T-62, T-64, and T-65
EKC produces benzoic acid directly by introducing air to toluene in the presence of a catalyst, which oxidizes the toluene to produce benzoic acid and benzaldehyde. This industrial grade benzoic acid (IBA) is stored in tanks T-2, T-3, and T-4, which are vented to water scrubber V-2. Technical benzoic acid (TBA) is a more refined product and is produced from IBA by removing impurities through a series of distillation columns. TBA is currently stored in tanks T-61 and T-62. Scrubber V-61 is identical to scrubber V-2 (same make and model) and is operated in the same manner.

Benzoic acid is not classified as a TAP or a HAP, and likely is not a VOC. Based on the definition in 40 CFR 51.100, VOCs are carbon compounds that participate in atmospheric photochemical reactions. Although benzoic acid is a carbon compound, it is unlikely that it could participate in atmospheric photochemical reactions, since under ambient conditions it exists as PM; benzoic acid has a melting point of 122.4°C. Above this temperature, benzoic acid does

exhibit some volatility, but any benzoic acid at these conditions released to ambient air would freeze into PM. As PM, benzoic acid is an eye and skin irritant, and therefore control of benzoic acid is desirable by EKC. Tanks T-64 and T-65 were permitted under Air Discharge Permit (ADP) 07-2720 on May 8, 2007.

EU-27 and EU-28: Tanks T-313 and T-313A

Tanks T-313 and T-313A store waste tar from various processes, the tar is used as a fuel for boilers U-2, U-3, and U-7. Prior to April 16, 2001, tank T-313 was the only tar storage tank. When in use, air is introduced into the tank at approximately 2,400 cfh to eliminate copper deposits and to recover benzoic acid. The exhaust from the tank is routed to a packed water scrubber with a water flow rate of 11 gpm. The scrubber water originates from and is returned to tank T-222; overflow from tank T-222 is sent to the wastewater treatment system. Based upon historical analysis of the benzene and toluene concentration in the scrubber water, emission factors of 1.61 lb/hr and 2.55 lb/hr for benzene and toluene, respectively, were established.

Tank T-313A was installed to replace and supplement tank T-313 tar storage. Prior to December 2006, the emissions from the head space of tank T-313A routed to oil absorber B-203, and then to the Vent Header System. In most cases, emissions are vented to tank T-313A, but for limited periods during which the 200-side processes are not operating. Although the facility has several process streams that produce tar, the tar produced from the 200-side contains phenol, which if commingled with emissions from the 100- and 150-side processes would interfere with efficient operation of those processes. However, with the 200-side processes shut down, the headspace from tank T-313A is now routed directly to the vent header system for control by carbon beds and RTOs.

EU-29 through EU-46: Fragrance and Specialty Plant Batch Distillation Reactors, and Columns

A variety of continuous and batch reactors and batch distillation columns make up the fragrance and specialty plants. The chemicals that are primarily produced in the plants are: amyl cinnamic aldehyde, methyl cinnamic aldehyde, benzyl acetate, benzyl benzoate, benzyl alcohol, benzyl salicylate, butyl cinnamic aldehyde, cinnamic alcohol, cinnamic aldehyde, decanal, hexyl cinnamic aldehyde, hexanal, octanal, octyl salicylate, and Lilience™. In general, the following reactors and columns are used to produce the listed chemicals:

- Batch distillation columns C-1101, C-1151, C-1181, C-1191, and C-1211 and batch reactors R-1101, R-1141, and R-1171: the majority of primary and intermediate chemicals in the fragrance and specialty plants;
- Continuous tube reactor R-2150: Lillience™;
- Batch distillation column C-8502 and batch reactors R-8501, R-8502, and R-8521: benzyl alcohol and Lillience™ intermediates; and
- Continuous distillation column C-801 and batch reactor R-801: crude and technical benzyl alcohol

Emissions from the columns are controlled by a variety of control equipment, including knockout pots, condensers, and scrubbers. The water temperatures and flow rates for the condensers for batch distillation columns C-1151, C-1181, C-1191, and C-1211 are monitored. Prior to ADP 09-2885, only the vent exhaust temperature was monitored. It was determined by

EKC and SWCAA that monitoring the exhaust temperature did not give an adequate representation of the effectiveness of the condensers. By maintaining the tube wall temperature of the condensers at 3°C (37.4°F) and flows at 2 gpm, it is assumed that approximately 66% of the total available condensables can be removed from the vent.

Several tanks are used to store reactants, intermediate chemicals, or final products:

Tanks associated with the Fragrance and Specialty Plants

T-16	T-804	T-1102	T-1144	T-1190	T-1193
T-802	T-805	T-1110	T-1144	T-1191	T-1194
T-803	V-1101	T-1132	T-1146	T-1192	

Crude and technical grade benzyl alcohol are produced and purified in reactor R-801 and continuous distillation column C-801. The federal requirement contained in 40 CFR 63.114 only applies when processing crude benzyl alcohol under vacuum conditions. Normal operations are to process crude benzyl alcohol at atmospheric pressure. Continuous distillation column C-801 emits VOCs (HAP, non-HAP, and TAP) and emissions are controlled by a condenser and a water scrubber.

EU-29: Batch Distillation Column C-1101
This column is also known as the SDU column. Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1988
Vents Through: .....Condenser E-1111, vent condenser E-1112
Primary Heat Input: U-16
Associated Equipment: .....Still pot V-1101, column C-1101, condenser E-1111, reboiler E-1101, accumulator D-1101, knock-out pot D-1102, circulation pump P-1102B, and vacuum package J-1131.

EU-30: Batch Distillation Column C-1151
This column is also known as the FIF column. Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1989
Vents Through: .....Condenser E-1153, vent condenser E-1156, knock-out pot V-1156
Primary Uses: .....Distillation of fragrance chemicals
Primary Heat Input: .....U-11 and U-17
Associated Equipment: .....Still pot V-1151, column C-1151, condenser E-1153, reboiler E-1151, accumulator D-1154, knock-out pot D-1156, circulation pump P-1151, and vacuum package P-1157

EU-31: Batch Distillation Column C-1181
This column is also known as the KFC column. Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1997
Vents Through: .....Condenser E-1183, vent condenser V-1184
Primary Uses: .....Distillation of fragrance chemicals
Primary Heat Input: .....U-11 and U-17
Associated Equipment: .....Still pot V-1181, reboiler E-1181, column condenser E-1183, secondary vent condenser E-1184, vent knock-out pot V-1183, product cooler E-1184, product accumulator V-1184, circulation pump P-1181, and vacuum package P-1188.

EU-32: Batch Distillation Column C-1191
This column is associated with reactor R-1141 and is also known as the MPS column. This column uses an Alaskan Copper vacuum distillation stillpot. Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1993
Vents Through: .....Condenser E-1193 and vent condenser E-1196
Primary Uses: .....Distillation of fragrance chemicals
Primary Heat Input: .....U-11 and U-17
Associated Equipment: .....Still pot V-1191, condenser E-1196, vent condenser E-1196, vent knock-out pot V-1196, overheads accumulator V-1155, circulation pump P-1191, reboiler E-1191, and vacuum package P-1197.

EU-33: Batch Distillation Column C-1211
This column is also known as the PMC column. The process vents from the distillation column are not subject to certain provisions of 40 CFR 63 Subparts F and G due to the exemption of batch processes (§63.100(f)(l)). Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1999
Vents Through: .....Condenser E-1213 and vent condenser E-1214
Primary Uses: .....Distillation of fragrance chemicals
Primary Heat Input: U-16
Associated Equipment: .....Still pot V-1211, Column C-1211, reboiler E-1211, bottoms cooler E-1215, circulation pump P-1211, column condenser E-1213, secondary vent condenser E-1214, vent knock-out pot V-1214, product cooler E-1215, vacuum package P-1218, and product accumulator V-1212.

EU-34: Batch Reactor R-1101
Agitation/mixing method: .....Agitator with mechanical seal
Year Installed: 1989

Vents Through: .....Condenser E-1100 and scrubber C-1151
Primary Uses:.....Cinnamic aldehyde reactions, cinnamic alcohol catalyst blends, dibenzyl amine blends, and mixing batches.
Primary Heat Input:.....U-11 and U-17
Associated Equipment: .....Vent condenser E-1100 and decant tank T-1145

EU-35: Batch Reactor R-1141
Agitation/mixing method:.....Agitator with mechanical seal
Year Installed:.....1991
Vents Through: .....E-1141 and T-1113 or water seal pot and scrubber C-1151
Primary Uses:.....Hexyl cinnamic aldehyde, amyl cinnamic aldehyde, butyl Cinnamic aldehyde, cinnamic aldehyde, and pH adjustments for various recycle streams.
Primary Heat Input:.....U-11 and U-17
Associated Equipment: .....Vent condenser E-1141 and decant tank T-1142

EU-36: Batch Reactor R-1171
This reactor is also known as the benzyl benzoate (BOB) Reactor. Specific reactor information is shown below:
Agitation/mixing method:.....Agitator with mechanical seal
Year Installed:.....1998
Vents Through: .....Chilled water condenser E-1173 and condenser E-1171
Primary Heat Input:.....U-16
Associated Equipment: .....Column C-1171, column condenser E-1171, vent condenser E-1173, decant tank V-1171, decant tank T-1179, product cooler E-1172, and product filter F-1171.

EU-37: Continuous Tube Reactor R-2150
This reactor is primarily used in the dehydrogenation step of the Lilience™ process to convert liliol to Lilience™. The process is analogous to the current production of octanal from octanol in the manufacture of HCA. A copper oxide catalyst is used in the dehydrogenation step, just as they are used in the current HCA process. During production, liliol vapor is metered into the reactor along with a continuous flow of nitrogen. The reactor emissions – comprised of nitrogen, hydrogen, carbon monoxide, and small amounts of liliol and Lilience™ – will be further cooled by condenser E-2154 prior to discharge to the atmosphere.

The catalyst requires deactivation prior to replacement. Emissions of CO during reactor catalyst deactivation are comparable in quantity to that emitted during catalyst deactivation in reactor R-1250A.

Batch reactors R-1101, R-1141, and R-1171 are used to produce various fragrance chemicals. Emissions from the reactors consist of VOCs (HAP and non-HAP TAPs) and are controlled by water seal pots, condensers, and scrubbers. Exhaust temperatures are monitored to ensure proper operating conditions to minimize emissions.

EU-38 through EU-40: Tanks T-1213, T-1216, T-1115, and T-1144
Tanks T-1213 and T-1216 store decyl alcohol for production in the fragrance and specialty plants. These two tanks were installed in 1998 and store volatile organic liquids; however, a vapor pressure limit was requested to avoid applicability of 40 CFR 60 Subpart Kb.

Tank T-1115 is routed to scrubber C-1265 for control of methanol emissions.

Tank T-1144, a pressure vessel, stores either propionaldehyde or acetaldehyde. The headspace of tank T-1144 is vented to tank T-1146, which contains chilled benzaldehyde (59°F), which is in turn vented to scrubber C-1180. Tank T-1146 is the primary blend tank for production of cinnamic aldehyde and MCA.

EU-41: Batch Distillation Column C-8502
This column is also known as the benzyl alcohol column. Specific column information is shown below:
Packing/Trays Type: .....Packing
Year Installed: 1980
Vents Through: .....Condenser E-8502 and vent condenser E-8503
Primary Heat Input: .....U-11 and U-17
Associated Equipment: .....Still pot V-8501, column V-8502, condenser E-8502, vent condenser E-8503, knock-out pot V-8504, and vacuum pump P-8507.

EU-42: Batch Reactor R-8501
Specific reactor information is shown below:
Agitation/mixing method: .....Agitator with double mechanical seal
Year Installed: 1980
Vents Through: .....Directly to atmosphere or through scrubber
Primary Uses: .....Benzyl alcohol reactions
Primary Heat Input: .....Exothermic reaction, U-11, and U-17
Associated Equipment: .....Precoat tank T-8507

EU-43: Batch Reactor R-8502
Specific reactor information is shown below:
Agitation/mixing method: .....Agitator
Year Installed: 1980
Vents Through: .....Seal pot
Primary Uses: .....Benzyl alcohol reactions
Primary Heat Input: .....U-11 and U-17
Associated Equipment: .....Agitator A-8502

EU-44: Batch Reactor R-8521
Specific reactor information is shown below:
Agitation/mixing method: .....Agitator with double mechanical seal
Year Installed: 1989
Vents Through: .....Directly to atmosphere or through scrubber

Primary Uses:.....Benzyl alcohol reactions
Primary Heat Input:.....Exothermic reaction, U-11, and U-17
Associated Equipment: .....Precoat tank T-8527

EU-45: Continuous Distillation Column C-801
This column was originally intended for manufacture of nonyl phenol and was controlled through the use of scrubber C-802, which is a packed, counter-flow scrubber. The scrubber is designed to handle a maximum carrier gas flow rate of 8 dscfm, maintain a +0.25 iwc pressure drop, and achieve a minimum overall collection efficiency of 99.85%. The facility ceased manufacture of nonyl phenol on November 16, 2007 and none of the chemicals purified in the column can be adequately controlled through the use of a water scrubber and therefore the scrubber is no longer used as a control device.

EU-46: Reactor R-801
Liliol is produced by alkylating hydrogenated methyl cinnamic aldehyde (HMCA) molecule in reactor R-801. HMCA, a catalyst, and phosphoric acid are added to the reactor, which requires n-heptane as a drying agent. The reactor temperature will be increased until it reaches about 105°C, which will volatilize the n-heptane and force out the nitrogen pad through the vent condenser. Once the reactor is at temperature the vent valve will be closed and the system will be isolated from the environment. Later, t-butanol, is added to the reactor, which is converted to isobutylene. The isobutylene is consumed in the reaction to produce liliol; this reaction also causes the reactor pressure to become negative. Nitrogen is used to break the vacuum.

EU-47 through EU-53: HCA Plant
The HCA plant is composed of two reactors, three distillation columns, and several tanks for storing reactants, intermediate chemicals, or final products. Methanol scrubber C-1265 controls emissions from crude HCA distillation column C-1280, batch reactor R-1260, and tanks T-1121, T-1263, T-1263 (crude HCA), and T-1121 (methanol) in addition to batch reactor R-1141 (through tank T-1115), still pot V-1151 (column C-1151), and still pot V-1270. The minimum scrubber water recirculation flow is 2.0 gpm, the minimum scrubber water make-up flow is 7.5 gph, and the maximum scrubber water temperature is 77°F (25°C). Water overflows are routed to tank T-1263 in order to recover the methanol. The scrubber is estimated to have a control efficiency of >99%.

EU-47: Batch Distillation Column V-1270
Column V-1270 is generally used to purify HCA. Column V-1270 has a still pot size of 10,000 gal and utilizes 8.0 MMBtu/hr at peak load and 6.8 MMBtu/hr at average load from boiler U-17. There are two control modes depending upon whether the product being manufactured contains methanol; a 2" vent line and solenoid to allow for operation in both modes. All emissions are routed through condenser E-1271, knock-out pot V-1272 with chilled water vent condenser E-1273. If there is methanol present then the emissions are routed to methanol scrubber C-1265, otherwise, the emissions are vented to atmosphere through wet vacuum pump X-1277.

The exhaust temperature of batch distillation column V-1270 is monitored at the discharge point. Condenser E-1271 water temperature is limited to a maximum of 37.4°F (3°C), has a flow of 2 gpm, and is assumed to remove a minimum of 66% of the total available condensables.

EU-48: Continuous Tube Reactor R-1250A
Hexanol, octanol, and decanol are oxidized in reactor R-1250A to the corresponding aldehyde in the presence of a copper oxide catalyst. As a result of the reaction, both hydrogen and CO are released. Heptanal and octanal are then reacted with benzaldehyde to produce ACA, or HCA, respectively. Reactor R-1250A process gas consists primarily of hydrogen (~96% v/v) and CO (2.7% v/v). Emissions from reactor R-1250A are routed through a chilled water (less than 15°C or 59°F) condenser to remove VOCs (mainly aldehydes). The maximum temperature of the vent stream is limited to 15°C during the production of hexanal and octanal. During the production of decanal, the vent temperature needs to be higher (maximum of 40°C or 104°F) to prevent freezing. Flow from the reactor is vented through condenser E-1254 at approximately 118 scfm. The products from reactor R-1250A are condensed and the desired product (octyl aldehyde or octanal) is separated from unreacted octanol through distillation in batch distillation column V-1270. The distillation bottoms, consisting primarily of partially oxidized C_8 or C_{16} aldehydes and alcohols, which are produced by side reactions in the reactor, are waste products that are used as fuel in boiler U-17.

The catalyst in reactor R-1250A is periodically deactivated in order to recover the catalyst and as part of this process, air is passed through the catalyst to slowly oxidize hydrocarbons adhered to the catalyst. The exact mechanism of CO production is not known, although it is believed that chemicals produced through side reactions degrade and emit CO under the predominately oxygen deficient conditions.

EU-49: Batch Reactor R-1260
Batch reactor R-1260 is the final reactor in the process, reacting benzaldehyde with hexanal, or heptanal to make HCA, or ACA, respectively. Emissions from reactor R-1260 are routed first through a condenser then to scrubber C-1265. The crude HCA from reactor R-1260 is pumped to tank T-1263 where CO_2 is added to neutralize the catalyst in the product. Tank T-1263 is vapor balanced with reactor R-1260 to minimize emissions and the combined vent is routed to scrubber C-1265.

EU-50: Crude HCA Distillation Column C-1280
Crude HCA, which is currently stored in tank T-1263, contains some residual methanol. Column C-1280 allows recovery of methanol from the crude HCA. The recovered methanol is piped to T-1121 for reuse. Column C-1280 operates 8,760 hr/yr, has a gas flow of 2 acfm, exhausts at approximately 86°F (30°C), and vents to scrubber C-1265. Uncontrolled VOC emissions, including methanol, octanal, and HCA from C-1280 are approximately 0.961 lb/hr and about 0.0931 lb/hr when controlled by scrubber C-1265. Methanol comprises about 96.9% of the emissions.

EU-51: Aldehyde Distillation Column C-1290
Column C-1290 is generally used to distill aldehydes from alcohols; the emissions are VOCs, primarily composed of the aldehyde and alcohol being distilled. Column C-1290 operates under vacuum (column top pressure of 30–50 mm Hg, absolute) and vents through condenser E-1291. The condenser vent is tied into decant tank V-1299, which is controlled by chilled water (less than 15°C or 59°F) condenser E-1299, before venting to atmosphere.

EU-52 and EU-53: Methanol Tank T-1121 and Crude HCA Tank T-1263
Emissions of methanol from tank T-1121 and tank T-1263 are controlled by scrubber C-1265. Tank T-1263 was believed to be subject to 40 CFR 60 Subpart Kb when it was permitted under ADP 03-2456; ADP 03-2456 was later superseded by ADP 03-2456R1, which maintained the same determination. When the determination was reviewed during permitting for ADP 07-2759, SWCAA determined that, in fact, the tank was not subject to Subpart Kb because the tank does not meet the applicability requirements under §60.110b(b). The tank is also not subject to the HON because the tank is not used in processes that are HON applicable. The tanks are subject to 40 CFR 63 Subpart EEEE because the tanks contain methanol (crude HCA has some methanol content).

EU-54 through EU-65: Benzoate Plant
Sodium and potassium benzoate are manufactured by combining sodium or potassium hydroxide in batches with benzoic acid. This solution is then fed at a constant rate to continuous rotary drum product dryers. Steam and vapors from the product dryers are collected in large hoods positioned over each dryer, which then feed into wet scrubbers. Because the hoods do not capture all of vapors, a scrubber is also dedicated to scrubbing air from within the building. Each scrubber exhausts outside the building, resulting in a large net inflow of air into the benzoate building. After the product has dried, the dry product is pneumatically conveyed from the product dryers to a number of locations for packaging in small bags or large sacks. Heat for the product dryers is provided by boilers U-11 and U-17.

The water scrubbers are used to control PM and VOC (HAPs and non-HAP TAPs) emissions. Each benzoate scrubber does not emit above Title V major source levels so CAM does not apply to the scrubbers.

EU-54 through EU-62 and EU-65: Benzoate Dryers

Unit		Dryer Make/Model	Dryer Throughput Capacity (lb/day)	Associated Scrubber	Scrubber Make/Model
EU-54	D-901	Blaw-Knox Double-Drum model	25,000	C-901	Ducon Dynamic UW-3 model III
EU-55	D-902	Blaw-Knox Double-Drum model	18,500	C-902A	Ducon Dynamic UW-4 model IV
EU-56	D-903	Blaw-Knox Double-Drum model	15,000	C-901	Ducon Dynamic UW-3 model III
EU-57	D-904	Blaw-Knox Double-Drum model	25,000	C-904	Ducon Dynamic UW-3 model III
EU-58	D-905	Blaw-Knox Double-Drum model	37,500	C-905	Ducon Dynamic UW-3 model III
EU-59	D-906	Blaw-Knox Double-Drum model	37,500	C-906	Ducon Dynamic UW-3 model III

Unit		Dryer Make/Model	Dryer Throughput Capacity (lb/day)	Associated Scrubber	Scrubber Make/Model
EU-60	D-907	Blaw-Knox Double-Drum model	25,000	C-907	Ducon Dynamic UW-3 model III
EU-61	D-908	Blaw-Knox Double-Drum model	25,000	C-907	Ducon Dynamic UW-3 model III
EU-62	D-909	Blaw-Knox Double-Drum model	25,000	C-909	Ducon Dynamic UW-3 model III
EU-65	Fugitives	N/A	N/A	C-920	Ducon Dynamic UW-3 model III

Makeup water for the scrubbers is provided by condensed steam from the product dryers. Each scrubber is equipped with a bleed line that bleeds off excess water collected in the scrubber. The excess water containing sodium and/or potassium benzoate is sent to EKC's wastewater system or reprocessed.

EU-63: Benzoate Fluidized Bed Extruder
A Luwa Corporation (model 180) sodium/potassium fluidized bed extruder unit and vibrating fluid bed dryer is used to produce the extruded form of benzoate at approximately 2500 lb/hr. Emissions from the unit are controlled using a Tech Air, Inc. (model KTR121-10-1900) baghouse with 2100 ft² of filter area, an air-to-cloth ratio of 5.7:1, and a 99.9% control efficiency for $PM_{2.5}$, according to manufacturer's specifications. The flow determined in the August 31, 2004 source test was 5,720 dscfm.

EU-64: Benzoate Pneumatic Conveyors X-932, X-936, X-937, X-950, X-958, and X-960
The pneumatic conveyors are a source of particulate matter emissions. The filter housings are 36" high, have a diameter of 36", and contain four polypropylene filter cartridges (each cartridge is 12¾" diameter by 26½" high). Total filter surface area per unit is 440 ft² with a maximum flow rate of 400 cfm. A second cartridge filter 12" diameter by 18" high is used to protect an oil sealed vacuum pump. These pneumatic conveyor systems will be vented outside the building and emissions are estimated based on test results from the benzoate baghouse. The six pneumatic conveyor systems have a combined total flowrate of approximately 1450 cfm with resulting emissions of 0.44 tpy based on 0.008 gr/dscf with 51% of the contribution from the back half analysis. The filterable PM emissions are estimated at 0.0487 lb/hr. This emission factor is used to calculate PM emissions from these conveyors unless new data is developed during a subsequent source test.

EU-65: Benzoate Plant, Fugitives
The benzoate building air, which contains fugitive emissions from the dryers that are not captured by the individual dryers' exhaust, is vented to a dedicated scrubber D-920.

EU-66 and EU-67: Plasticizer Plant
Benzoic acid and glycols are reacted in the presence of a catalyst in the two batch reactors R-8601A and R-8621 to produce diethylene glycol dibenzoate and dipropylene glycol dibenzoate. The batch reactors are vented to refrigerated chillers and then can either be vented to atmosphere or recycled to the reactor, depending on batch stage. The reactor is generally purged and then charged with isooctane, before adding the benzoic acid and glycols. Heat may be added at various stages of the reaction. The temperature of the final refrigerated chiller controls the

concentration of isooctane emitted, which is the primary VOC emitted. Tank T-8604 is a storage tank associated with the plasticizer plant. The reactors and chillers do not emit above Title V major source levels so CAM does not apply to the units. Specialty reactor R-1171 is also used to manufacture plasticizers as its design is analogous to reactors R-8601A and R-8621.

EU-68 through EU-72: Wastewater Treatment

EKC operates both aerobic and anaerobic wastewater operations. Wastewater is collected from a variety of process throughout the plant, including stormwater and groundwater sources and treated in either or both of the wastewater systems.

EU-68: Aerobic Wastewater Treatment System

The aerobic wastewater treatment system collectively consists of equipment and processes used to treat wastewater generated from manufacturing processes, the groundwater remediation operation, and storm water generated on-site. Flow equalization from various parts of the facility and pretreatment is performed in the following tanks: T-22, T-90, T-95, T-103A, and T-103B. Primary treatment of VOCs in the wastewater is performed in the biological oxidation (BIOX) plant, which includes several tanks and clarifiers. Tanks T-91A, T-92, T-93, T-96, and T-96A are associated with the BIOX plant. The BIOX plant is also the final discharge point for treated water into the Columbia River. Sludge handling is also performed at the facility. The treated sludge is used as a soil amendment for beneficial land application. Tanks T-91, T-98A, T-98B, T-98C, T-99, and T-100 are associated with the sludge handling processes.

EU-69 and EU-70: Anaerobic Wastewater Treatment System

The anaerobic treatment system (ANTS) plant treats a portion of the wastewater under anaerobic conditions before discharging to the BIOX plant. Wastewater may also be directly discharged to the two anaerobic digesters, tanks T-86 and T-186. Tanks T-83, T-84, T-85, T-88, and T-188 are also associated with the ANTS plant.

Emissions from the digesters are controlled by flare X-86B. Flare X-86B is a ZOTF enclosed flare manufactured by John Zinc Company and contains a natural gas pilot light to maintain the enclosed combustion device stability. The flare is 4 ft in diameter and 50 ft in height, has a total heat input capacity of 10 MMBtu/hr, and will use V-Mix™ biogas burners with a Tru-Lite™ igniter assembly and the flare control system will automatically adjust the air louvers and, if necessary, add supplemental natural gas to control the operating temperature. The enclosed flare will have a total heat input capacity of 10 MMBtu/hr. At maximum gas production, the enclosed flare is expected to destroy up to 20,000 scfh of digester gas. Flare X-86B emits NO_x, CO, SO_2 and VOCs (HAP, non-HAP, and TAP). The flare may be bypassed occasionally, not to exceed 10,000 ft^3 of digester gas per month. When the flare is being bypassed, the emissions are composed of methane and VOCs, with trace amounts of H_2S.

In previous permitting actions, emission limits for flare X-86B for NO_x, CO, and PM were established on a pound per unit energy (lb/MMBtu) basis. These limits were originally based on the manufacturer guaranteed emission rates. However, as a practical matter, compliance with these emission limits can be complicated since accurately measuring the energy

supplied to the flare can be highly variable. In addition, since the fuel source is a constantly changing mix of ANTS gas and natural gas, there are questions as to the effectiveness of such limits. The flare passes emission tests based upon annual limits easily; the annual limits were also based upon the original manufacturer guarantee. In order to cause the short-term emission limits to be more consistent with other limits in the permit, the limits were converted to lb/hr limits that continue to be based on the manufacturer's guarantee.

No single unit in the ANTS plant, including the flare, emits above Title V major source levels, so CAM does not apply.

EU-71: Wastewater Treatment Tanks, Tanks T-104, T-141, T-164, and T-182
These tanks are the collection points for wastewater that will be treated in the ANTS. These tanks are subject to 40 CFR 61 Subpart FF.

EU-72: Wastewater Treatment Tanks, Tanks T-21B and T-21D
Acid wastewater is collected in tanks T-21B and T-21D, the headspaces of which are routed to non-regenerative carbon canisters due to the possibility of benzene in the water in accordance with 40 CFR 61 Subpart FF.

EU-73: Benzene transfer operations
Benzene is produced as a by-product of toluene oxidation process at the facility and is shipped off-site for sale. The facility does not actively produce benzene as a product. During the loading of railcars, benzene emissions are controlled by non-regenerative carbon beds which are monitored by a Continuous Emission Monitoring System (CEMS). This source is subject to the HON for the synthetic organic chemical manufacturing industry. The HON was promulgated after November 15, 1990; therefore CAM does not apply.

EU-74 through EU-77: Miscellaneous Tanks
EKC operates a variety of tanks with no specific minor permit requirements. However, some of these may be subject to Subpart G or Subpart EEEE, depending upon the contents. The tanks have been loosely collected into major activity groups. EKC submits reports annually that are used for applicability purposes.

III. EXPLANATION OF INSIGNIFICANT EMISSION UNIT DETERMINATIONS

Each emission unit listed as insignificant in the permit application has been reviewed by SWCAA to confirm its status. Emission units were determined to be insignificant by SWCAA as follows:

IEU-1: Nitrogen Storage Tanks and Generator
The nitrogen generator and storage tanks at the facility contain pressurized nitrogen, which is insignificant by definition in accordance with WAC 173-401-532(5).

IEU-2: Drum Cleaning
Drum cleaning (drums and totes) is conducted to remove heavy material from various drums used to store final product, intermediate product, and waste. Drum cleaning operations, including steam cleaning equipment, is insignificant by definition in accordance with WAC 173-401-532(39).

IEU-3: Drum and Tote Loading
The drum and tote loading of final and intermediate product is performed at various drum loading stations at the facility. Drum and tote loading are insignificant by definition in accordance with WAC 173-401-532(42).

IEU-4: Batch Loading and Unloading of Solid Phase Catalysts
Various solid phase catalysts are used in the production of chemicals at the facility. Batch loading and unloading of solid phase catalysts is categorically exempt from consideration as a significant emission unit in accordance with WAC 173-401-532(60).

IEU-5: Demineralization and Oxygen Scavenging of Water
The boiler water at the facility is de-aerated to remove oxygen at various locations in the boiler area. The demineralization and oxygen scavenging of water is categorically exempt from consideration as a significant emission unit in accordance with WAC 173-401-532(61).

IEU-6: Soldering and Welding Activities
Welding activities at this facility consume less than one ton per day of welding rod. Welding activities that consume less than one ton per day of welding rod are defined at insignificant based on the basis of production rate in accordance with WAC 173-401-533(2)(i).

IEU-7: Pilot Plants or Research and Development Laboratory
The research and development laboratory at this facility is an insignificant emission unit based on the quantity of emissions from that source. In accordance with WAC 173-401-533(3)(a) SWCAA has determined that this unit is insignificant.

IEU-8: Laboratory
Laboratory tests at the facility are conducted to monitor various processes. Chemical and physical analytical laboratory operations or equipment including fume hoods and vacuum pumps at this facility comprise an insignificant emission unit based on the quantity of emissions from these sources. In accordance with WAC 173-401-533(3)(c), SWCAA has determined that this unit is insignificant.

IEU-9: Miscellaneous Storage Tanks
The following storage tanks at the facility have a capacity of less than 10,000 gal and contain only low VOC containing material with a vapor pressure of less than 80 mm Hg at 21°C (<1 psia at 68°F) and therefore are determined to be insignificant. VOC storage tanks less than 10,000 gal capacity with lids having less than 80 mm Hg vapor pressure are insignificant in accordance with WAC 173-401-530(4)(d) or WAC 173-401-533(2)(c).

Tank	Volume (gal)	Vapor Pressure (mm Hg)	Tank	Volume (gal)	Vapor Pressure (mm Hg)	Tank	Volume (gal)	Vapor Pressure (mm Hg)
T-19	5,824	9.5	T-222A	2,254	17.5	T-1131	5,024	0.1
T-33	1,438	9.5	T-140	2,325	9.5	T-1132	5,024	0.8
T-46A	509	9.5	T-421	32	13.2	T-1133	5,024	0.1
T-48C	2,700	23	T-714	5,000	75	T-1184	4,499	2
T-51	2,113	0.8	T-802	7,046	0.295	T-1191	3,757	0.03
T-54	5,871	0.8	T-1102	4,133	0.549	T-1192	3,757	0.03
T-57	4,885	0.025	T-1103	3,006	0.549	T-1196	8,907	0.0085
T-59	4,509	0.8	T-1104	2,348	1	T-1198	8,907	1
T-63	9,289	0.8	T-1105	2,348	0	T-1200	1,479	9.5
T-98C	3,788	0.1	T-1106	4,009	0.1	T-1214	9,987	0.15
T-100A	2,784	17.5	T-1107	1,984	17.5	T-1215	9,987	0.15
T-104	3,672	13.2	T-1112	794	17.5	T-8502	1,872	0.1
T-104E	881	23	T-1113	5,284	17.5	T-8502A	1,872	0.1
T-105	239	13.2	T-1114	1,864	0.03	T-8503	1,984	0.1
T-107	202	0.1	T-1115	4,009	0.02	T-8504	1,984	0.1
T-110	117	13.2	T-1122	4,979	0.1	T-8507	100	0.38
T-112A	330	0.1	T-1123	4,979	0.1	T-8508	6,363	0.1
T-117A	450	13.2	T-1127	5,024	3	T-8509	6,012	0.1
T-124	736	13.2	T-1129	5,024	3			
T-141	1,122	23	T-1130	5,024	0.8			

IEU-10: Maintenance
Routine housekeeping, preparation and painting of structures or equipment are categorically insignificant in accordance with WAC 173-401-532(33).

IEU-11: Steam Vents, Leaks, and Safety Relief Valves
Steam vents and safety relief valves are categorically insignificant in accordance with WAC 173-401-532(87) and (89).

IEU-12: Air Operated Equipment
Pneumatically operated equipment is categorically insignificant in accordance with WAC 173-401-532(88).

IEU-13: Sludge Dewatering and Handling Equipment
Sludge dewatering and handling is categorically insignificant in accordance with WAC 173-401-532(114).

IEU-14: Tar and Benzoic Acid Melting
Unusable tars and benzoic acid are generated as byproducts, from maintenance activities, upsets and sampling activities. Tars are collected as bottoms material in distillation columns. In addition, benzoic acid is recovered from the benzoic acid chipper baghouse. Benzoic acid is by definition a VOC, but is a solid under ambient conditions. Unusable tars and benzoic acid are currently collected from various locations on-site to be heated outside in an open-topped container until they liquefy, and are then pumped back into the process at the appropriate location for reprocessing. The tar and benzoic acid melters are vented to a water scrubber, which has a water flow rate of 10 gpm and an assumed minimum control efficiency of 95%.

EKC melts a maximum of 160,000 lb/yr of tar; the tar contains approximately 20% water and 15% benzoic acid with a maximum of 400 ppm benzene and 400 ppm toluene. The tar is heated to 119°C, and then the exhaust is vented to the scrubber, which has an exhaust temperature of about 20°C. Benzoic acid has a vapor pressure of 5 mm Hg at 119°C and 0.002 mm Hg at 20°C. Benzene and toluene are assumed to not be controlled by the scrubber.

Tar melting PM emissions (as benzoic acid)

$$\frac{160{,}000\ lb\ tar}{yr} \times \frac{15\ lb\ benzoic\ acid}{100\ lb\ tar} \times \frac{0.002\ mm\ Hg}{760\ mm\ Hg} \times (1 - 95\%) = 0.0031\ lb/yr$$

Tar melting benzene/toluene emissions

$$\frac{160{,}000\ lb\ tar}{yr} \times \frac{400\ ppm}{10^6\ ppm} = 64\ lb/yr$$

Benzoic acid melting PM emissions (as benzoic acid)

$$\frac{60{,}000\ lb\ benzoic\ acid}{yr} \times 95\% \times \frac{0.002\ mm\ Hg}{760\ mm\ Hg} \times (1 - 95\%) = 0.0075\ lb/yr$$

The tar and benzoic acid melting operations at this facility comprise an insignificant emission unit since the emissions are less than 1.0 tpy VOC. In accordance with WAC 173-401-530(4), SWCAA has determined that these operations are insignificant.

IV. EXPLANATION OF OPERATING TERMS AND CONDITIONS

Req-001 through Req-006 and Req-008: General Standards for Maximum Emissions

SWCAA 400-040 establishes maximum emission standards for various air contaminants, including fallout, fugitive emissions, fugitive dust, visible emissions, SO_2, and unreasonable odors. These requirements apply to all emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Req-001 establishes a maximum visible emissions limit for all emission units at 20% opacity. Most emission units that emit visible emissions have limits establishes in minor permit actions that are much less than 20% opacity. Visible emissions are generally measured using SWCAA Method 9, which is similar to EPA Method 9, except the data reduction methods are different.

The definitions of fallout, fugitive dust, fugitive emissions, and emissions detrimental to human health may overlap, but may also be considered to be completely separate emissions. Generally fallout is particulate matter that is deposited in measurable quantities outside the boundaries of the facility. Fugitive dust may be considered fallout if there is sufficient quantities, but is more often associated with dust blown by the wind. Fugitive emissions include fugitive dust, but would also include emissions that could not reasonable pass through a stack or vent, such as leaks in pipes or tanks. Emissions detrimental to human health could include any of the above, if the material was determined to have health impacts.

Req-004 addresses odor impacts on neighboring properties. The facility uses and produces many chemicals that have an odor. The odors are not generally offensive and have resulted in few complaints.

The 1,000 ppm SO_2 emission limit in Req-006 cannot be exceeded if EKC burns approved fuels based on stoichiometric analysis and sulfur content of the fuels (natural gas, fuel oil, process gas/digester gas). The highest SO_2 emission concentrations will come from the combustion of the fuel with the highest sulfur content (fuel oil with a sulfur content of 1.75% by weight). The following calculation demonstrates how the 1,000 ppmvd SO_2 limit cannot be exceeded:

$$\left[\frac{\frac{7.88\ lb}{gal}\times\frac{1000\ gal}{150\ MMBtu}\times\frac{1.75\ lb\ S}{100\ lb\ oil}\times\frac{lbmol\ S}{32.07\ lb\ S}\times\frac{lbmol\ SO_2}{lbmol\ S}}{\frac{lbmol}{385.3\ dscf}\times\left[\frac{20.9\%\ O_2}{(20.9\%\ O_2-7\%\ O_2)}\right]\times\frac{9190\ dscf}{MMBtu}}\right]\times 10^6 = 788\ ppm\ SO_2\ @\ 7\%\ O_2$$

Req-007, Req-014, and Req-040: Prohibition from Concealment and Masking

No specific monitoring was specified for these requirements because there are no specific monitoring requirements that can be used to encompass the whole range of potential concealment and masking scenarios. The facility is required to certify compliance with all terms and conditions of the permit, including these prohibited items, at least annually. EKC must make

a reasonable inquiry to determine if concealment or masking has occurred during the reporting period in order to certify compliance.

Req-040 only applies to the boilers that are subject to 40 CFR 60 Subpart Dc.

Req-009: Emission Standards for Combustion and Incineration Units

SWCAA 400-050 establishes maximum emission standards for combustion and incineration units. The particulate matter limit cited in Req-009 is a general requirement that applies to all combustion units, therefore, these requirements apply to all combustion emission units at the source, both EU and IEU. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Based on the allowable types of fuels, the following PM emission rates were determined:

Natural gas, uncontrolled. The calculation assumes a heat content of 1020 Btu/ft³, the PM (total) emission factor from AP-42 Section 1.4 (7/1998), a 3% O_2 content in the exhaust, and a fuel factor of 8710 dscf/MMBtu from EPA Method 19.

$$\frac{7.6\ lb}{10^6 scf} \times \frac{7000\ gr}{lb} \times \frac{scf}{1020\ Btu} \times \frac{10^6\ Btu}{MMBtu} \times \frac{MMBtu}{8710\ dscf} \times \frac{20.9\%}{20.9\% - 3.0\%} = 0.007\ gr/dscf$$

#6 Fuel Oil, uncontrolled (1.75% w/w sulfur). The calculation assumes a heat content of 150 MMBtu/1000 gal, the PM (total) emission factor from AP-42 Section 1.3 (9/1998), a 3% O_2 content in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19.

$$\frac{[9.19 \cdot S + 3.22]\ lb}{1000\ gal} = \frac{[9.19 \times 1.75 + 3.22]\ lb}{1000\ gal} = \frac{19.3\ lb}{1000\ gal}$$

$$\frac{19.3\ lb}{1000\ gal} \times \frac{7000\ gr}{lb} \times \frac{1000\ gal}{150\ MMBtu} \times \frac{MMBtu}{9190\ dscf} \times \frac{20.9\%}{20.9\% - 3.0\%} = 0.11\ gr/dscf$$

Hot oil heater U-1 and boilers U-2, U-3, and U-7 are currently permitted to burn up to 1.75% w/w sulfur #6 fuel oil. These units are controlled by baghouses F-13 or F-14, which have a minimum control efficiency of 90%. Emissions from the boilers are required to be routed to the baghouse when burning any fuel other than natural gas; therefore, the calculated emission rate would be 0.011 gr/dscf. These units have not been required to be tested on fuel oil in the past, since the units have not burned large quantities of #6 fuel oil. In ADP 09-2885, a schedule has been established for the units to be tested.

#6 Fuel Oil, uncontrolled (1.50% w/w sulfur). The calculation assumes a heat content of 150 MMBtu/1000 gal, the PM (total) emission factor from AP-42 Section 1.3 (9/1998), a 3% O_2 content in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19.

$$\frac{[9.19 \cdot S + 3.22]\ lb}{1000\ gal} = \frac{[9.19 \times 1.5 + 3.22]\ lb}{1000\ gal} = \frac{17\ lb}{1000\ gal}$$

$$\frac{17\ lb}{1000\ gal} \times \frac{7000\ gr}{lb} \times \frac{1000\ gal}{150\ MMBtu} \times \frac{MMBtu}{9190\ dscf} \times \frac{20.9\%}{20.9\% - 3.0\%} = 0.10\ gr/dscf$$

Waste Tar, Hazardous Waste, and Octanal Bottoms. These fuels have the consistency of fuel oil, but contain no sulfur. Generally, SWCAA has assumed that the PM emission factor for these fuels would be similar to #2 fuel oil, which from AP-42 Section 1.3 (9/1998), the PM (total) emission factor is 3.3 lb/1000 gal. The calculation assumes a heat content of 137 MMBtu/1000 gal, the PM (total) emission factor from AP-42 Section 1.3 (9/1998), a 3% O_2 content in the exhaust, and a fuel factor of 9190 dscf/MMBtu from EPA Method 19.

$$\frac{3.3\ lb}{1000\ gal} \times \frac{7000\ gr}{lb} \times \frac{1000\ gal}{137\ MMBtu} \times \frac{MMBtu}{9190\ dscf} \times \frac{20.9\%}{20.9\% - 3.0\%} = 0.021\ gr/dscf$$

Boilers U-2 and U-7 have been tested on waste tar on 1/28/2009 and 5/5/2009, resulting in 0.0071 gr/dscf and 0.0090 gr/dscf, respectively. Boiler U-3 was tested while firing hazardous waste as part of the CPT on 11/11/2008; the emission rate was determined to be 0.00083 gr/dscf. Finally, boiler U-17 was tested while firing on octanal bottoms on 11/25/2003 the result of which was an emission rate of 0.018 gr/dscf. Boiler U-17 is limited to burning 0.05% w/w sulfur #2 fuel oil.

Req-010: Emission Standards for General Process Units

Particulate matter emissions are not to exceed 0.1 gr/dscf corrected to the appropriate oxygen level. Emissions from the combustion of waste tar, benzoic acid and benzoates production are controlled by baghouses or wet scrubbers. Source tests have confirmed that emission concentrations are less than 0.1 gr/dscf.

SWCAA 400-060 establishes maximum particulate matter emission standards of 0.1 gr/dscf for general process units. Therefore, these requirements apply to all general process units at the source, both EU and IEU. A "general process unit" is an emission unit using a procedure or a combination of procedures for the purpose of causing a change in material by either chemical or physical means, excluding combustion. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

Req-011: Emission Unit and Control equipment Operation in Conformity with Requirements

EKC is required to operate the control devices whenever the emission unit whose emissions are controlled is in operation, operate the control device according to manufacturer's specifications, and minimize emissions.

Req-012: Emission Unit and Control equipment Operation in Conformity with Requirements

General requirements under minor ADPs, Orders of Approval (OAs), or other applicable requirements require that EKC operate emission units and control equipment according to the applicable terms.

Req-013: Startup, Shutdown, and Malfunction Plan

EKC is required to maintain a startup, shutdown, and malfunction plan according to 40 CFR 63.8 as specified in various NESHAPS.

Req-015: Vent Streams Required to be Routed to Vent Header System

This requirement originated in OA 01-2385 to ensure that the sources that were plumbed into the vent header system did not vent individually and that source testing of the vent header system would be representative of these sources. In the Order, it was specified that the vent streams from the "distillation columns" be routed to the vent header system. By context of the Order, it was believed that the intent was to include the columns from the phenol plant and not the other sections of the facility. In ADP 09-2885, this term was clarified to include the columns only from the Intermediates Plant, since the facility no longer produces phenol.

The following columns and tanks are tied into the Vent Header System (condensers, pumps, and other ancillary equipment are not listed):

Toluene Stripping	Benzoic Acid	Benzaldehyde	Toluene Storage	Vent Directly to Carbon Beds/RTOs	
Column B-152	Column B-154	Column B-104	Tank T-70	Column B-102	Tank T-164
Column B-103	Column B-155		Tank T-71	Column B-401	Tank T-164C
Column B-107	Column B-421	**Benzene**	Tank T-42	Column R-101	Tank T-197
Tank T-162	Column B-411	Column B-711	Tank T-1*	Column R-151	Tank T-198
Tank T-124	Column B-105	Column B-701		Tank T-400	
Tank T-110	Tank T-421	Tank T-48C	**Miscellaneous**	Tank T-104	
Tank T-117	Tank T-107	Tank T-714	Tank T-222	Tank T-104D	
Tank T-105			Tank T-182	Tank T-141	
* Tank T-1 can be connected to the Vent Header System as needed.					

Columns B-501 and B-511 are not connected to the vent header system since the exhausts from these columns contain appreciable amounts of oxygen, which would introduce a potential hazard in the vent header system.

Req-016: Facilitywide HAP Limit

As part of the opt-out permit, originating with ADP 07-2759 and superseded by ADP 09-2885, the facility is required to maintain HAP emission below 9.5 tpy for any individual HAP and 24.0 tpy for all HAPs combined. This action was taken to cause the facility to be considered an area source for purposes of applicability for 40 CFR 63 Subpart FFFF.

Req-017: HAP Limit for Tanks

Many of the tanks at the facility pre-existed the rules and regulations pertaining to permitting and therefore there were no specific requirements in any minor permit. As part of the opt-out process, it was required that all the uncontrolled tanks' emissions be subject to a 2.0 tpy VOC limit. If the VOCs are also HAPs, then the emissions would need to be included with the facilitywide HAP limit in Req-016.

Req-018 through Req-034: National Emission Standard for Organic Hazardous Air Pollutants for Equipment Leaks, 40 CFR 63 Subpart H

40 CFR 63 §§63.160–63.176 and SWCAA 400-075 establish maximum emission standards for equipment leaks of HAPs for the Synthetic Organic Chemical Manufacturing Industry. These requirements apply to the fragrance and specialty plants. The notification of compliance status that details the compliance determinations per this regulation was sent to SWCAA on September 17, 1997.

Req. 035 through Req-038: Requirements for Toluene Tanks

A maximum emission rate for benzene and toluene was established for the toluene tanks, which are tied into the vent header system. In the event of a plantwide shutdown, the vent header system would not be online and the toluene tanks would vent "naturally" through the conservation and emergency vents. In this case the emissions are determined through engineering calculations.

The emission limits in Req-035 and Req-036 are assumed to be the emissions from the conservation and emergency vents as the tanks are normally connect to the vent heard system.

Req-039, and Req-041 through Req-108: Requirements for Combustion Units

EKC operates several boilers and hot oil heaters to provide steam for various processes on-site. Three units – hot oil heater U-1, boiler U-2 and boiler U-3 – pre-existed SWCAA and the requirements for pre-construction permits. All of the other boilers and hot oil heaters were permitted by SWCAA after receiving a pre-construction application from EKC, which has changed over the years. In the final permitting action, either an OA or ADP, SWCAA applied emission limits and operating, monitoring, reporting, and recordkeeping requirements. In addition, the units were required to install BACT at the time of the application. In subsequent permitting actions, some of the requirements among the boilers and hot oil heaters were changed at the request of EKC to establish new emission limits or operating parameters.

As of the most recent permitting action, ADP 09-2885, all of the boilers and hot oil heaters are required to be tested every sixty (60) months (per a schedule in the ADP) on each fuel that the unit can burn. The data generated during this periodic testing, along with fuel usage is used to determine total emissions from these units. Based on experience with these specific emission units and other similar emission units, SWCAA believes that emissions will not significantly degrade within the one to five-year span between source tests. Therefore, the use of source test emission factors and monthly fuel usage records to calculate annual emission rates is considered

adequate to demonstrate compliance with the annual emission limits. In the case where it is not required, or not feasible to test, for a particular pollutant, either a specific emission factor is cited, or the default factors from AP-42 are used for emissions determinations.

40 CFR 60.42c(d) establishes a maximum sulfur content limit of 0.5% w/w for any fuel oil used in boiler U-15 and hot oil heaters U-12, U-14, and U-16 (can only burn natural gas), which are subject to Subpart Dc. ADP 09-2885 further limited the maximum sulfur content to 0.05% w/w for any fuel oil burned in the units, based on reviews of BACT.

The calibration requirement in Req-041 is performed annually in accordance with the manufacturer's specifications.

OA 97-2078 Conditions 10(l) and 10(n) were streamlined into a single requirement under Req-090 pertaining to boiler U-16 since the intent of both requirements is to limit the sulfur content of the fuel burned in boiler U-16.

Req-109 through Req-158: Requirements under NESHAP for Hazardous Waste Combustors

Wastes associated with the manufacture of benzoic acid, benzaldehyde, plasticizers, fragrances, flavorings, and other specialty chemical are burned in boiler U-3; the boiler can also burn natural gas, fuel oil, and waste tar. These wastes have the consistency of fuel oil and a heat content of about 15,000 Btu/lb. The waste is considered to be "hazardous waste" because of the possibility that it could contain traces of benzene. The boiler is currently subject to the RCRA standards for hazardous waste-fired boilers and industrial furnaces (BIFs) contained in 40 CFR 266 Subpart H and has been issued RCRA permit #WAD092899574 by EPA and WDOE on July 16, 2001. The boiler is also subject to the Hazardous Waste NESHAP (40 CFR 63 Subpart EEE).

Under Subpart EEE, the periodic Comprehensive Performance Test (CPT) establishes both emission limits and operating parameters for the boiler. The most recent CPT was performed on November 11–12, 2008.

Req-122 requires monthly testing. Under §63.1206(c)(3)(viii), the requirement is that testing be performed weekly unless the facility documents that weekly testing would unduly restrict or upset operations. EKC has already demonstrated that monthly testing was adequate for this requirement under the RCRA permit. The system has not had any problems in the 18 years it has operated under a monthly testing schedule. SWCAA believes that requiring weekly testing at this time is unwarranted and therefore requires that EKC test at least monthly, in accordance with §63.1206(c)(3)(vii).

Req-157 establishes a 34 mg/dscm PM emission limit for boiler U-3. This limit is more stringent than the 80 mg/dscm PM emission limit established in Subpart EEE. The lower limit is consistent with the existing requirement in the RCRA permit and EKC requested the lower limit in ADP 09-2885 in order to remain consistent with the RCRA permit.

Req-159 through Req-196: Requirements for Benzoic Acid and Benzaldehyde Production (EU 22 through EU 28)

These requirements pertain to the Benzoic Acid and Benzaldehyde Production areas as well as the operation of the carbon beds and RTOs.

Req-161 and Req-168 contain a CO concentration limit of 7,500 ppmvd for each set of carbon beds with no on-going testing requirement. The concentration limit will only be verified if SWCAA believes that the operating conditions since the initial source test have changed enough to warrant a new test. The only emissions from the carbon beds are during RTO bypass (infrequent and usually transitory events limited to 240 hr/yr). As currently configured, the carbon beds do not have a significant potential to violate the concentration limits.

Most of the requirements on the carbon beds The carbon beds and the RTOs are subject to the HON. The main requirement for the carbon beds is to maintain a minimum total resource effectiveness (TRE), which is calculated in accordance with the HON. In addition, the steam rate, bed temperature, airflow rate are required monitoring parameters. The RTO is required to maintain a minimum HAP emission reduction rate of at least 98%. The center bed temperature of the RTOs is required to be monitored.

There are specific requirements for the emissions from Tanks T-54, T-313, and T-313A and the benzoic acid chipper baghouse.

Req-189 allows only 0.2 tpy of PM emissions from the benzoic acid chipper baghouse. The PM is assumed to be benzoic acid. On July 24, 1997, PM emissions from the benzoic acid chipper were measured at 0.25 lb/hr during bagging operations and 0.13 lb/hr during non-bagging operations. Typically, 75% of the operations are bagging, while 25% of the operations are non-bagging. Using this data and an assumption that the baghouse is only 90% efficient (a conservative estimate since no testing has been conducted to validate the effectiveness of the baghouse), an emission factor of 0.0231 lb/hr was developed. This emission factor will be used to calculate annual emissions unless a new emission factor is developed from a new source test.

Req-**190** through Req-196 establish requirements from ADP 07-2720 for the benzoic acid tanks (T-61, T-62, T-64, and T-65), such as a requirement for temperature not to exceed 170°C, opacity requirements, and to vent the head spaces of the tanks to water scrubber V-61 for control of PM (as benzoic acid).

Req-197 through Req-246: Requirements for Fragrance and Specialty Plants (EU-29 through EU-46)

In the last permitting action, ADP 09-2885, several other ADPs and OAs were superseded in order to comprise a single permit for the fragrance and specialty plants.

Several of the Requirements establish emission limits on specific columns or reactors for VOC, TAPs, and/or HAPs. There are specific requirements for monitoring or recordkeeping depending upon the type of chemical being processed in a particular column or whether the product contains methanol acetone, or acetic acid.

Column C-801 previously was permitted to process nonyl phenol. However, the facility ceased manufacture of nonyl phenol on November 16, 2007. Since column C-801 can process crude benzyl alcohol, which is a regulated chemical under the HON, the TRE limit of 1.0, 98% w/w HAP reduction, or 20 ppmv HAP emission limit contained in Req-238 potentially would be applicable. At the present time, the limits do not apply because the exhaust flow is less than 0.005 m^3/min. Column C-801, when producing crude benzyl alcohol at atmospheric pressure, is exempt from control requirements based on a low flow exemption in the HON regulation.

The originating permit, ADP 09-2885, for Req-243 contained a typographical error, continuous distillation column C-801 is not plumbed to "chilled water," but to "cooling tower" water. All determinations in the minor permit were made under the correct assumption.

Req-247 through Req-265: Requirements for Hexyl Cinnamic Aldehyde Plant (EU-47 through EU-53)

In the last permitting action, ADP 09-2885, several other ADPs and OAs were superseded in order to comprise a single permit for the HCA Plant. The requirements found in this ADP are directly applicable to equipment in the HCA Plant.

Req-266 through Req-274: Requirements for Benzoate Plant (EU-54 through EU-65)

There is currently one active OA, OA 00-2274R3, that applies to approved operations of the benzoate plant. OA 00-2274R3 was written in response to an application submitted by EKC to modify the minimum scrubber water flow rates consistent with design flow rates. The requirements found in this OA are directly applicable to benzoate plant.

Req-270 utilizes an emission factor of 0.0487 lb/hr unless new data is developed during a source test. Total PM emission concentrations from the conveyors are estimated at 0.008 gr/dscf with 51% of the total PM being condensable PM (based on a February 8–9, 1995 source test of the fluidized bed extruder baghouse). The total flow rate from this system is 1,450 cfm, therefore filterable particulate matter emissions are estimated at 0.0487 lb/hr.

Req-274 requires a minimum scrubber water flow rate of 28 gpm for the type UW-4 scrubbers and 15 gpm for the type UW-3 scrubbers.

Scrubbers C-902A and C-920 are Ducon Dynamic type UW-4 scrubbers, the remainder of the scrubbers are Ducon Dynamic type UW-3 scrubbers. The type UW-3 scrubbers require 1–2 gal of scrubber water per 1,000 acfm of saturated vapor treated, therefore the minimum scrubber water flow for these units should be 15–30 gpm if the unit is treating 15,000 acfm of gas (maximum measured from scrubber C-907). The type UW-4 scrubbers require 2–3 gal of scrubber water per 1,000 acfm of saturated vapor treated, therefore the minimum scrubber water flow for scrubbers C-920 and C-902 should be 28–42 gpm if the units are treating 14,000 acfm of gas (estimated flow for scrubber C-920).

In a letter dated March 18, 2002, the facility submitted pump curves for the two pumps used to recirculate scrubber water for the benzoate scrubbers. Based on these pump curves, the post-

pump pressure for scrubbers C-901, C-904, C-905, C-906, C-907, and C-909 must be 25 psig or less to provide for the minimum scrubber water flow. The post-pump pressure for scrubbers C-902A and C-920 must be 37 psig or less to provide for the minimum scrubber water flow.

Req-275 through Req-277: Requirements for Plasticizer Plant (EU 66 and EU 67)

There is currently one active OA, OA 96-1864R1, that applies to approved operations of the plasticizer plant. This OA was issued in response to an application submitted by EKC. The requirements found in this OA are directly applicable to the emission units for which the specific OA was issued.

Req-275 contains a temperature limit based on a January 5, 1994 source test. During the source test, exhaust temperatures ranged to 50°F while maintaining compliance with the VOC emission limits (4.2 lb/hr emitted compared to a 9.0 lb/hr limit). An operating limit of 52°F allows for a small amount of operational flexibility while maintaining compliance with the emission limits.

The final control devices for reactors R-8601A and R-8621 are refrigerated chillers E-8603 and E-8623, respectively. There is a pressure transducer on each of the chillers and if the pressure exceeds 2 psig (which corresponds to a 20 acfm flow), then the chillers vent to atmosphere, otherwise, the gas flow is directed to refrigerated condensers X-8601 and X-8621 and then back to the reactors. At any given time, a portion of the vent flow may be venting to atmosphere and through the condensers. Req-277 requires that if the vent flow through the condensers exceeds 20 acfm, then the vent gas temperature, which is measured at the E-8603 and E-8623 atmospheric vent, is restricted to 52°F. The term was clarified in the Title V permit to delineate that the requirement applies to each reactor individually, not as a group.

Req-278 through Req-301: Requirements for Wastewater Treatment (EU-68 through EU-71)

There is currently one active ADP, ADP 09-2885, that applies to approved operations of the wastewater treatment plant. The requirements found in this OA are directly applicable to operations at the wastewater treatment plant. In addition, the wastewater treatment plant is subject to the provisions of 40 CFR 61 Subpart FF, which establishes maximum emission standards for benzene wastewater operations. These requirements apply to the wastewater operations only. The facility triggered the control requirements in January 1998. Aqueous waste streams that contain benzene will be treated to meet the regulatory specified target benzene quantity of <6.0 Mg/yr.

Req-302 through Req-306: Requirements for Benzene Transfer Operations (EU-73)

There is currently one active ADP, ADP 09-2885, that is directly applicable to the benzene transfer operations. In addition, this operation is subject to the HON, which establishes maximum emission standards for benzene transfer operations.

When railcars are loaded, the vapor space of the railcars is routed to non-regenerative carbon canisters, which are equipped with a CEMS. The carbon reduces the VOC concentration by a minimum of 98% per the requirements in the HON.

Req-307 through Req-317: Requirements for Miscellaneous Storage Tanks (EU-74 through EU-77)

These requirements apply to a variety of tanks and transfer racks that may not have any other specific requirements.

Other tanks or transfer racks, if they meet the capacity and vapor pressure criteria, would be subject to 40 CFR 63 Subpart EEEE. Tank service may change in the future and other tanks may become subject to the requirements of Subpart EEEE. EKC is required to maintain a tank list with the appropriate information for determining applicability.

V. EXPLANATION OF OBSOLETE AND FUTURE REQUIREMENTS

1. SWCAA Air Discharge Permits

SWCAA has issued a total of 92 Administrative Orders, which include ADPs, OAs, three letters of approval in response to applications for operations at the source, and one Consent Order issued to correct compliance violations. Of the 92 orders issued, 79 have been superseded or have expired. There are currently 13 active orders. The following is a list of current and superseded/expired orders:

Active Permits

Order/Permit Number	Application Number	Date Issued	Description
ADP 09-2885	CO-878 CO-882	9/15/2009	Opt-out permit, consolidation of other permits, and approval to produce new chemical
ADP 07-2720	CO-831	5/8/2007	Installation of benzoic acid tanks.
OA 00-2270R2	CO-738	12/20/2002	Add approval to burn octanal waste to boiler U 17 conditions [Portions superseded by ADP 07-2759].
OA 96-1864R1	CO-732	9/20/2002	Installation of replacement (larger) plasticizer
OA 00-2274R3	CO-728	6/20/2002	Modification of benzoate scrubbers minimum water flow rate requirement consistent with design water flow rates
OA 01-2402	CO-722	1/20/2002	Installation of scrubber to control fumes from tar and benzoic acid melting
OA 01-2389	CO-710	10/20/2001	Modification of permit terms for U 14 and U 15 including approval to fire increased amounts of low-sulfur fuel oil [Portions superseded by ADP 07-2759].
OA 99-2233	CO-637	1/20/2001	Modification of permit conditions for baghouses F-13 and F-14 and Specialty Distillation Unit distillation column
OA 99-2202	CO-635 CO-636	4/19/1999	Modification of short-term emission limits for boilers and heaters and increased acetaldehyde emission limits in the specialty chemical plant [Portions superseded by OA 002328 and OA 01-2389].
OA 97-2078	CO-613	2/19/1998	Installation of boiler U 16, R-1171 and modification of permit terms for R-1101 and R-1141 [Portions superseded by ADP 07-2759].
OA 95-1799R1	CO-570	12/19/1996	Modification of emission limits for U 11 and establishment of 139.0 tpy plantwide NOx emission limit [Portions superseded by ADP 07-2759].

Active Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 96-1865	CO-549 CO-550	8/19/1996	Modification of emission limits and operational conditions for VOCs from the production of phenol [Portions superseded by OA 01-2395].
OA 94-1670R1	CO-556	9/19/1995	Increased emission limits for U-9 [Portions superseded by OA 00-2328 and ADP 07-2759].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
ADP 07-2759	CO-840	1/7/2008	Opt-out permit for HAP minor
OA 01-2378R1	22P-CO	7/20/2004	Modification/reissuance of emission reduction credits that expired April 2006 - benzene credits used for ADP 03-2456R1.
OA 03-2456R1	CO-764	7/20/2004	Modification of conditions for the HCA plant due to unexpected CO emissions from continuous tube reactor R-1250 [Superseded by ADP 07-2759].
OA 04-2529	CO-762	4/20/2004	Approval for minor modification of permit terms for the Fragrance and Benzyl Alcohol/Benzyl Amine plants and consolidation of permit terms [Superseded by ADP 09-2885].
OA 03-2465	CO-745	5/15/2003	Approval of new anaerobic wastewater treatment equipment and associated flare X-86B [Superseded by ADP 07-2759].
OA 03-2456	CO-746	3/27/2003	Approval of new equipment that will be used primarily for the production of hexyl cinnamic aldehyde [Superseded by OA 03-2456R1].
OA 00-2274R2	CO-718	12/6/2001	Modification of benzoate plant scrubbers monitoring and consolidation of all permit terms and conditions for the benzoate plant [Superseded by OA 00-2274R3].
OA 01-2395	CO-716	11/20/2001	Expansion of phenol block and consolidation of all permit terms and conditions for the phenol block [Superseded by ADP 07-2759].
OA 01-2377 and OA 01-2378	CO-714	8/30/2001	Emission Reduction Credit deposit for replacement of tar tank T-313 with T-313a [Expired].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 00-2270R1	CO-698	8/13/2001	Replacement of U 17 burners and approval to fire low-sulfur distillate fuel oil at will [Superseded by OA 00-2270R2].
OA 00-2328	CO-650 CO-651	3/20/2001	Modification of various permit terms and conditions [Superseded by OA 01-2389, OA 01-2395, and ADP 07-2759].
OA 00-2274R1	CO-675	10/30/2000	Modification of scrubbing system approved in OA 00-2274 [Superseded by OA 00-2274R2].
OA 00-2274	CO-659	6/19/2000	Installation of sodium benzoate dryer and scrubber [Superseded by OA 00-2274R1].
OA 00-2270	CO-656	6/12/2000	Installation of boiler U 17 [Superseded by OA 00-2270R1].
OA 99-2214	CO-641	7/22/1999	Installation of batch vacuum distillation column and 4 additional storage tanks to increase production of specialty chemicals [Superseded by OA 00-2328 and OA 00-2274R3].
OA 98-2125	CO-601 CO-621	2/19/1999	Modification of various permit terms and conditions [Superseded by OA 002328, OA 01-2395, and ADP 07-07-2759].
OA 98-2121	N/A	5/6/1998	Consent Order to address PM from baghouse F-14. The Order requires specific corrective action until F-14 can be modified with longer bags [Expired 1/1/1999].
OA 98-2088	CO-483 CO-553	3/11/1998	Modification of permit terms for 4 batch vacuum distillation columns in the fragrance facility [Superseded by OA 00-2328, OA 00-2274R3, and OA 99-2233].
OA 97-2026	CO-595	7/29/1997	Installation of 1 batch vacuum distillation column and 5 storage tanks for the production of specialty chemicals [Superseded by OA 00-2328 and OA 00-2274R3].
C95 5522 FDB	N/A	3/28/1997	Consent decree - expired March 28, 2002 - requires operation of 100-side CEM [Expired].
OA 97-1986	CO-586	3/19/1997	Installation and operation of soil vapor extraction unit equipped with thermal oxidizer in response to EPA corrective action [Superseded by ADP 07-2759].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 96-1955	CO-581	12/16/1996	Phase II of phenol block expansion. Installation of R-151, B-155, T-186, X-100, X-150, X-86 [Superseded by OA 00-2328, OA 00-2274R3, OA 01-2395, and ADP 07-2759].
OA 96-1943	CO-578	11/19/1996	Installation of toluene storage tank T-71 and installation of refrigerated condensers to control emissions. Nitrogen pad from toluene oxidizer [Portions superseded by OA 01-2395].
OA 96-1864	CO-552	6/27/1996	Change of plasticizer plant permit conditions [Superseded by OA 96-1864R1].
OA 94-1667R2	CO-548	12/19/1995	Installation of two tub-scrub units in series to control benzene vapors during rail-car loading [Portions superseded by OA 01-2395 and ADP 07-2759].
OA 94-1709R1	CO-555	12/19/1995	Modification of PM limit on boiler baghouses so that 0.01 gr/dscf limit only applies to filterable emissions [Superseded by OA 99-2233 and ADP 07-2759].
OA 95-1799	CO-551	10/11/1995	Modification of boiler and heater emission limits and establishment of 137.0 tpy cap on NOx emissions [Superseded by OA 95-1799R1, OA 00-2328, and OA 00-2274R3].
OA 95-1797	CO-541	9/30/1995	Installation of 1 boiler, 1 heater, 2 distillation columns to increase benzaldehyde and benzoic acid production [Superseded by OA 01-2389, OA 99-2202, OA 00-2328, and OA 00-2274R3].
OA 95-1757	CO-529 CO-543	5/30/1995	Installation of 2 sodium benzoate dryers and one new scrubber to control PM emissions. This installation increased steam load on the boilers [Superseded by OA 98-2125 and OA 00-2274R3].
OA 94-1709	CO-526	1/19/1995	Use of baghouses F-14 for PM control while burning waste tar in U 2 [Superseded by OA 95-1799R1, OA 00-2328, and OA 00-2274R3].
OA 94-1667R	N/A	12/13/1994	Corrected minor errors OA 94-1667 [Superseded by OA 94-1667R2 and OA 01-2395].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 94-1670	CO-518	10/10/1994	Installation of boiler U 9 [Superseded by OA 94-1670R1, OA 00-2328, and OA 00-2274R3].
OA 94-1667	CO-515	10/3/1994	Use of 100-side carbon adsorption system to control benzene emissions from rail-car loading and storage tanks [Superseded by OA 94-1667R2 and OA 01-2395].
OA 94-1640	CO-506	9/30/1994	Installation of 3 storage tanks for fragrance plant w/conservation vents and a nitrogen blanket [Superseded by OA 00-2328 and OA 00-2274R3].
OA 94-1658	CO-507	9/19/1994	Replacement of two baghouses for U-7 (F-14) [Superseded by OA 00-2328 and ADP 07-2759].
OA 94-1633R	N/A	7/28/1994	Corrected minor errors in 94-1633 [Superseded by OA 00-2328 and OA 00-2274R3].
OA 94-1633	CO-513	7/13/1994	Routing of uncontrolled columns and tank vents to carbon adsorber beds via 100-side vent header [Superseded by OA 94-1667R2 and OA 01-2395].
OA 94-1593	N/A	5/6/1994	Compliance schedule requiring report of compliance with federal regulations - effectively superseded by Title 5 [Superseded by OA 00-2274R3].
OA 93-1516	CO-476	10/4/1993	Installation of 5,000 gallon reactor (R-8621) for production of plasticizers [Superseded by OA 96-1864R1].
OA 93-1494	CO-475	7/9/1993	Installation of batch vacuum distillation system and 5 storage tanks [Superseded by OA 00-2328 and OA 00-2274R3].
OA 92-1458	CO-463	9/15/1992	Installation of 3rd toluene stripping column and associated equipment and storage tanks to increase benzaldehyde production [Superseded by OA 00-2328 and OA 00-2274R3].
OA 92-1399	CO-448	3/13/1992	Construction of permanent facilities for production of cinnamic aldehyde by equipment previously approved. Packed bed scrubber used for emission control [Superseded by OA 99-2202, OA 00-2328, and OA 00-2274R3].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 92-1391	CO-447	2/17/1992	Installation of 6th product dryer for sodium and potassium benzoate production (D-906) [Superseded by OA 98-2125 and OA 00-2274R3].
OA 91-1336	CO-438	6/17/1991	Installation of new potassium benzoate scrubber for D-902 to prevent cross contamination (was vented commonly with D-901 which dries sodium benzoate) [Superseded by OA 98-2125 and OA 00-2274R3].
OA 91-1318	CO-368	5/20/1991	Installation of larger baghouse to control PM from increased tar burning in U 2 and U 3 [Superseded by OA 94-1709R1, OA 00-2328, OA 00-2274R3, and OA 95-1799R1].
OA 91-1283	CO-419	2/19/1991	Installation of 5th product dryer in sodium benzoate facility (D-905) with a wet scrubber for control of PM [Superseded by OA 98-2125 and OA 00-2274R3].
OA 90-1254	CO-411	9/6/1990	Replacement of carbon adsorbers and increased venting by benzoic acid unit [Superseded by OA 00-2328 and OA 00-2274R3].
OA 90-1213	CO-406	5/21/1990	Installation of Dowtherm heater U 12 primarily fired on natural gas with #2 fuel oil as a backup fuel [Superseded by OA 00-2328 and OA 00-2274R3. OA 91-1318, and OA 94-1709R1].
OA 90-1201	CO-393	4/26/1990	Construction of new octanal conversion/vacuum distillation facilities (ACA, HCA production) [Superseded by OA 00-2328 and OA 00-2274R3].
OA 89-1151	CO-381	12/6/1989	Installation of 2nd hydrogenation reactor in benzyl alcohol facility (R-8521) [Superseded by OA 98-2125 and OA 00-2274R3].
OA 89-1078	CO-365	5/15/1989	Installation of pneumatic conveying system, house-keeping system with baghouse, mix tank vent controls and revised dryer - scrubber connections in sodium and potassium benzoate facilities [Superseded by OA 98-2125 and OA 00-2274R3].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 89-1055	CO-360	2/14/1989	Installation of 4th product dryer in sodium benzoate facility [Superseded by OA 98-2125 and OA 00-2274R3].
OA 88-1049	CO-356	1/16/1989	Installation of fluidized bed product dryer for new extruder with a baghouse for control of PM emissions [Superseded by OA 98-2125 and OA 00-2274R3].
OA 88-1026	CO-347	10/31/1988	Installation of sodium benzoate dryer with PM control by existing scrubber [Superseded by OA 98-2125 and OA 00-2274R3].
OA 88-1026	CO-347	10/31/1988	Installation of sodium benzoate dryer with PM control by existing scrubber [Superseded by OA 98-2125 and OA 00-2274R3].
OA 88-1018	CO-351	10/19/1988	Installation of boiler U 11 [Superseded by OA 00-2328 and OA 00-2274R3. OA 91-1318].
OA 88-996	CO-342	7/5/1988	Installation of boiler U 9 with limitation of fuel sulfur content to 1.5% by weight [Superseded by OA 95-1799R1, OA 00-2328, and OA 00-2274R3].
OA 88-991	CO-338	6/13/1988	Installation of fragrance chemical production facilities and combustion of 500 lb/day distillation residuals [Superseded by OA 99-2202, OA 00-2328, and OA 00-2274R3].
OA 82-675	CO-282	12/10/1982	Installation of benzyl chloride production facilities [Superseded by OA 00-2274R3].
OA 82-675	CO-282	12/10/1982	Installation of benzyl chloride production facilities [Superseded by OA 00-2274R3].
OA 81-578	CO-268	3/16/1981	Installation of plasticizer production facilities to pro-duce glycol esters of benzoic acid [Superseded by OA 96-1864R1].
OA 81-578	CO-268	3/16/1981	Installation of plasticizer production facilities to pro-duce glycol esters of benzoic acid [Superseded by OA 96-1864R1].
OA 80-537	CO-262	8/6/1980	Installation of anaerobic digester and flare system to treat formic and acetic acid by-products [Superseded by OA 00-2328 and OA 00-2274R3].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 80-530	CO-259	7/8/1980	Installation of benzyl alcohol production, transfer and storage facilities [Superseded by OA 98-2125 and OA 00-2274R3].
OA 80-530	CO-259	7/8/1980	Installation of benzyl alcohol production, transfer and storage facilities [Superseded by OA 98-2125 and OA 00-2274R3].
OA 78-327	CO-217	3/18/1978	Installation of sodium benzoate production facility [Superseded by OA 98-2125 and OA 00-2274R3].
OA 78-327	CO-217	3/18/1978	Installation of sodium benzoate production facility [Superseded by OA 98-2125 and OA 00-2274R3].
OA 77-289	CO-209	12/6/1977	Expansion of phenol block, increased throughput in existing toluene reactor using absorbing columns B-202 as control [Superseded by OA 96-1865 and OA 01-2395].
OA 77-289	CO-209	12/6/1977	Expansion of phenol block, increased throughput in existing toluene reactor using absorbing columns B-202 as control [Superseded by OA 96-1865 and OA 01-2395].
OA 75-135	CO-182	11/26/1975	Construction and operation of alkyl phenol plant and storage system for production of nonyl phenol [Superseded by OA 98-2125 and OA 00-2274R3].
OA 75-99	CO-175	7/2/1975	Installation of Babcock and Wilcox boiler and bag-house for firing waste tar (U 7) [Superseded by OA 94-1658, OA 95-1799R1, OA 00-2328, and OA 00-2274R3].
OA 75-99	CO-175	7/2/1975	Installation of Babcock and Wilcox boiler and bag-house for firing waste tar (U 7) [Superseded by OA 94-1658, OA 00-2328, OA 00-2274R3, and OA 95-1799R1].
OA 75-95	CO-161	5/23/1975	Installation of waste tar atomizing burners on U 2 and U 3 and approval to burn 5–8 gpm acetic-formic acid water [Superseded by OA 94-1709R1, OA 00-2328, OA 00-2274R3, and OA 95-1799R1].

Superseded Orders/Permits

Order/Permit Number	Application Number	Date Issued	Description
OA 75-95	CO-161	5/23/1975	Installation of waste tar atomizing burners on U 2 and U 3 and approval to burn 5-8 gal/min acetic-formic acid water [Superseded by OA 94-1709R1, OA 95-1799R1, OA 00-2328, and OA 00-2274R3].
N/A	CO-157	11/4/1974	Land filling by hydraulic dredging – received November 4, 1974
74-0712LET	CO-145	7/12/1974	Plantwide odor control project [Superseded by OA 00-2274R3].
73-1221LET	CO-119	12/21/1973	Installation of carbon beds for 98+% control of VOCs with CEM [Superseded by OA 00-2274R3].
OA 73-8	CO-93	2/21/1973	Order to reduce emissions from various operations [Superseded by OA 94-1709R1, OA 00-2328, OA 96-1865, OA 01-2395, and OA 00-2274R3].
72-1211LET2	CO-87	12/11/1972	Flyash control system for boiler B-2 [Superseded by OA 00-2274R3].

2. Future Requirements

MACT/NESHAP

The facility is subject to various currently promulgated MACT/NESHAP standards. The following MACT rules may be applicable to this facility in the future:

- 40 CFR 63 Subpart DDDDD (§63.74804 et seq.) – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters – [12/28/05]. Subpart DDDDD applies to industrial, commercial, and institutional boilers and process heaters at major sources of HAP emissions. The regulation applies to the boilers and hot oil heaters at EKC's facility as long as the facility remains a major source of HAPs. All of the existing boilers are in either the "large liquid fuel" subcategory or the "large gaseous fuel subcategory." Because all of EKC's units were installed prior to January 14, 2003, they are considered "existing" units. The only requirement that applies to existing units in these categories is initial notification of applicability (due March 12, 2005). EPA failed to promulgate this standard by November 15, 2000 (the statutory deadline for promulgation of 10-year MACT standards), triggering a requirement by EKC to submit a notification of potential applicability by May 15, 2002. EKC submitted this "Part I" notification on May 15, 2002. This notification may also serve as the notification due March 12, 2005.

Additional requirements of this subpart may apply to new boiler or process heater installations.

On June 8, 2007, as a result of several previous legal actions, the District of Columbia Court of Appeals vacated 40 CFR 63, Subpart DDDDD. The decision was based upon a review by the Court that identified inconsistencies between Subpart DDDDD and the definition of Commercial and Industrial Solid Waste Incineration (CISWI) Units (aka "CISWI Definitions Rule"). Taken together, many of the boilers affected by Subpart DDDDD would be reclassified as CISWI units, which would have substantially reduce the universe of boilers affected by Subpart DDDDD. Because Subpart DDDDD will need to be significantly altered to address these changes, the court decided to vacate the rule in its entirety.

It is possible that the rule will remain in place. As such, EKC will continue to proceed as if the upcoming compliance deadline were to remain in effect at least until there is a more definitive outcome in this case.

- 40 CFR 63 Subpart VVVVVV (§63.11494 et seq) "National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources." This regulation was published in the Federal Register on October 29, 2009. The compliance date for this regulation is **October 29, 2012.**

Compliance Assurance Monitoring
CAM may apply to some equipment in the future when pollutant specific requirements for that emission unit are included in the Title V permit, or at permit renewal (whichever comes first). CAM is not currently required for any equipment at EKC's facility.

VI. EXPLANATION OF MONITORING TERMS AND CONDITIONS

M01. Visible Emissions Monitoring

This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the general visible emission requirements. The visible emission limits utilizing this monitoring section to assure compliance do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615.

Based on SWCAA's experience, no opacity is expected from sources burning natural gas or process gas or from distillation columns or reactor vents. Emissions from combustion units burning oil, waste tars, and hazardous wastes are likely to exhibit some opacity but well below the generally applicable 20% limit. Periodic soot blowing and grate cleaning to maintain boiler efficiency may result in higher opacity caused by these activities and is expected and allowed by the relevant standard (i.e. SWCAA 400-040). Having EKC inform SWCAA when fuel oil will be burned, allows SWCAA to determine if additional opacity monitoring will be necessary. SWCAA has the authority under SWCAA 400-106 to conduct or require emission testing as necessary to determine the compliance status of a source, evaluate control equipment performance, or quantify emissions.

There is no situation, based on source tests and calculations, that any combustion unit would exceed the grain loading limit. It was therefore determined by SWCAA that a visible emissions observation of these units would be sufficient to determine compliance.

Because the expectation of little or no visible emissions from the emission units, M1 has been designed to provide a "ramp up" of effort if visible emissions are observed. The first step is to observe visible emissions as a simple "see" or "no see" test. In this way, the inspection can be conducted even if no opacity certified personnel are available. If an official opacity observation is necessary, EKC has time to schedule testing by a certified individual. Any observation of visible emissions causes EKC to perform additional effort. Such effort may include maintenance of the unit or Method 9 readings, depending upon the source. If visible emissions are above the opacity limit, then EKC is required to report a deviation and perform maintenance or repairs. SWCAA has allowed up to 72 hours to provide an opacity reading using EPA Method 9 to demonstrate compliance with the applicable opacity limit.

M02. Grain Loading Limit Monitoring

The following have grain loading requirements as listed:

Title V Requirement	Emission Unit	Grain Loading Limit
Req-009	All combustion EUs	≤0.1 gr/dscf
Req-010	All non-combustion EUs	≤0.1 gr/dscf
Req-042	Boilers U-2, U-3, and U-7 burning tar	≤0.01 gr/dscf
Req-170	Carbon beds T-180/T-181	≤0.005 gr/dscf
Req-178	Carbon beds T-120A/T-130B	≤0.005 gr/dscf
Req-194	Benzoic acid chipper baghouse	≤0.006 gr/dscf

Title V Requirement	Emission Unit	Grain Loading Limit
Req-266	Benzoate scrubbers	≤0.006 gr/dscf
Req-268	Fluidized bed extruder baghouse	≤0.008 gr/dscf

For the combustion units, there are several fuels that can be burned, including natural gas, fuel oil, waste tar, hazardous waste, and octanal bottoms.

All of the non-combustion units have requirements to be tested periodically for PM emissions. All of the previous source tests have shown that the units are below the applicable grain loading limits. It was therefore determined by SWCAA that a visible emissions observation of these units would be sufficient to determine compliance.

M03. Complaint Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the general requirements drawn from SWCAA 400-040. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. These requirements are designed to provide prompt response to all relevant air quality complaints, and record any necessary corrective action. The plant is located in an industrial area that has not received substantial public air quality complaints in the past.

This is a state only and/or local only requirement because it is used to assure compliance only with state and or local only requirements.

M04. Fugitive Emission and Fallout General Inspection
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the general requirements drawn from SWCAA 400-040. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. The requirements are designed to provide prompt response to all relevant complaints, and record any necessary corrective action.

M05. Particulate Matter Emissions Monitoring
This monitoring requirement is used to provide a reasonable assurance of compliance with the general requirements drawn from SWCAA 400-040 and SWCAA 400-050. These general PM emission limits do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615.

M06. Maintenance Activities Monitoring
Maintenance activities are recorded so that SWCAA and EKC can evaluate any changes that may affect the ability of the emission unit to meet emission limits and operate properly. Such recordkeeping also allows SWCAA and EKC to evaluate and institute monitoring at the appropriate frequency for various emission units in future permitting actions. For example, if

a significant portion of the bags in a baghouse need to be replaced weekly, but monitoring is limited to monthly opacity observations, this data can be used to determine a more appropriate monitoring schedule to be implemented during the next permitting action. Such records can also be evaluated to determine if emission factors used to calculate emissions are still valid.

M07.Emission Inventory Monitoring
Under the applicable ADP or OA, specific information is required to be tracked for purposes of determining annual emissions. This information is generally submitted as part of the annual emission report required under SWCAA 400-105.

M08. Startup, Shutdown, and Malfunction Plan
The requirement comes directly from 40 CFR 63.6(e)(3) and requires EKC to maintain and update a startup, shutdown, and malfunction (SSM) plan. In the preamble to proposed changes to 40 CFR 63.6 (July 29, 2005 Federal Register), EPA clarified that the SSM plan is not incorporated into the Title V permit, and the provisions of the plan are not applicable requirements of the Title V permit. Actions taken by EKC during a SSM event can be compared against the SSM Plan to help determine if EKC complied with the general duty clause to minimize emissions during a startup, shutdown or malfunction event. In the July 29, 2005 *Federal Register* notice (70 FR 43992), EPA explained that sources must have maximum flexibility to react to unanticipated conditions. Revisions to the SSM Plan do not require a revision of the Title V permit.

M09. Emission Units Subject to 40 CFR 63 Subpart F, Subpart G, or Subpart H
This monitoring requirement is used to provide a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63 Subpart F (§63.100 et seq), Subpart G (§63.110 et seq), and Subpart H (§63.160 et seq). This monitoring requirement is used to confirm that for those EUs that are subject are meeting the requirements of the applicable regulations.

M10. Leak Detection and Inspection of Sample Connect, Open Valves, and Bottoms Receivers
This monitoring requirement is used to provide a reasonable assurance of compliance with the specific requirements drawn from 40 CFR §63.166, 40 CFR §63.167, and SWCAA 400-075. The monitoring required by this section is from 40 CFR §63.167(e) and 40 CFR §63.172(f). This monitoring requirement is used to confirm that open valves, bottoms receivers, sample connections, closed-vent system and control devices are meeting the requirements of the applicable regulations.

M11. Leak Detection Program Applicability Monitoring Log
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.162, and SWCAA 400-075. The monitoring is specified in 40 CFR 63.123(a). This monitoring requirement is used to identify which equipment is subject to the leak detection program.

M12. Leak Detection Monitoring
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with leak detection requirements drawn from 40 CFR 163, 40 CFR §§63.166-63.167, 40 CFR §§63.169-63.173, and SWCAA 400-075. This monitoring requirement is mainly taken from 40 CFR 63.162, except that 40 CFR 63.162 does not identify the frequency of the report review. Consequently, SWCAA has implemented a requirement to review the reports annually under the "gap filling" provisions of WAC 173-401-615.

The monitoring of leaks shall be conducted as defined in 40 CFR 63.180 except as approved in the alternative monitoring request contained in a letter from Anita J. Frankel, EPA Region 10 on April 23, 1996, found in Appendix A of the Title V Permit. The alternative monitoring request to use a photoionization detector (PID) calibrated with isobutylene instead of methane to satisfy the leak monitoring requirements of 40 CFR 63.180 was granted.

M13. Leak Detection Quality Improvement Plan
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with leak detection requirements drawn from 40 CFR 63.162, 40 CFR 63.176, and SWCAA 400-075. This monitoring is specified in 40 CFR §63.175-63.176. This monitoring requirement is used to summarize the progress at reducing leaks from equipment that are above target levels.

M14. Heat Exchanger Testing
This monitoring requirement is used to provide a reasonable assurance of compliance with the heat exchanger leak requirement drawn from 40 CFR 63.104, and SWCAA 400-075. This testing is used to confirm that HAP material is not leaking into heat exchanger water. SWCAA approved an alternative monitoring plan on April 26, 1999. The alternative monitoring plan utilizes the assumption that the once-through cooling water from the Columbia River is originally HAP free. A copy of the approval is contained in Appendix B of the Title V permit.

M15. Toluene Tank Temperature Monitoring
This monitoring requirement is used to provide a reasonable assurance of compliance with the emission limits in ADP 09-2885. This monitoring requirement is used to confirm that the cooling equipment for toluene tanks T-70 and T-71 is operating correctly. The data collected by this monitoring section, in conjunction with the data collected by M28, enables the calculation of toluene emissions from the tanks. The temperatures establish an upper limit of toluene concentration based on saturation vapor pressure, and the toluene throughput can be used to calculate gas flow from the tanks.

Although this monitoring is used to assure compliance with an hourly standard, temperature monitoring is only required daily because the cooling equipment is extremely simple and has proven to be highly reliable. It is highly unlikely that the equipment would degrade in the span of a single day to the point where the hourly emission limit would be exceeded. The tanks are now piped to the vent header and although the condensers are always on; the temperature limit only applies when the vent header is bypassed.

M16. Toluene Tank Monitoring During Bypass
In the rare situation where the vapor space of the toluene tanks exceeds +1.8 iwc, the vapor controls are effectively bypassed. Since the vapor pressure is continuously monitored, the bypass event occurs when the pressure exceeds +1.8 iwc. Engineering calculations using the assumption that the vapor from the tanks is fully saturated with toluene are used to determine emissions.

M17. Toluene Tanks Throughput Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the emission limits in ADP 09-2885. The annual throughput and periodic emissions test results from M27 are used to quantify emissions from toluene tanks T-70 and T-71. The throughput limitation was based on an emissions evaluation during BACT review.

M18. Combustion and Process Unit Fuel Consumption Logging
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the general and specific requirements. The monitoring required by this section allows for the calculation of annual emissions from specific emission units and a demonstration of compliance with fuel consumption limitation requirements. Emission factors used to calculate annual emissions are fuel-specific and expressed as mass emissions per unit of fuel consumed. The source and fuel-specific emission factors are derived from the most recent source test at that (or a very similar source) when source test data is available. When source test data is not available, emissions are calculated using the most current AP-42 factors when the relevant emission limit was set. SO_2 emissions are calculated using a mass balance as discussed in M5.

The frequency of logging was chosen to correspond with the most frequently rolled emission limits (monthly).

40 CFR 60 Subpart Dc requires daily fuel usage monitoring for boilers U-12, U-14, U-15, and U-16 unless an alternative schedule is established by the EPA Administrator. In a letter dated October 10, 2002 the EPA Administrator (United States EPA Region 10 in this case) approved a request from the facility to reduce the required fuel usage monitoring frequency for boilers U-12, U-14, U-15, and U-16 from daily to monthly. This letter is included as Appendix C of the Title V permit.

M19. Combustion and Process Unit Fuel Certification and Sulfur Content Monitoring
This monitoring requirement, by itself or in combination with other monitoring requirements, is used to provide a reasonable assurance of compliance with the general and specific requirements.

SWCAA 400-040(6) limits the emission of gaseous SO_2 from any emission unit to a maximum concentration of 1,000 ppmvd corrected to 7% oxygen. The boilers and heaters at this facility combust natural gas, fuel oil, or process tar, all of which have a sulfur content of $\leq$1.75%. Based on stoichiometric analysis, it is not possible for the combustion sources in question to exceed the limit of 1,000 ppmvd SO_2 while firing on natural gas or fuel oil.

Waste tar burned in boilers U-2, U-3 or U-7 contains no sulfur because no processes at the facility that create the waste tar contain any sulfur compounds. Therefore, it is not necessary to demonstrate that emissions of SO_2 from the combustion of waste tar are less than 1,000 ppm. Monitoring and certification of fuel type and sulfur content is sufficient to demonstrate compliance with the SO_2 limitations.

M20. Boiler U-9 Steam and Fuel Meter Calibrations
Records of fuel and steam meter calibrations for boiler U-9 are required to be submitted by EKC to SWCAA annually. This requirement originates from the minor permit, OA 94-1670R1, Appendix A. Although many of the requirements under the permit section were superseded, this requirement, which only exists in the Appendix, has not been superseded and is therefore still in effect.

M21. Combustion Unit Periodic Emissions Monitoring
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. Annual tuning and emission monitoring provides further assurances (beyond required reference method source testing) that the boilers and heaters are operating properly. Tuning and emission monitoring is not meant to provide a direct compliance demonstration, but rather to identify problems with boiler operations (failing burners, improper combustion air flow, failing O_2 sensors, and etc.) before such failures result in exceedances of the emission limits. In SWCAA's experience, emissions from EKC's boilers and heaters are not highly variable, therefore this annual tuning/emissions monitoring frequency provides a reasonable assurance that major equipment failures have not occurred between scheduled source tests (usually every five years).

M22. Combustion Unit Fuel Heat Content
This monitoring requirement is used to verify emissions calculations for boilers and heaters whose emission factors are based upon heat content values. EKC regularly tests for heat content of tars, hazardous waste, and octanal bottoms for use in their energy management. The intention was not to collect fuel content data for natural gas or fuel oil.

M23. Baghouses F-13 and F-14 Visible Emissions Monitoring
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 99-2233. This monitoring requirement is used to ensure that the baghouses are operating properly and to insure compliance with the opacity limits. The baghouses are not likely to degrade in less than one week to the point where there is a violation of the opacity standard, therefore weekly opacity monitoring provides a reasonable assurance of ongoing compliance.

M24. Boiler U-9 PM, SO_2, and VOC Emission Factors
OA 94-1670R1 Conditions 12(c) and 12(d) established specific emission factors for calculating PM, SO_2, and VOC emissions from boiler U-9. There are no periodic source testing requirements for these pollutants for this boiler.

M25. Combustion Unit Emission Testing
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from ADP 09-2885, and the general carbonyl emission limit from SWCAA 400-050. Emissions are measured using EPA Methods 5, 7E, 9, 10, 19, and 202 or equivalent test methods. Front and/or back half emissions data measured using Methods 5 and/or 202 are used to confirm compliance with PM emissions limits as noted in the Requirement section. In SWCAA's experience, boiler emissions are not highly variable, therefore this testing frequency (every 5 years), along with annual tuning and emissions monitoring (M59), periodic opacity monitoring, and fuel logging should provide a reasonable assurance of on-going compliance. The consistency of emissions from these units has been demonstrated by past emissions testing. In addition, because operating an improperly tuned boiler results in poor fuel efficiency, there is an economic incentive to maintain each unit properly.

M26. Hot Oil Heater U-16 PM Emission Factor and Emissions Determination
This monitoring term establishes a specific emission factor for calculating PM emissions from hot oil heater U-16. There are no periodic source testing requirements for PM for this boiler.

M27. Baghouses F-13 and F-14 Pressure Drop Monitoring
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from OA 94-1709R1, OA 95-1799R1, OA 99-2233, OA 00-2328, and the general opacity requirement from SWCAA 400-040. The proper pressure drop across the baghouses is an indication of proper operation of the baghouses. These baghouses have demonstrated compliance with the permit limits at greater differential pressures than allowed by the current permit. Excess opacity or inconsistent fluctuations in baghouse pressure drop may be indicators of a malfunction that could lead to excess emissions. Therefore, the combination of pressure drop and opacity monitoring and periodic source testing are used to provide a reasonable assurance of continuous compliance.

M28. Baghouses F-13 and F-14 Bag Check
This monitoring requirement is used to provide a reasonable assurance of compliance with the specific requirements drawn from ADP 09-2885 and the general opacity requirement from SWCAA 400-040. Operating experience with these baghouses has shown that minimal baghouse maintenance has been necessary on an annual basis. This monitoring requirement is a secondary monitoring requirement designed to ensure baghouse performance is maintained. This annual baghouse check augments the periodic opacity observations.

M29. Internal Combustion Engine Monitoring and Emissions
This monitoring requirement is used to provide a reasonable assurance of compliance with the specific requirements drawn from OA 95-1799R1 and ADP 09-2885. Hours of operations will be logged to confirm compliance with the annual emission limits. Actual emissions are generally less than 60% of the emissions limit and it is highly unlikely an exceedance will take place in the future. The permit limits were established based on specific emissions

factors from Table 3.3.1 of AP-42 (10/96). These emission factors when applied with horsepower-hours provide a reasonable assurance that the emission limits are met on a continual basis. Hours of operation must be logged monthly because the emission limits are on a monthly rolling total basis.

M30. Boiler U-3 Continuous Emission Monitoring System (CEMS) Requirements
Under 40 CFR 63 Subpart EEE, emissions of CO and O_2 from boiler U-3 are required to be monitored using a CEMS. The CEMS is installed and maintained in accordance with 40 CFR 60 Appendix B and Appendix F. A relative accuracy test audit (RATA) is required annually.

M31. Boiler U 3 Continuous Monitoring Systems
In addition to the CEMS, EKC is required to operate a Continuous Parameter Monitoring System (CPMS). Collectively, the CEMS and the CPMS are referred to as Continuous Monitoring Systems (CMS). To demonstrate compliance on an on-going basis, 40 CFR 63 Subpart EEE requires that the specified operating parameters be monitored on a continuous basis and that results be recorded in the facility operating record. A network of instruments is used to monitor and record the boiler operating parameter data that is needed to demonstrate compliance with the Subpart. A Distributed Control System (DCS) calculates and logs regulatory data. A list of parameters that are continuously monitored in the control room is presented in Table 3-2 of the CPT Plan, along with instrument location and range.

Measurement (unit)	Related Operating Parameter Limits	Instrument	Instrument Range
Combustion Chamber Temperature (°F)	Minimum Combustion Chamber Temperature	Type K Thermocouple	0–2,000°F
Baghouse Inlet Duct Temperature (°F)	Maximum Baghouse Inlet Temperature	Type K Thermocouple	0–500°F
Stack Carbon Monoxide (ppmv, dry)	Maximum Carbon Monoxide Concentration	NDIR	0–200 0–3,000 ppm (split range)
Stack Oxygen (% dry)	Maximum Carbon Monoxide Concentration	Paramagnetic	0–25 %
Baghouse Differential Pressure (iwc)	Minimum Baghouse Pressure drop	Photohelic	0–10 iwc
Baghouse Leak Detector (mg/m^3)	Indication of Baghouse Leak	Triboelectric	1–1,000,000 mg/m^3
Steam Production Rate (lb/hr)	Maximum Steam Production Rate	Orifice Plate	0–50,000 lb/hr
Hazardous Waste Flow (lb/hr)	Maximum Hazardous Waste Feedrate and Maximum Total Constituent Feedrates (ash, Cr, and Pb)	Micromotion	0–100 lb/hr

As EPA has not promulgated any specific performance specifications for CPMS instruments, EKC will use manufacturer's procedures and working knowledge of specific instruments to

conduct the calibrations. Calibrations are performed as specified in the Appendix II of the CPT Plan Revision 3 (7/24/2009) or as specified in subsequent CPTs .

M32. Boiler U-3 Comprehensive Performance Plan and Testing
A Comprehensive Performance Plan and Test is required to demonstrate compliance with the emission standards under 40 CFR 63 Subpart EEE, establish limits for the operating parameters provided by §63.1209, and demonstrate compliance with the performance specifications for the CMS. The initial CPT Plan was submitted to EPA an approved on September 19, 2008 and the CPT was completed on November 11–12, 2008.

M33. Boiler U-3 Confirmatory Performance Plan and Testing
Confirmatory Performance Testing is required in order to demonstrate compliance with the dioxin/furan emission standard when the source operates under normal operating conditions; and to conduct a performance evaluation of continuous monitoring systems required for compliance assurance with the dioxin/furan emission standard under §63.1209(k).

This testing is required 37 months after the compliance date, December 11, 2011.

M34. Boiler U-3 PM CEMS Correlation Plan
Under 40 CFR 63 Subpart EEE, EKC is required to install, calibrate, maintain, and operate a PM CEMS. A PM CEMS correlation test plan is required to be developed that includes the following information:

- Number of test conditions and number of runs for each test condition;
- Target particulate matter emission level for each test condition;
- How EKC plans to modify operations to attain the desired particulate matter emission levels; and
- Anticipated normal particulate matter emission levels.

This test plan may be included as part of the comprehensive performance test plan required under §§63.1207(e) and (f). However, since EPA has not promulgated performance specifications and operational requirements applicable to PM CEMS, compliance with this requirement is not yet triggered.

M35. Boiler U-3 Feedstream Analysis Plan
Under 40 CFR 63 Subpart EEE, EKC is required to develop a Feedstream Analysis Plan (FAP) and maintain the plan in the operating record; the FAP was submitted to SWCAA on October 14, 2008. The FAP must follow the requirements described in 40 CFR 63.1209(c) and include information about waste sampling methods, waste analysis methods, and monitoring of waste feed rates. The FAP is updated as needed to reflect changes in the facility waste production.

M36. Boiler U-3 ESV Operating Plan
Under 40 CFR 63 Subpart EEE, EKC is required to develop an Emergency Safety Vent (ESV) operating plan, comply with the operating plan, and keep the plan in the operating record.

The ESV operating plan must provide detailed procedures for rapidly stopping the waste feed, shutting down the combustor, and maintaining temperature and positive pressure in the combustion chamber during the hazardous waste residence time, if feasible. The plan must include calculations and information and data documenting the effectiveness of the plan's procedures for ensuring that combustion chamber temperature and positive pressure are maintained as is reasonably feasible.

M37. Boiler U-3 Operator Training and Certification Program
In circumstances where 40 CFR 63 Subpart EEE refers to "control room operator," SWCAA and EKC have agreed that this is equivalent to the term being used at the facility, which is "hazardous waste boiler operator" or "boiler operator".

Under 40 CFR 63 Subpart EEE, EKC is required to establish training programs for all categories of personnel whose activities may reasonably be expected to directly affect emissions of HAP from boiler U-3. Such persons include, but are not limited to, boiler operators, control operators, persons that sample and analyze feedstreams (field operators), persons that manage and charge feedstreams to the combustor (boiler operator), persons that operate emission control devices (boiler operator), and ash and waste handlers (boiler operator). The training program is designed to be of a technical level commensurate with the person's job duties specified in the training manual and requires an examination to be administered by the instructor at the end of the training course. Passing of this test shall be deemed the "certification" for personnel, except that, for boiler operators, the training and certification program shall be as specified in §63.1206(c)(6)(iii) through (c)(6)(vi).

Boiler U-3 is required to be operated and maintained at all times by persons who are trained and certified to perform these and any other duties that may affect emissions of hazardous air pollutants when hazardous waste is being burned in the boiler. A certified boiler operator must be on duty at the site at all times the source is in operation.

M38. Boiler U-3 Operation and Maintenance Plan
Under 40 CFR 63 Subpart EEE, EKC is required to prepare and operate according to an operation and maintenance plan that describes detailed procedures for operation, inspection, maintenance, and corrective measures for all components of boiler U-3, including associated pollution control equipment that could affect emissions of regulated hazardous air pollutants. The plan describes how boiler U-3 is operated and maintained in a manner consistent with good air pollution control practices for minimizing emissions to the levels achieved during the CPT.

This plan ensures compliance with the operation and maintenance requirements of §63.6(e) and minimizes emissions of pollutants, AWFCO events, and malfunctions.

M39. Baghouse F-13 Bag Leak Detection System Corrective Measures Plan
Under 40 CFR 63 Subpart EEE, EKC is required to develop a bag leak detection system corrective measures plan, which includes, at a minimum, the procedures used to determine and record the time and cause of the alarm as well as the corrective measures taken to correct the control device malfunction or minimize emissions as specified in the plan.

M40. Carbon Bed Operation Parameter Logging
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.113 and §63.114, SWCAA 400-075, and ADP 09-2885. This monitoring requirement assures that the carbon beds are being regenerated and operated correctly so that emission rates are minimized when one or both RTOs are not being used. EKC has chosen to monitor the inlet air flow to toluene oxidizer R-150 in order to calculate the outlet air flow. The outlet air flow rate is the inlet air flow rate minus the oxygen utilized by the reactor.

The 100-side carbon adsorbers are subject to the flow and temperature monitoring requirements of 40 CFR 63 Subpart G based on the results from a January 1995 source test which showed that the TRE value can be less than 4.0. Flow and temperature monitoring is required when a carbon adsorber is utilized as the final control device (when the RTOs are being bypassed), and the TRE value is less than 4.0. This monitoring is not required of the 150-side carbon adsorbers because the TRE value as measured during a May 21, 1997 source test is much greater than 4.0.

When the carbon beds are used as the final control device, sampling is required weekly. The carbon beds are often the final control device for brief periods of time (as little as a minute) when the RTOs trip off-line for safety purposes. It was not the intent of the federal testing requirement to specify testing during these brief upsets, therefore SWCAA believes that testing on a weekly schedule when the carbon bed is the final control device for 12 or more hours in any 7-day period satisfies the federal requirement. Carbon bed testing is conducted at least monthly to assure that the carbon beds are operating properly.

Monitoring of the gas flow through each set of carbon beds is required using the "gap-filling" provision of WAC 173-401-615 in order to allow the calculation of pollution mass emission rates and the TRE index value when the carbon beds are used as a final control device.

Based on emission test data, this source does not have a significant potential to violate the 7,500 ppmvd CO emission limit when exhaust flowrates (which correspond to reactor air rates) are within the required range. Past testing has indicated that uncontrolled CO emissions from the oxidation of toluene are less than 6,600 ppmvd. Inlet concentrations were measured at 6,041 ppm (100-side) and 6,019 ppm (150-side) during the most recent testing conducted February 1, 2007 (150-side) and May 9, 2007 (100-side). Because this process is operated within limited ranges, SWCAA does not believe that uncontrolled CO emissions would exceed 7,500 ppmvd. However, by monitoring flowrates, SWCAA and EKC will be able to monitor any changes in operations that may affect CO emissions.

M41. Carbon Bed Testing
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.2346 and ADP 09-2885 Condition 214. Testing is triggered whenever the RTOs are being bypassed at a TRE less than 4.0.

M42. RTO Temperature Logging
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR §§63.113 and 63.114, SWCAA 400-075, and ADP 09-2885. This monitoring requirement is to assure that RTOs X-100 and X-150 are operating at temperatures sufficient to adequately reduce emissions of CO and VOCs (essentially all the VOCs are HAPS in this case) and maintain compliance with the applicable emission limits. This minimum temperature is identified in the Notice of Compliance Status as greater than 1,500°F. This design temperature will be considered adequate unless data from a required source test indicates differently. This requirement is consistent with 40 CFR 63.114(a)(1).

M43. RTO Operation Logging
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from ADP 09-2885 Condition 171. The hours of operation of the RTOs is required to be continuously recorded.

M44. RTO SO_2 Emission Factors
The only source of SO_2 in from the RTOs is from the combustion of natural gas. This monitoring term, per WAC 173-401-615(1)(b), establishes the AP-42 emission factor for natural gas (July 1998) and the fuel usage as an appropriate method for determining total SO_2 emissions.

M45. RTO Exhaust Flow Rate Logging
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.114, SWCAA 400-075, and OA 01-2389. This monitoring requirement is used in conjunction with concentration data from emissions testing (M20) to quantify annual emissions from EU-13 through 16 (RTOs X-100 and X-150). The RTOs are flameless and designed to minimize NO_x emissions. Emission testing has not detected the formation of NO_x. For requirements requiring "rolled monthly" calculations, the emissions will be calculated each month. The frequency of logging was chosen to correspond with the most frequently rolled emission limits (monthly).

M46. RTO Testing
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.113, SWCAA 400-075, and ADP 09-2885. This monitoring requirement is used to quantify emissions from RTOs X-100 and X-150 based on emissions testing conducted every five years. Periodic testing is sufficient to demonstrate annual compliance when used in conjunction with opacity, temperature, and fuel type monitoring. Past emissions testing has demonstrated compliance with the emission limits by a wide margin and shown that the emissions from these units are relatively consistent. Emission factors developed from the most recent source test are used with the temperature

and flow rate logging to calculate annual emissions and determine the compliance status relative to the annual emission limits.

40 CFR 63.113(a)(2) states that compliance with the destruction efficiency and organic emission concentration can be determined by measuring either organic HAPs or total organic carbon using procedures in 40 CFR 63.116(b)(3). This requirement states, in part that EKC "is not required to conduct a performance test when ... [a] control device for which a performance test was conducted for determining compliance with a regulation promulgated by EPA ... [and] no process changes have been made since test ... [can] reliably demonstrate compliance despite process changes."

M47. Vent Header System Pressure Monitoring and Bypass Log
The vent header system pressure is monitored continuously. In the event that the vent header system is bypassed, then emissions during a vent header system bypass shall be calculated using engineering calculations with the best information available. If the vent header system is bypassed due to a startup, shutdown, or malfunction, EKC will follow the SSM Plan and perform all actions, recordkeeping, and reporting requirements in accordance with §63.6(e)(3).

M48. RTO and Carbon Bed Bypass Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 63.114, SWCAA 400-075, and ADP 09-2885. The release vents on the 100-side vent header are set approximately +0.5 iwc above +2.5 iwc, therefore, when the pressure exceeds +2.5 iwc it is assumed that emissions are released uncontrolled. When a bypass occurs, ADP 09-2885 requires that the SSM Plan be followed. When a bypass occurs, federal regulations require that EKC minimize emissions in accordance with the "general duty clause" of 40 CFR 63.6. This monitoring requirement is used to assure that emissions from vent header system are being routed to a control device.

M49. Tar Tank T-313 Operation Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. Compliance with the annual emission limits is calculated based on the hours of operation and the emission factor presented in the applicable requirement. The emission limits are annual totals, therefore semiannual hours monitoring is adequate.

The emission factors presented for use with Req-202 and Req-203 were developed using a mass balance approach utilizing the average benzene and toluene concentrations in the T-313 scrubber water for the 5-year period 1996-2000. The benzene and toluene concentrations were relatively constant; therefore additional testing of benzene and toluene concentrations was not required. It is unlikely that actual emissions will approach the emission limits because tar tank T-313 is only used when tar tank T-313A cannot be used.

M50. Tank T-54 Parameter Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. The emission concentrations in the vent stream

from tank T-54 are expected to remain relatively constant because the processes venting to tank T-54 (500-side columns) are continuous and not highly variable, therefore annual monitoring is sufficient to characterize the emission concentrations. However, because the vent flow to tank T-54 can be adjusted by plant operational personnel, the vent flow is monitored weekly.

VOCs from tank T-54 consist primarily of benzaldehyde, benzoic acid, benzene, and toluene. Benzene and toluene emissions can be calculated from the results of the annual emission testing and the average vent flow. Benzaldehyde/benzoic acid emissions can be calculated by assuming the vent flow from the tank is saturated with benzaldehyde (which oxidizes in air to form benzoic acid) at the measured tank temperature.

M51. Benzoic Acid Tank Parameter Log
During period when tanks T-61, T-62, T-64, and T-65 contain benzoic acid, EKC is required to record the scrubber water flow and the tank temperature. Since benzoic acid is a solid at ambient temperatures, the tanks must be heated. ADP 07-2720 limits the maximum temperature of the tanks, since at higher temperatures, benzoic acid does have a vapor pressure and would result in emissions.

M52. Benzoic Acid Chipper Baghouse Testing
There are no periodic testing requirements for the benzoic acid chipper baghouse; however, EKC may conduct a source test on the unit in accordance with OA 00-2274R3.

PM emissions from the benzoic acid chipper baghouse are calculated using a PM emission factor of 0.0231 lb/hr, which was established in OA 00-2274R3.

M53. Benzoic Acid Chipper Baghouse Pressure Drop Log
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 00-2274R3. This monitoring requirement is used to ensure that the baghouse is operating properly. Relatively large changes in baghouse pressure drop may be indicative of a change in effectiveness over time and would be noticed by SWCAA and plant personnel.

The benzoic acid chipper is a very small source of potential emissions. The baghouse needs only a 90% efficiency to meet the applicable emission limits. If the baghouse is operating properly, it is assumed that the PM emission standards will be met by a wide margin.

M54. Specialty and Fragrance Process Parameter Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. Operating parameters for various reactors and columns in the specialty and fragrance plants are monitored on a continuous or periodic basis. The data is used directly for compliance determinations or indirectly in calculations used for compliance determinations (e.g. emissions calculations)

M55. Fragrance Plant and Benzyl Alcohol Plant Source Testing
Emission testing of columns C-1101, C-1151, C-1181, C-1191, and C-1211 is required to be conducted at least once every sixty (60) calendar months in accordance with ADP 09-2885 Appendices F and G. Based on the testing schedule:

- The next scheduled test for C-1211 is by 10/31/2013 (initial test was performed on 10/28/2008);
- The next scheduled test for C-1181 is by 11/30/2013 (initial test was performed on 11/7/2008);
- Initial testing of C-1101 is required prior to December 2010;
- Initial testing of C-1151 is required prior to December 2011; and
- Initial testing of C-1191 is required prior to December 2012.

Testing is performed at the column discharge point.

M56. Batch Reactors R-1101, R-1141, R-1171, R-8501, R-8502, R-8521, and Scrubber C-1180 Source Testing
Emission testing of batch reactors R-1141, R-1171, R-8501, R-8502, and R-8521 shall be conducted at least once every sixty (60) calendar months in accordance with ADP 09-2885 Appendix H.

- Batch reactor R-1141 was tested on 3/25/2009;
- Batch reactor R-1171 was tested on 6/16/2009;
- An initial test of continuous batch reactor R-8501 is required within 60 days after reaching maximum production rate of Lilience™ but no later than 180 days after the initial startup date;
- An initial test of batch reactor R-8502 is required prior to 12/31/2010; and
- An initial test of batch reactor R-8521 is required prior to 12/31/2011.

Emission testing of scrubber C-1180 shall be conducted at least once every sixty (60) calendar months in accordance with ADP 09-2885 Appendix I. Scrubber C-1180 was initially tested on 3/25/2009; the next source test is due by 3/31/2014.

M57. Emissions from Columns C-1101, C-1151, C-1181, C-1191, C-1211 and C-8502 and Reactors R-1101, R-1141, and R-1171
Annual emissions of VOC, TAPs, and HAPs from distillation columns C-1101, C-1151, C-1181, C-1191, C-1211, and C-8502, and reactors R-1101, R-1141, and R-1171, are calculated using an emission factor from the most recent source test and the amount of product produced. If source test data is not available, then the emissions are determined from engineering calculations using component vapor pressure and exhaust flow. VOC emissions are reported as the individual species emitted if such data is available, or as the most volatile compound in the column or reactor if speciation data is not available.

M58. FIF Scrubber C-1180 Make-up Water Flow Rate and Recycle Water Flow Rate Monitoring
The make-up water flow rate and recycle water flow rate are related to the efficiency of the scrubber to remove VOC from the exhaust streams of the reactors controlled by scrubber

C-1180. These parameters are recorded once per shift or as a 1-hr average if the data is collected by the DCS.

M59. Column C-1171 Monitoring when being used as a Scrubber by Reactor R-1171
When reactor R-1171 is processing chemicals containing or using acetaldehyde or propionaldehyde, column C-1171 is used as a scrubber with water from accumulator tank V-1171. In such instances, the amount of water added to the tank and the reflux water flowrate in column C-1171 are recorded.

M60. Tank T-1146 Temperature Monitoring
When tank T-1146 is used as a control for tank T-1141, tank T-1146 contains cold benzaldehyde. In such instances, the temperature of the tank is recorded at least once per day.

M61. Column C-801 Exhaust Temperature Log
When distilling crude benzyl alcohol under vacuum conditions, the temperature of the exhaust from continuous distillation column C-801 is continuously monitored and recorded. The exhaust temperature is directly related to the volatility and the emission rate from the column can be determined.

M62. Column C-801 Pressure Monitoring Log
When distilling HAP-containing products, the pressure in column C-801 is continuously measured. There are a variety of products that can be processed in the column, some under vacuum, and the pressure is monitored in order to verify emissions.

M63. Column C-801 Source Testing
When distilling crude benzyl alcohol under vacuum conditions, the emissions rate is assumed to be 2.3 lb/hr of HAP, unless a source test is performed. If a source test is conducted, the test is conducted based on the same configuration (per 40 CFR 63.114).

M64. Emissions from Column C-801
Since column C-801 can process many different products, the annual emissions of VOC, TAPs, and HAPs from distillation column C-801 are calculated using an emission factor from the most recent source test and the amount of product generated, if the source test was performed on the same product. Otherwise, emissions are determined from engineering calculations using vapor pressure and exhaust flow.

M65. Reactor R-801 Parameter Monitoring
When reactor R-801 is in operation, vent condensers E-812A/E-812B cooling water inlet temperatures, cooling water outlet temperatures, and cooling water flow rates are continuously monitored and recorded. Since the vent condensers are the final control devices for the reactor, these parameters are used to verify compliance by validating the assumptions of the original permitting action.

M66. Reactor R-801 Source Testing
Emission testing of reactor R-801 shall be conducted within sixty (60) days of production of Lilience™ and every sixty (60) months thereafter in accordance with ADP 09-2885 Appendix L. This source test requirement has not yet been triggered.

M67. Emissions from Reactor R-1250A
Annual emissions of VOC and TAPs from continuous tube reactor R-1250A during the production of a specific aldehyde are calculated from the amount of that aldehyde produced during the year and the emission rate per quantity of aldehyde produced from the most recent source test conducted while producing that aldehyde. If source test data is not available for the production of a specific aldehyde, then emissions are calculated using the assumption that the vapor stream is saturated with that aldehyde at 15°C, using the theoretical vent flow calculated from a material balance across the reactor.

M68. Emissions from Batch Distillation Column V-1270
Annual emissions of VOC and TAPs from batch distillation column V-1270 are calculated using an emission factor for the processing of each chemical (expressed in lb/batch) from the most recent source test and the total number of batches processed. If no source test is available then emissions are determined using engineering calculations with the best information available.

M69. HCA Plant Parameter Log
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. Monitoring requirements (a)–(f) assure compliance with parameter limits established in the permit to assure proper emission control. Information collected from monitoring requirement (g) is used to calculate annual emissions.

M70. HCA Plant Source Testing
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. The testing frequency is specified in ADP 09-2885 and will provide a reasonable assurance of compliance with the permitted emission limits. The most recent source tests were:

- Distilling octanal on 3/18/2008; and
- Distilling decanal on 3/24/2008.

For each aldehyde produced in reactor R-1250A that has not been initially tested, an initial test is required to be performed within sixty (60) days after producing any aldehyde in excess of 1,080 hours in any 12-month rolling period.

M71. Emissions from Continuous Tube Reactor R-2150
Annual emissions of VOC and TAPs from continuous tube reactor R-2150 shall be calculated from the amount of product produced during the year and the emission rate per quantity of product produced from the most recent source test conducted.

M72. Continuous Tube Reactor R-2150 Source Testing
Emission testing of continuous tube reactor R-2150 will be conducted within sixty (60) days of achieving maximum production but no later than one hundred eighty (180) days after startup of Lilience™ production and every sixty (60) months thereafter in accordance with ADP 09-2885 Appendix J. This testing requirement has not yet been triggered.

M73. Continuous Tube Reactor R-2150 Catalyst Deactivation Source Testing
The catalyst in reactor R-1250A is periodically deactivated in order to recover the catalyst and as part of this process, air is passed through the catalyst to slowly oxidize hydrocarbons adhered to the catalyst, which produces CO. Emission testing of continuous tube reactor R-2150 during catalyst deactivation will be conducted within ninety (90) days of initial production after the modification and every sixty (60) months thereafter in accordance with Appendix K of ADP 09-2885. This testing requirement has not yet been triggered.

M74. Benzoate Plant Production Monitoring
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 00-2274R3. This monitoring requirement is used in conjunction with the appropriate emission factors developed during source testing to quantify monthly and annual emissions from the benzoate plant.

The requirement to log plant operating hours was added under the "gap-filling" provision of WAC 173-401-615 for use with the emission factor in Req-172. The frequency of logging was chosen to correspond with the most frequently rolled emission limits (monthly).

M75. Benzoate Plant Diphenyl Concentration Determination
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 00-2274R3. This monitoring requirement is used to assure that the carbon towers are reducing VOC concentrations prior to the dryers and quantify annual emissions (based on the weekly biphenyl concentration analysis and the quantity of product produced (M44)) using a mass balance approach. It is assumed that all diphenyls are volatilized in the dryers and not captured by the wet scrubbers.

The carbon beds used to remove diphenyl compounds are unlikely to fail in the period of a week or less, and the variability of the diphenyl concentration is low enough that weekly sampling provides a reasonable assurance of continuous compliance with the annual emission limit.

M76. Benzoate Plant Scrubber Flow Rate and Fluidized Bed Extruder Baghouse Pressure Drop Log
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 00-2274R3. This monitoring requirement is used to assure proper operation of the benzoate plant scrubbers and baghouse used to reduce particulate matter emissions.

SWCAA believes that weekly monitoring provides a reasonable assurance of continuing compliance because these units have a past history of reliability. The likely failure points (pumps and filter bags) are not likely to fail catastrophically. A slow progression towards failure should be caught with the weekly monitoring.

In a letter dated May 22, 2002, EKC submitted pump curves for the two pump models utilized for the benzoate scrubbers. Scrubbers C-902A and C-920 each use an AMT pump that supplies 28 gpm (the minimum flow requirement for these scrubbers) at a pump pressure of 37 psig. Scrubbers C-901, C-904, C-905, C-906, C-907, and C-900 each utilize a Teel pump that supplies 15 gpm (the minimum flow requirement for these scrubbers) at a pump pressure of 25 psig. Pump pressures at or below these pressures can be used as a surrogate indicator of adequate scrubber water flowrate.

M77. Benzoate Plant Scrubbers and Fluidized Bed Extruder Baghouse Emission Testing

This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 00-2274R3. This monitoring requirement is used to assure that the benzoate scrubbers and fluidized bed extruder baghouse in the benzoate plant are reducing PM emissions from the dryers and extruder, and to quantify emissions. The first test satisfying this monitoring requirement was performed in 1994.

This periodic testing, when used in conjunction with opacity observations and scrubber flow rate monitoring is used to ensure emission limits are met. The emission factor generated during the source test (in units of lb PM/lb benzoate product) is multiplied by the total amount of benzoate produced to determine annual emissions from the scrubbers.

The efficiency of the scrubbers is primarily related to the amount of water flow, and the purpose of this monitoring is primarily to update the emission factor to account for any minor changes is plant operations over the five-year period between tests. Major changes that may cause emission increases must undergo new source review.

Short of a catastrophic bag failure in the fluidized bed extruder baghouse, PM emissions should remain well below the 0.008 gr/dscf emission limit. On August 31, 2004 filterable PM emissions were measured at 0.0015 gr/dscf. The weekly opacity and pressure drop monitoring requirement will ensure that a catastrophic bag failure does not go undetected.

M78. Benzoate Pneumatic Material Handling Systems Emissions Testing

Unless a source test has been performed, emissions from the benzoate pneumatic material handling systems are calculated using an emission factor of 0.0487 lb/hr, which was specified in OA 00-2274R3. Since a source test procedure was not specified in OA 00-2274R3, under authority of WAC 173-401-615(1)(b), a source test procedure is specified within the monitoring term.

M79. Plasticizer Plant Monitoring
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 96-1864R1. The dominant factor affecting emissions from this unit is the efficiency of the exhaust chillers. This monitoring requirement is used to assure that the refrigerated chillers are reducing emissions from the plasticizer reactors (EU-26) and providing a reasonable assurance of compliance with the VOC emission limits. The chilling of the exhaust results in a reduction in VOC concentration in the exhaust gases. During a source test conducted January 5, 1994, temperature and exhaust concentrations were measured. The results of the source test show that compliance with the 52°F temperature limit provides compliance with the concentration and hourly emission limits.

The total production of plasticizers is multiplied by a production-based emission factor to calculate annual VOC (isooctane) emissions. The production based emission factor is generated from the results of the most recent source test. The length of time nitrogen is added and the rate of nitrogen addition are related to the quantity of VOC (isooctane) emitted from the system, therefore these parameters are checked twice a year to provide a reasonable assurance that the emission factor generated during the most recent source test remains valid.

M80. Condenser X-8601 Sampling Log
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the requirements drawn from OA 96-1864R1. An initial source test is required on R-8601A (an initial source test was performed on R-8621 in 1994) to establish baseline emission factors for this unit. Periodic source sampling every five years is used in conjunction with semi-annual monitoring of nitrogen flow to the units to assure that the original emission factors remain valid. If the results of this periodic monitoring indicate that operations have changed such that the emission factors generated during the initial source test are no longer valid (assuming such a source did not require New Source Review) a new baseline source test may be necessary.

M81. Emissions from Column C-8502 and Reactors R-8501, R-8502, and R-8521
Annual emissions of VOC, TAPs, and HAPs from reactors R-8501, R-8502, and R-8521 are calculated using an emission factor from the most recent source test and the amount of product produced. If source test data is not available, then emissions are determined from engineering calculations using component vapor pressure and exhaust flow. VOC emissions are reported as the individual species emitted if such data is available, or as the most volatile compound in the column or reactor if speciation data is not available.

M82. Flare X-86B Temperature Log
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 61.349 and ADP 09-2885. This monitoring requirement is used to confirm that the combustion zone temperature meets the criteria for reduction of organic emissions. Maintaining adequate combustion temperature should maintain good combustion and low particulate emissions. The minimum temperature limit is set at a level where a source test has shown compliance with all applicable emission limits. A March 23,

2001 source test demonstrated compliance with all applicable emission limits at an average temperature of 1,343°F. Federal, state and local regulatory provisions for relief from requirements during shutdown, startup, malfunction and/or upset conditions apply.

M83. Flare X-86B Testing
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 61.349 and ADP 09-2885. This monitoring requirement is used to quantify emissions from flare X-86B. The flare has a very simple design, and unless processes change such that the types of gases being combusted in the flare change, the temperature monitoring requirement alone is adequate to provide a reasonable assurance of compliance with the VOC destruction requirements. Any process change that could appreciably change the mix of gases to the flare would require new source review, therefore a testing frequency of every 5 years provides an adequate assurance of compliance. Periodic testing is used to confirm that emission limits are being achieved and the flare is being properly maintained.

M84. Flare X-86B SO_2 Emission Factor and Emissions Determination
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific SO_2 limitations drawn from ADP 09-2885. Because the only sulfur available to bacteria in the wastewater is added by EKC as a nutrient, a sulfur balance across the system is a simple was of calculating sulfur emissions from the digester flare. Because wastewater streams and procedures are unlikely to change frequently or quickly, an annual determination of the SO_2 emission rate provides an adequate assurance of compliance.

M85. Flare X-86B Fuel Usage and Digester Gas Bypassed Log
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 61.349, SWCAA 400-075, and ADP 09-2885. This monitoring requirement, along with emission factors developed during source testing is used to quantify annual emissions from flare X-86B. Where requirements specify "rolled monthly," calculations will be made each month.

The frequency of logging was chosen to correspond with the most frequently rolled emission limits (monthly).

M86. Benzene Content of Facilitywide Waste
This monitoring requirement is used to provide, by itself or in combination with other monitoring requirements, a reasonable assurance of compliance with the specific requirements drawn from 40 CFR 61.342, SWCAA 400-075, and OA 09-2285. This monitoring requirement is used to quantify annual emissions from wastewater streams containing benzene and toluene. Quantifying emissions is accomplished by material balance and quarterly sampling analyses.

M87. Wastewater Treatment Non-regenerative Carbon Canisters
This monitoring requirement is used to provide, in combination with other monitoring requirements, a reasonable assurance of compliance with the wastewater vent requirements drawn from 40 CFR 61.349, WAC 173-440-075, and SWCAA 400-075. The monitoring requirement is specified in 40 CFR 63.354(b). This monitoring requirement is used to assure that the non-regenerative carbon canisters on tank T-21 are reducing emissions from the wastewater storage tanks and operating properly.

M88. Benzene Transfer Operations Monitoring
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from CFR 63.126, SWCAA 400-075, and ADP 09-2885. This monitoring requirement is used to confirm that benzene exhaust concentration from the carbon beds (for control of emissions from benzene loading operations) are within established emission limits. The CEM output is recorded continuously on a circular chart (one for each rail car). CEM data has consistently shown that emissions are well below the 20 ppm limit during rail car loading and are generally at 0 ppm. This is consistent with the EKC's operating practice of always replacing the carbon when the first tub scrub has breakthrough. Charts are available on site for review.

M89. Benzene Transfer Operations Line Pressure Log
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from ADP 09-2885. While off-loading benzene into railcars, the bypass lines are be checked for proper alignment and closure prior to loading benzene into railcars. The pressure in the collection system at the railcar vent line during benzene railcar loading is also monitored. The results of this monitoring is recorded once per tank loading event.

M90. Benzene Railcar Non-regenerative Carbon Canister Monitoring
EKC operates a benzene CEMS on the exhaust of the non-regenerative carbon canisters for the benzene railcar loading rack in order to monitor potential breakthrough. The CEMS is calibrated quarterly in accordance with the manufacturer's recommendations.

M91. Rail Car and Tank Truck Testing
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from CFR 63.126, SWCAA 400-075, and OA 94-1667R2. This monitoring is specified in 40 CFR 63.128(e and f). This testing is used to confirm that EU-20 (the benzene rail car or tank truck) is leak free.

M92. Transfer Racks not Subject to Control Requirements under 40 CFR 63 Subpart EEEE
This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from 40 CFR 63 Subpart EEEE. EKC identified seven loading racks at the facility:

Transfer Rack and Location	Type	Load or Offload	Contains Org. Liq.	Annual Volume (gal/yr)	Additional Information
Benzyl alcohol (Specialty)	Truck	Load	No	—	—
HCA (Specialty)	Truck	Load	No	—	—
Benzene (Main Loading Rack)	Truck	Load	Yes	415,362[a,b]	Emissions controlled via non-regenerative carbon canisters
KFlex/Benzaldehyde (Main Loading Rack)	Truck	Load	No	—	—
Glyxal/Toluene (Main Loading Rack)	Truck	Load and Offload	Yes	800,000[c]	Toluene only offloaded to tanks with emission controls
Benzene/Benzoic Acid (Main Loading Rack)	Truck	Load	Yes	415,362[a,b]	Emissions controlled via non-regenerative carbon canisters
KFlex (Main Loading Rack)	Truck	Load	No	—	—

NOTES:
[a] This would be the actual volume of benzene loaded to both truck and railcars in CY2006. In 2006, only railcars were loaded.
[b] In December 2006, EKC stopped producing phenol, which drastically reduced the volume of benzene produced; phenol production creates large quantities of benzene as a by-product. This number represents the maximum production in CY2006.
[c] Toluene is rarely offloaded from or to truck. It is very unlikely that EKC would exceed 800,000 gal from this rack.

The benzene, glyxal/toluene, and benzene/benzoic acid loading racks are subject to 40 CFR 63 Subpart EEEE, but is not subject to controls per §63.2343(a) Specific monitoring, reporting and recordkeeping requirements are specified in §§63.2343(c) , 63.2343(d), and 63.2390(d).

M93. Storage Tank Parameter Log

This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from ADP 09-2885, 40 CFR 63 Subpart G, and 40 CFR 63 Subpart EEEE. In order to properly determine applicability of Subpart G and Subpart EEEE, a requirement to monitor and record appropriate data on all tanks containing VOL was established in ADP 09-2885.

M94. Storage Tanks (<5,000 gal) not Subject to Control Requirements under 40 CFR 63 Subpart EEEE

This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from 40 CFR 63 Subpart EEEE. Tanks that (1) contain VOL with ≥5% HAP (as listed in Table 1 of the Subpart) and are less than 5,000 gal are subject to the Subpart, but are not subject to the control requirements. This includes the following tanks:

Tank ID Number Location	Capacity (gallons)	HAP	Additional Information
T-48C (Benzaldehyde Process)	2,700	Benzene, Toluene	Emissions from this tank are routed back to the process via the vent header system.
T-222A (Benzoic Acid/Benzaldehyde)	2,254	Benzene, Toluene	Emissions from this tank are routed back to the process via the vent header system.
T-1103 (Specialty)	3,006	Methanol	Vapor pressure of HAP in this tank is less than 27.6 kPa.

Tank ID Number Location	Capacity (gallons)	HAP	Additional Information
T-1107 (Specialty)	1,984	Methanol	-
T-1146 (Specialty)	2,113	Acetaldehyde	Emissions from this tank vent to scrubber C-1180.
T-33 (Boiler Slab)	1,438	Dowtherm A (Biphenyl)	Vapor pressure of this material and HAP are much less than 27.6 kPa. In addition, the heat transfer system is closed to the atmosphere under normal operating conditions.
T-140 (Boiler Slab)	1,438	Dowtherm A (Biphenyl)	Vapor pressure of this material and HAP are much less than 27.6 kPa. In addition, the heat transfer system is closed to the atmosphere under normal operating conditions.
T-1200 (Specialty)	1,479	Dowtherm Q (LF) or Excelltherm XXT (Biphenyl)	Vapor pressure of this material and HAP are much less than 27.6 kPa. In addition, the heat transfer system is closed to the atmosphere under normal operating conditions.

Information pertaining to these tanks are listed as part of §63.1343(a).

M95. Storage Tanks (≥5,000 gal) not Subject to Control Requirements under 40 CFR 63 Subpart EEEE

This monitoring requirement is used to provide a reasonable assurance of compliance with the requirements drawn from 40 CFR 63 Subpart EEEE. Tanks that (1) contain VOL with ≥5% HAP (as listed in Table 1 of the Subpart) and are greater than or equal to 5,000 gal are subject to the Subpart, but are not subject to the control requirements.

M96. Storage Tanks Requiring Controls under 40 CFR 63 Subpart EEEE – Testing

For those tanks that meet the applicability requirements of 40 CFR 63 Subpart EEEE and where the tank is required to be installed with emissions controls, the Permittee shall perform performance testing in accordance with §§63.2354(a) and (b).

M97. Storage Tanks Requiring Controls under 40 CFR 63 Subpart EEEE – CMS

For those storage tanks that are subject to 40 CFR 63 Subpart EEEE and require controls, the Permittee shall install, operate, and maintain a CMS as required under 40 CFR 63.2366.

VII. EXPLANATION OF RECORDKEEPING TERMS AND CONDITIONS

K1. General Recordkeeping
This recordkeeping section consolidates similar requirements from various OAs and ADPs, as well as clarifying or specifying requirements under other regulations.

K2. Fuel Consumption Records
A specific requirement of OA 97-2078 requires that fuel consumption records for boiler U-17 be kept.

K3. Operation and Maintenance Log – Boilers and Hot Oil Heaters
A specific requirement of OA 95-1799R1 requires that steam production and NO_x emissions be kept for boilers U-2, U-3, U-7, U-10, U-11, and hot oil heater U-12.

K4. CMS Recordkeeping
Under 40 CFR 63 Subpart A, EKC is required to keep additional records pertaining to operation of the CMS.

K5. Subpart EEE Recordkeeping
Under 40 CFR 63 Subpart EEE, EKC is required to keep records pertaining to the operation and maintenance of boiler U-3.

K6. Leak Detection Recordkeeping
Under 40 CFR 63 Subpart F, EKC is required to keep records pertaining to the leak detection program for units subject to the HON.

K7. Benzoate Plant and Benzoic Acid Chipper Opacity
EKC is required to maintain records of the monthly opacity observations from scrubbers C-901, C-902A, C-904, C-906, C-907, C-909, C-920, the fluidized bed extruder baghouse, and the benzoic acid chipper baghouse.

K8. Fluidized Bed Extruder Baghouse Pressure Drop
Records of the weekly pressure drop of the fluidized bed extruder are required to be kept.

K9. Tanks and Loading Racks Subject to 40 CFR 63 Subpart EEEE
Under 40 CFR 63 Subpart EEEE, EKC is required to keep record pertaining to the loading racks and tanks subject to the Subpart.

VIII. EXPLANATION OF REPORTING TERMS AND CONDITIONS

R01. Deviations or Excursions from Permit Conditions
A deviation or excursion from permit condition means an instance when any regulation, rule, or approval condition is not met, including, but not limited to, conditions that establish emission limitations, emission standards, control equipment requirements, work practices, parameter ranges, and those designed to assure compliance with such requirements, such as monitoring, recordkeeping, and reporting. Reporting requirements exist under 40 CFR 63 Subpart A, Subpart F, Subpart EEEE, WAC 173-401-615(3)(b), and various OAs and ADPs. For the purposes of WAC 173-401-615(3)(b), unless otherwise defined in a specific permit term, "prompt" is defined by SWCAA to be thirty (30) days after the end of the month in which the deviation occurred or sooner. For deviations which represent a potential threat to human health or safety, "prompt" means as soon as possible, but in no case later than twelve (12) hours after the deviation is discovered.

R02. Excess Emissions
Excess emissions may result from a deviation or excursion from permit conditions, startups, shutdowns, malfunctions, and upsets. If the excess emissions are considered unavoidable and EKC reports the excess emissions within forty-eight (48) hours of discovery along with the appropriate documentation, SWCAA may waive penalties associated with the excess emissions in accordance with SWCAA 400-107(2). A Notice of Violation or Notice of Correction may still be issued.

R03. Complaint Reports
Reports to SWCAA regarding complaints received by the facility are required to be reported within three (3) days of receiving the complaint.

R04. Benzene Wastewater Quarterly Reports
Each applicable quarterly reporting requirement listed in 40 CFR 61 Subpart FF is listed in this section.

R05. Semiannual Reports
EKC is required to provide a report of all monitoring records and provide a certification of all reports on a semiannual basis. Semiannual reporting and certification of monitoring records is required by WAC 173-401-615(3).

Other semi-annual reporting requirements were grouped by the required reporting date. A Responsible Official must certify all reports required by the Title V permit that were submitted during the semiannual period.

R06. Annual Reports and Compliance Certification
EKC is required to report and certify compliance with all permit terms and conditions on an annual basis. Annual compliance certification is required by WAC 401-630(5). In addition, each applicable annual reporting requirements required by an OA, ADP, or federal regulation is listed in this section.

R07. Emissions Inventory Reports
Annual reporting of emissions inventory is required under SWCAA 400-105 to be submitted to SWCAA by March 15th for the previous calendar year unless an extension is approved by SWCAA.

R08. Leak Detection Periodic Report
EKC is required to submit a semiannual report regarding the equipment subject to 40 CFR 63 Subpart H.

R09. Periodic Startup, Shutdown, and Malfunction Report
During periods of startup, shutdown, or malfunction, where EKC is operating in accordance with the SSM Plan and excess emissions are caused or an exceedance of an applicable standard occurs, EKC is required to submit a report to describe the event and describe the actions taken to minimize emissions.

R10. Immediate Startup, Shutdown, and Malfunction Report
During periods of startup, shutdown, or malfunction, where EKC is not operating in accordance with the SSM Plan and excess emissions are caused or an exceedance of an applicable standard occurs, EKC is required to submit a report to describe the event, the reasons why the SSM Plan was not followed, and describe the actions taken to minimize emissions.

R11. Excessive Exceedances Report
Under 40 CFR 63 Subpart EEE, if EKC has ten (10) or more exceedances of an emission standard or operating requirement while hazardous waste remains in the combustion chamber during any 60-day period EKC is required to submit a report to SWCAA that documents the exceedances and the actions taken by EKC.

R12. Emergency Safety Vent Opening Report
Under 40 CFR 63 Subpart EEE, if an ESV opening occurs and an emission limit is exceeded, EKC is required to submit a report documenting the event and the actions taken by EKC.

R13. Excess Emissions and Continuous Monitoring System Performance Report and Summary Report
Under 40 CFR 63 Subpart A, EKC is required to submit excess emissions and CMS reports semiannually. Under certain circumstances, a summary report can be submitted.

R14. Emission Test Reports
SWCAA 400-106 and all of the applicable Air Discharge Permits for this facility require submission of required source emissions test reports no later than forty-five (45) days after completing the required test.

R15. Performance Monitoring (Tuning) Reports
SWCAA 400-106 and applicable ADPs that require performance monitoring also require that a report be submitted. Performance monitoring or performance tuning reports are simple

results logs that can be completed on-site during testing and must be reported within fifteen (15) days.

R16. Plasticizer Plant Operation or Material Change Reporting
This report is a tool SWCAA uses to track minor changes at the facility without the use of an ADP application, and assure that New Source Review is not overlooked for significant changes. EKC is required to notify SWCAA at least ten (10) days prior to changing the method of operation of the plasticizer plant or prior to processing any new material.

R17. Fragrance and Specialty Plants – New Chemicals Reporting
This report is a tool SWCAA uses to track minor changes at the facility without the use of an ADP application, and assure that New Source Review is not overlooked for significant changes. EKC is required to notify SWCAA at least seven (7) days prior to processing any new material in the fragrance or specialty plants.

R18. Notification of CPT and Confirmatory Performance Test
EKC is required under 40 CFR 63 Subpart EEE to conduct periodic CPTs and Confirmatory Performance Tests on the operation of boiler U-3. Notification of these tests by EKC to SWCAA is required.

In addition, there are requirements for notification by EKC to the public of the intent to perform these tests.

R19. Notification of Compliance
Within ninety (90) days of the completion of a CPT, EKC is required under 40 CFR 63 Subpart EEE to notify SWCAA with documentation that the facility is in compliance with the emission standards and CMS requirements as well as establishing operating parameter limits for boiler U-3.

R20. Notification of Change
If EKC changes the design, operation, or maintenance practices pertaining to boiler U-3, EKC is required to notify SWCAA and to schedule a CPT.

R21. Notification of Excessive Bag Leak Detection System Exceedance
If EKC operates boiler U-3 when the detector response exceeds the alarm set-point more than 5% of the time during any 6-month block time period, EKC shall submit a notification to SWCAA and the EPA Administrator within thirty (30) days of the end of the 6-month block time period that describes the causes of the exceedances and the revisions to the design, operation, or maintenance of the combustor or baghouse EKC is taking to minimize exceedances.

R22. Notifications and Reports Required under 40 CFR 63 Subpart EEEE
Under 40 CFR 63 Subpart EEEE, loading racks and tanks that have requirements under the Subpart are subject to specific reporting requirements.

IX. COMPLIANCE HISTORY

The following Field Notices of Correction (FNOC) or Field Notices of Violation (FNOV) have been issued during the last permit term (December 6, 2001 through May 13, 2010).

FNOC/ FNOV#	Violation Date	Notes
4260	6/9/2009	Failure to conduct source test by September 30, 2008 of reactor R-1171 per OA 97-2078 Appendix A Condition 2.h and Appendix C.
4259	11/17/2008	Failure to conduct source testing of U-16 on natural gas and U-2 on waste tar by September 30, 2008 in violation of ADP 07-2759 Condition 150.
4254	11/1/2006	Failure to conduct source testing in violation of OA 00-2270R2, Appendix A, Condition 2b and AOP SW99-10-R0 M1.
4253	10/19/2006	Excess of 10,000 ft^3 of ANTS digester gas allowed to bypass flares in violation of ADP 03-2465 Condition 9.
3518	11/18/2005	Excess of 10,000 ft^3 of ANTS digester gas allowed to bypass flares in violation of ADP 03-2465 Condition 9.
3515	1/19/2005	Allowed the loading of benzene into uncertified rail car in violation of Title V Permit SW99-10-R0, OA 94-1667R2, and SWCAA 400-115.
3511	10/7/2004	Allowed B-204 bottoms oil HAP concentrations to exceed 1,000 ppmw while B-203 was final control device in violation of OA 01-2395.
3510	10/5/2004	Failure to conduct timely benzene and toluene concentration monitoring following more than 12 hours of RTO bypass in violation to Title V Permit SW99-10-R0.
3503	5/6/2004	Allowed the center bed temperature to drop below 1,500°F (1-hour average) in violation of OA 96-1955.
3501	3/3/2004	Deviated from minimum temperature limit of 1,400°F in violation of OA 03-2465 Condition 8.
2674	10/14/2003	Allowed combustion zone temperatures of X-150 to fall below 1,500°F (1 hour average) in violation of OA 01-2395.
2671	4/29/2003	Exceeded the vacuum pump circulation water temperature limit in violation of OA 98-2088.
2667	3/6/2003	Failure to maintain the minimum scrubber water flowrate for scrubber C-907.
2666	12/13/2002	Failure to attempt repair of a leaking pump within five days in violation of Order SW99-10-RO, Requirement 118 and 40 CFR 63.163(C)(2), as stated in FNOC number 2661.
2661	7/5/2002	Failure to monitor inlet and outlet benzene and toluene concentrations within seven days following an extended RTO bypass event in violation of SWCAA 01-2395 and SW99-10-RO, as stated in FNOV number 2666.6

X. PERMIT ACTIONS

Previous Actions – AOP SW99-10-R0

1. Initial Permit Application Submitted:	June 2, 1995
2. Permit Application Deemed Complete:	December 5, 1995
3. Permit Application Sent to EPA:	July 22, 1998
4. Draft Permit Issued:	April 30, 1999
5. Proposed Permit Issued:	October 15, 2001
6. Final Permit Issued:	December 4, 2001
7. Permit Expiration:	December 4, 2006
8. Renewal Permit Application Due:	June 4, 2006

Previous Actions – AOP SW99-10-R1

1. Renewal Permit Application Submitted:	June 6, 2006
2. Permit Application Deemed Complete:	August 7, 2006
3. Permit Application Sent to EPA:	August 7, 2006
4. Draft Permit Issued:	March 25, 2010
5. Proposed Permit Issued:	May 13, 2010
6. Final Permit Issued:	July 9, 2010
7. Permit Expiration:	July 9, 2015
8. Renewal Permit Application Due:	January 9, 2015

Current Actions – AOP SW99-10-R1A (Administrative Amendment)

1. Initial Notification:	August 17, 2010
2. Final Permit Issued:	August 24, 2010
3. Permit Expiration:	July 9, 2015
4. Renewal Permit Application Due:	January 9, 2015