# APPENDIX XXIII

# SUBPART FF COMPLIANCE PLAN

EVOQUA WATER TECHNOLOGIES

PARKER REACTIVATION FACILITY

PARKER, ARIZONA

Revision 9
March 2014

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Revision 9 –March 2014

**EVOQUA WATER TECHNOLOGIES**
**PARKER, ARIZONA FACILITY**

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# 1. INTRODUCTION

This document summarizes the applicable National Emission Standards for Hazardous Air Pollutants (NESHAP) for Benzene Waste Operations (Subpart FF) requirements and compliance plan for the Evoqua Water Technologies, Parker, Arizona facility. The main purpose of the document is to assist facility management and staff in understanding the relevant NESHAP Subpart FF requirements, and provide a tool for maintaining and tracking compliance documentation. Portions of the Facility's operations are also subject to RCRA Subpart CC, which controls emissions of volatile organics, including benzene. Subpart CC has provisions that can be more or less stringent than Subpart FF, and it also contains an exemption for certain facilities equipped with and operating air emission controls in compliance with Subpart FF. This plan does not address Subpart CC requirements.

The NESHAP regulations covered include:

- Subpart A - General Provisions (40 CFR 61.01, et seq.)
- Subpart FF - National Emission Standard for Benzene Waste Operations (40 CFR §61.340, et seq.)

Subpart A details the general provisions of the NESHAP regulations and applies to all facilities that trigger one or more of the emission standards outlined in the subsequent subparts. Subpart FF details the specific requirements for controlling benzene emissions from chemical manufacturing plants, petroleum refineries, and coke by-product recovery plants. This subpart also applies to facilities that treat wastes generated by facilities subject to Subpart FF; it is for this reason that the Parker, Arizona facility must comply with Subpart FF requirements (see §61.340(b)). The relevant texts from Subparts A and FF are provided in Appendix A for reference.

This document assumes that the total annual benzene quantity (TAB) for the Facility is less than 10 megagrams (Mg) per year. The Facility implements a TAB tracking system to closely monitor the facility TAB throughout the year, as changes to Facility practices, including additional controls, must be implemented before the Facility TAB equals or exceeds 10 Mg/yr.

The sections that follow describe the treatment processes at the Parker, Arizona facility, summarize the relevant rule requirements, and outline the facility's compliance plan.

# 2. FACILITY DESCRIPTION

The Parker, Arizona facility reactivates spent carbon from both facilities subject to and exempt from the requirements of Subpart FF. The spent carbon is deposited in one of two hoppers (H-1 and H-2) whose emissions are controlled by carbon absorber WS-2. The spent carbon is stored in tanks (T-1, T-2, T-5, and T-6) prior to treatment. From the storage tanks, the slurry is pumped to the furnace feed tank (T-18) and is then dewatered before being introduced into the reactivation unit. The storage tanks and furnace feed tank are

connected to carbon adsorbers (WS-1 and WS-3) to treat any volatile organic compounds (VOC) that may be present in the tank vapors.

Spent carbon is reactivated in the facility reactivation treatment unit, which consists of a multiple hearth furnace (RF-2) and an afterburner (AB-2). In this treatment unit, organic contaminants such as benzene are thermally destroyed by high temperatures to achieve destruction and removal efficiency greater than 99%. Under the language of Subpart FF and EPA guidance, the regenerated carbon is considered a product, not a waste. As such, the Facility is not required to demonstrate compliance with the benzene removal or destruction requirements in the regenerated carbon, provided the carbon is legitimately redeployed as a regenerated carbon product. The Facility confirms this by ensuring its regenerated carbon meets product specifications and is placed into inventory for reuse.

Reactivated carbon product is cooled before it is stored, packaged, and shipped. The hot gases from the reactivation treatment unit are further treated by air pollution control equipment prior to being routed through a stack to atmosphere.

The Parker, Arizona facility currently operates as an interim status facility under the Resource Conservation and Recovery Act (RCRA) and is limited to a maximum spent carbon feed to the furnace of 2760 lb/hr.

Sources of potential benzene emissions from Subpart FF waste include:

- Carbon adsorbers (WS-1, WS-2, and WS-3), which control spent carbon storage and furnace feed tank VOC emissions, including benzene.
- Emissions associated with the reactivation treatment unit (RF-2 and AB-2).
- Fugitive emissions from the unloading of spent carbon into hoppers H-1 and H-2.
- Fugitive emissions from containers of Subpart FF waste.

The processes subject to Benzene Neshap compliance are highlighted in the facility process flow diagram located in Appendix L.

# 3.0 MANAGEMENT SUMMARY OF RULE REQUIREMENTS

## *3.1 Applicability Criteria for Designation of Affected Facilities (40 CFR §60.340)*

Subpart FF applies to chemical manufacturing plants, coke by-product recovery plants, and petroleum refineries, and to treatment, storage and disposal facilities (TSDFs) that treat, store, or dispose, of hazardous wastes containing benzene generated by these facilities (e.g., the Facility) (see §61.340(a) and (b)). Because the Facility's TAB is less than 10 Mg/yr, it is subject only to TAB recordkeeping and reporting requirements under this section of the rule.

Subpart FF also applies to any facility that receives waste that is accompanied by a notice

that the waste must be managed in accordance with Subpart FF (See 40 CFR §61.342(f)). The Facility receives wastes that have been designated as Subpart FF wastes under these provisions. All incoming wastes with a Subpart FF notice, including any subsequentmixtures of these wastes with any other materials, must be managed in compliance with Subpart FF requirements.

Incoming wastes from plants that are subject to Subpart FF (e.g., wastes from refineries, coke by-product recovery plants and chemical plants) which do not have a Subpart FF notice are presumed to not require Subpart FF controls at the Facility. If a generator provides a Subpart FF notice for a type of waste after prior shipments of that type have already been received, it is presumed that Subpart FF controls are required only from the date the Subpart FF notice is received.

### *3.2 Definitions (40 CFR 61.02 and 61.341)*

Outlined below is a list of useful definitions that apply under NESHAP regulations. This list is not exhaustive and facility staff should reference the applicable subpart for additional information.

- ***Chemical Manufacturing Plant*** - any facility engaged in the production of chemicals by chemical, thermal, physical, or biological processes for use as a product, co-product, by-product, or intermediate including but not limited to industrial organic chemicals, organic pesticide products, pharmaceutical preparations, paint and allied products, fertilizers, and agricultural chemicals. See the definition at 40 CFR §61.341 for examples of some of the applicable process units.

- ***Capital Expenditure*** - An expenditure for a physical or operational change to a stationary source which exceeds a minimum threshold. The importance of the capital expenditure provisions is that modifications to existing facilities that result in an increase in emissions are not subject to NESHAP permitting requirements if the modifications can be accomplished without a “capital expenditure”. The difficulty with determining whether a modification triggers the “capital expenditure” threshold is that the Internal Revenue Service (IRS) guidelines cited by EPA as the means of making this determination are no longer published. EPA recognizes that the IRS form is no longer available, and intends to modify this definition. In the meantime, EPA uses the following definition:

  Capital Expenditure > (Original Equipment Cost)(0.07)

  Capital expenditures are analyzed on a per project basis to determine if a modification will result from a change in operation.

- ***Closed Vent System*** - A system that is not open to the atmosphere and is composed of piping, ductwork, connections, and, if necessary, flow inducing

devices that transport gas or vapor from an emission source to a control device.

- ***Coke By-Product Recovery Plant*** - any facility designed and operated for the separation and recovery of coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery.

- ***Commencement of Construction*** - Construction commences when an owner or operator has undertaken a continuous program of construction or modification, or when an owner has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification. Under a strict reading of this definition, construction commences when an owner signs a contract for the construction of a new or modified emission unit subject to NESHAP regulations. However, this is not how EPA applies this definition. EPA has issued guidance to the effect that construction commences when any component of an emissions unit subject to NESHAP is affixed to a foundation. Under this guidance, the laying of a foundation or permanent installation of piping or electrical conduit associated with a NESHAP source is considered to be commencement of construction. Notably, EPA does allow the shipment of pre-fabricated equipment to a site, provided that equipment is not affixed to a foundation upon arrival at the NESHAP facility.

- ***Construction*** - Fabrication, erection, or installation of a facility subject to NESHAP regulations. More notably, construction of a facility subject to NESHAP regulations cannot be commenced without a permit from EPA or its delegated administrator.

- ***Container*** - Any portable waste management unit in which a material is stored, transported, treated, or otherwise handled. Examples of containers are drums, barrels, tank trucks, dumpsters, tank cars, and dump trucks.

- ***Cover*** - A device or system which is placed on or over a waste placed in a waste management unit so that the entire waste surface area is enclosed and sealed to minimize air emissions. A cover may have openings necessary for operation, inspection, and maintenance of the waste management unit such as access hatches, sampling ports, and gauge wells provided that each opening is closed and sealed when not in use. Examples of covers include a fixed roof installed on a tank, a lid installed on a container, and an air-supported enclosure installed over a waste management unit.

- ***Individual Drain System*** – A system used to convey waste from a process unit, product storage tank, or waste management unit to a waste management unit. This term includes all process drains and associated sewer lines down to the receiving waste management unit.

- ***No Detectable Emissions*** - Less than 500 parts per million by volume (ppmv) above background levels, as measured by a detection instrument reading in accordance with the procedures specified in §61.355(h) of this subpart.

- ***Modification*** - Any physical or operational change to an existing facility that results in an increase in the emission rate to which a NESHAP regulation applies. The following changes are not considered modifications:

  - Maintenance, repair, and routine replacement, if such physical change does not increase the maximum potential to emit of a pollutant to which NESHAP regulations apply.

  - An increase in production rate (i.e., feed rate) if that increase can be accomplished without a capital expenditure.

  - An increase in the hours of operation.

  The relocation or change in ownership of a stationary source. However, such activities must be reported to EPA, as discussed in Section 3.4 below.

- ***Petroleum Refinery*** - any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through the distillation of petroleum, or through the redistillation, cracking, or reforming of unfinished petroleum derivatives.

- ***Point of Waste Generation*** - The location where the waste stream exits the process unit component or storage tank prior to handling or treatment in an operation that is not an integral part of the production process, or in the case of waste management units that generate new wastes.

- ***Tank*** - A stationary waste management unit that is designed to contain an accumulation of waste and is constructed primarily of non-earthen materials which provide structural support.

- ***Total Annual Benzene Quantity (TAB)*** - the sum of the annual benzene quantity for each hazardous waste stream from a chemical manufacturing plant, a coke by-product recovery plant, or a petroleum refinery received at the Facility that has a flow-weighted annual average water content greater than 10 percent or that is mixed with water, or other wastes, at any time and the mixture has an annual average water content greater than 10 percent, calculated in accordance with 40 CFR §61.355.

- ***Waste*** - Any material resulting from industrial, commercial, mining or agricultural operations, or from community activities that is discarded or is being accumulated, stored, or physically, chemically, thermally, or biologically treated prior to being discarded, recycled, or discharged.

- ***Waste Management Unit*** – A piece of equipment, structure, or transport mechanism used in handling, storage, treatment, or disposal of waste. Examples of a waste management unit include a tank, surface impoundment, container, oil-water separator, individual drain system, steam stripping unit, thin-film

evaporation unit, waste incinerator, and landfill.

- ***Waste stream*** - The waste generated by a particular process unit, product tank, or waste management unit. The characteristics of the waste stream (e.g., flow rate, benzene concentration, water content) are determined at the point of waste generation. Examples of a waste stream include process wastewater, product tank drawdown, sludge and slop oil removed from waste management units, and landfill leachate.

### *3.3 Permitting for New and Modified Facilities (40 CFR §§61.07 - 61.08)*

Prior to commencement of construction or modification of a facility subject to NESHAP regulations, an owner or operator must submit an application to EPA or its delegated administrator. For the Parker, Arizona facility, the application should be submitted to EPA Region IX at the following address:

Mr. Jack Broadbent
Director, Air and Toxics Division (A-1)
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

The contents of the application should include:

- The name and address of the applicant.

- The location of the proposed source.

- Technical information describing the proposed nature, size, design, operating design capacity, and method of operation, including a description of any equipment to be used to control emissions. Such technical information shall include calculations of emissions in sufficient detail so that EPA can assess the validity of the calculations and determine compliance with the applicable standards.

- Applications for modifications should also include a description of the proposed nature of the changes, the productive capacity of the facility before and after the changes are completed, and calculations of emissions before and after the changes are completed. The calculations should be in sufficient detail so that EPA can validate them and determine compliance with applicable standards.

After submittal of the application, EPA Region IX will determine if the application is complete. If deemed complete, EPA will notify the applicant within 60 days of its intention to approve or deny the application. If EPA determines that the new or modified source will comply with the applicable NESHAP standards, construction will be approved.

Construction may be commenced as soon as EPA issues its approval of the application.

### *3.4 Notifications (40 CFR §§61.09, 61.10, 61.13(c), and 61.342(f))*

The following written notifications shall be submitted to EPA Region IX:

- Anticipated start-up notification. This notification shall be provided no more than 60 days nor less than 30 days before start-up.

- Actual start-up notification. The notification of actual start-up shall be submitted within 15 days after the date of start-up.

- Existing source notification. This notification should have been submitted by April 7, 1993. The contents of this notification are outlined in 40 CFR 61.10

- Change in information notification. If any of the information provided in a permit application or in the existing source notification is changed even though the change does not constitute a modification (e.g., change in ownership, address, etc.), a notification shall be submitted within 30 days after the change.

- Emission testing notification. This notification should be submitted at least 30 days prior to testing.

- Subpart FF waste disposal notification. If Subpart FF wastes are shipped offsite for treatment at another facility, a notification must accompany each shipment stating that the wastes contain benzene, which is required to be managed and treated in accordance with the provisions of Subpart FF (See 40 CFR §61.342(f)).

### *3.5 General Standards for Treatment Facilities (40 CFR §61.348)*

The facility shall treat the waste received from Subpart FF waste generators to at least one of the following standards:

**1.** Remove benzene from the waste stream to a level less than 10 ppmw on a flow weighted annual average basis. The reduction of benzene concentration by dilution is not allowed [§61.348(a)(1)(l)].

**2.** Remove benzene from the waste stream by 99 percent or more on a mass basis [§61.348(a)(1)(ii)].

**3.** Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)].

4. Return the waste to a process to generate a new product [§61.342(c)(1)(iii)].

Under the language of Subpart FF and EPA guidance, the regenerated carbon is considered a product, not a waste. As such, the Facility is not required to demonstrate compliance with the benzene removal or destruction requirements in the regenerated carbon, provided the carbon is legitimately redeployed as a regenerated carbon product.

The Facility confirms this by ensuring its regenerated carbon meets product specifications and is placed into inventory for reuse. However, all equipment used to manage the spent carbon up to and including the multiple hearth and afterburner must be managed in accordance with Subpart FF equipment standards. These standards are set forth in 40 CFR §61.343 through §61.349 (as applicable). The requirements for each type of equipment are covered in the following section except for surface impoundments and oil-water separators, which are not present at the Facility.

The Facility may occasionally generate a wastewater from the discard of motive water used in the Facility's production process to slurry incoming spent carbon prior to reactivation. The motive water is assumed to become a waste at the point that the Facility determines it is no longer useable for its intended purpose. At that point of waste generation, if the wastewater has a flow-weighted annual average benzene content of less than 10 ppmw, then it is exempt from further control requirements under §61.342(c)(2). If the flow-weighted annual average benzene concentration of discarded motive water is 10 ppmw or greater, the wastewater would need to be treated using a control device regulated by Subpart FF to achieve either a benzene content below 10 ppmw on a flow weighted annual average or 99% or more benzene removal on a mass basis, pursuant to §61.348(a)(1)(i) or (ii), or sent to a facility with a 61.342(f) notice that Subpart FF treatment is required.

All access doors or other potential openings shall be sealed and kept closed at all times when waste is being treated, except during inspection and maintenance. Visual inspections of each sealed opening shall be performed initially and quarterly thereafter to ensure that no cracks or gaps occur and that openings are sealed closed. All repairs of any identified gaps or broken seals shall be made within 15 days. Repairs may be delayed until the next unit shutdown if they cannot be completed without a partial or complete facility shutdown.

Facilities complying with standards numbered one and two above must also comply with the standards of 40 CFR §61.343 through §61.347, and §61.349 (if applicable). These sections provide the requirements for tanks, containers, surface impoundments, individual drain systems, oil-water separators, and closed vent systems. Since the Parker, Arizona facility does not operate surface impoundments, and oil-water separators subject to NESHAP regulations, these requirements will not be covered in the following section.

### *3.6 Standards for Tanks, Containers, Individual Drain Systems and Closed Vent Systems (40 CFR §§61.343, 61.345, 61.346, and 61.349)*

Table 1 summarizes the equipment design, inspection, and repair requirement outlined in 40 CFR 60.343, 61.345, 61.346 and 61.349. These standards apply to:

- Tanks
- Containers
- Individual Drain Systems

- Closed Vent Systems
- Control Devices

Defects or other problems detected during equipment inspections must be corrected within the time frames outlined in Table 1. Repair may be delayed until the next facility shutdown if it is technically infeasible to make the repair or correction without a partial or complete facility shutdown.

## Table 1 – Summary of Subpart FF Requirements

| Component | Equipment Design | Inspection Methods | Inspection Frequency | Repair Deadline |
|---|---|---|---|---|
| **Tanks (§61.343)** | Fixed roof connected by closed vent to a control device; all potential openings shall be sealed closed except during inspection, repair, maintenance, removal, or sampling; the closed vent system and control device shall meet the requirements of §61.349 (discussed below). | Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv. | Initial and quarterly visual inspections; Initial and annual Method 21 inspections. | 45 days |
| | Fixed roof with pressure relief device maintained in a closed position except during relief events (limitations apply, see note below). | Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv. | Initial and quarterly visual inspections; Initial and annual Method 21 inspections. | 45 days |
| ***Note:*** *A tank may be operated without a closed vent system if:*<br>*1) average water content is less than 10% by volume and maximum organic vapor pressure is less than 0.75 psia;*<br>*2) maximum organic vapor pressure is less than 4.0 psia and tank capacity is less than 40,000 gallons;* **or**<br>3) *maximum organic vapor pressure is less than 11.1 psia and tank capacity is less than 20,000 gallons.* | | | | |
| **Containers (§61.345)** | All containers shall remain sealed closed except during periods of loading, unloading, inspection, or sampling; liquids pumped into a container must be done with a submerged fill pipe. | Visual inspection for cracks and broken seals; Method 21 to verify fugitives < 500 ppmv for containers >111 gallons | Initial and quarterly visual inspections; Annual Method 21 inspections. | 15 days |
| ***Note:*** *Wastes treated within containers must be equipped with a closed vent system meeting the requirements of §61.349 (discussed below). Containers shipped offsite for treatment must meet the notification requirements of §61.342(f).* | | | | |

| Component | Equipment Design | Inspection Methods | Inspection Frequency | Repair Deadline |
|---|---|---|---|---|
| **Individual Drain Systems (§61.346)** | *Compliance option of §61.346(a):* Each individual drain system opening must be equipped with a closed vent system and control device. *Compliance option of §61.346(b):* Each drain must be equipped with water seal controls or a tightly sealed cap or plug; each sewer line shall be covered or enclosed with no visual gaps or cracks. | Visual inspection for cracks and broken seals.<br><br>Method 21 to verify fugitive emissions <500 ppmv | Initial and quarterly visual inspections. Initial and annual Method 21 inspections. | 15 days |
| **Treatment Processes (§61.348)** | Each treatment process must remove benzene to < 10 ppmw (dilution is not allowed), or remove or destroy benzene by [3] 99 wt%; each treatment process must comply with the standards of §§61.343 - 61.347; compliance must be demonstrated either by engineering calculations (§61.356(e)) or performance tests (§61.355); all potential openings shall be sealed closed except during inspection and maintenance or return waste to a process to generate a new product (§61.342(c)(1)(iii). | Visual inspection for cracks and broken seals; inspection of units according to §§61.343 - 61.347. | Initial and quarterly visual inspections; inspection of units according to §§61.343 - 61.347. | 15 days |
| **Closed-vent Systems and Control Devices(§61.349)** | The vent system shall remain closed and connected to a control device; bypass lines shall have a flow indicator or a car-seal or lock-and-key seal; all gauging and sampling devices shall be gas-tight except when gauging or sampling; control device must be monitored according to §61.354(c) (see note below); control device must be operated at all times when waste is present, except for maintenance and repair requires shutdown; | Visual inspection; Method 21 to verify fugitives < 500 ppmv. | Initial and quarterly visual inspections; Initial and annual Method 21 inspections. | First attempt: 5 days; Full repair: 15 days. |
| | An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) must: reduce organic emissions by 95 wt%; achieve organic concentration £ 20 ppmv, corrected to 3% oxygen; or provide minimum residence time of 0.5 sec at minimum temperature of 760°C; vent must be introduced into flame zone of boiler or process heater (§61.349(a)(2)(i)). | Visual inspection; monitoring according to §61.354(c) (see note below). | Initial and quarterly visual inspections; daily monitoring device inspections (see note below). | First attempt: 5 days; Full repair: 15 days. |

| Component | Equipment Design | Inspection Methods | Inspection Frequency | Repair Deadline |
|---|---|---|---|---|
| | A vapor recovery system (e.g., carbon adsorption system or condenser) must: recover or control organic emissions by 95 wt%, or recover or control benzene emissions by 98 wt%; carbon canisters must be replaced immediately upon breakthrough (§61.349(a)(2)(ii)). | Visual inspection; monitoring according to §61.354(c) (see note below). | Initial and quarterly visual inspections; daily monitoring device inspections (see note below). | First attempt: 5 days; Full repair: 15 days. |
| | Any other control device must achieve organic control of 95 wt% or benzene control of 98 wt%. | Visual inspection; monitoring according to §61.354(c) (see note below). | Initial and quarterly visual inspections; daily monitoring device inspections (see note below). | First attempt: 5 days; Full repair: 15 days. |

***Note:*** *§61.354(c) specifies the following required monitoring of operations for control devices subject to §61.349; the data recorded by the monitoring equipment must be inspected at least* ***once*** *each operating day to ensure proper operation of the control device, which in pertinent part are as follows:*
*(1) for a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder;*
*(2) for a control device subject to §61.349(a)(2)(iv) (other devices), devices to monitor the parameters specified in §61.349(a)(2)(iv)(C);* **and** *§61.354(d) specifies the required monitoring of carbon adsorption systems that do not regenerate the carbon bed directly on site (e.g., carbon canisters): organic or benzene outlet concentrations shall be monitored daily,* or *at intervals no greater than 20% of the design carbon replacement interval (whichever is greater), to indicate when breakthrough has occurred or replace carbon earlier than the design breakthrough period.*

## *3.7 Compliance Demonstration (40 CFR §§61.13, 61.355, and 61.356(e) - (f))*

Subpart FF requires the owner or operator to demonstrate compliance with the applicable general standards for hazardous waste treatment facilities and the applicable standards for closed vent systems and control devices. Compliance may be demonstrated either through engineering calculations or performance testing, which are discussed in turn below.

### 3.7.1 Engineering Calculations (40 CFR §61.348(c)(1))

Compliance with the general standards for hazardous waste treatment facilities [§61.348(a)(1)(I) - (iii)] may be demonstrated with engineering calculations. These calculations must demonstrate compliance at maximum waste flow rate and maximum benzene content conditions and be available prior to facility start-up. As discussed in Section 3.9, these calculations shall be maintained for the life of the facility and include all supporting technical information (e.g., design specifications, drawings, etc.). See 40 CFR 61.356(e)(2) for additional information.

Carbon canisters and their associated closed vent systems must meet specific calculation requirements of 40 CFR 61.356(f)(2)(i)(G). Briefly, this analysis must consider the vent stream composition, benzene and constituent concentration, flow rate, relative humidity, and temperature. Based on these data, the operator must calculate the effective control capacity of the carbon canister and define the appropriate replacement interval to assure that the carbon canister maintains its control effectiveness.

For the afterburner, the specific calculation requirements are set forth in 40 CFR §61.356(f)(2)(i)(A). In general, this analysis must consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

### 3.7.2 Performance Testing (40 CFR §61.348(c)(2))

If emissions testing is used to demonstrate compliance, the tests must be performed within 90 days of start-up for new units, or April 7, 1993 for existing units. Additionally, the EPA can at anytime require that such testing be performed to demonstrate compliance with Subpart FF requirements [40 CFR 61.13(b)]. The results of the emissions tests shall be reported to EPA Region IX within 31 days following the completion of testing. As discussed in Section 3.9, the results should be retained for the life of the facility.

The specific source tests that may be performed in lieu of engineering calculations are as follows:

| COMPLIANCE STANDARD | TEST METHODS REFERENCE |
|---|---|
| Remove benzene to a 10 ppmw concentration [§61.348(a)(1)(i)] | See §61.355(d) |
| Remove benzene from the waste stream by 99 percent or more on a mass basis | See §61.355(e) |

| COMPLIANCE STANDARD | TEST METHODS REFERENCE |
|---|---|
| [§61.348(a)(1)(ii)] | |
| Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)] | See §61.355(f) |
| Meet control device performance requirements specified in §61.349(a)(2) | See §61.355(i) |

### 3.7.3 Method 21 Testing (40 CFR §61.355(h))

All inspections performed using an organic vapor analyzer (OVA) shall be performed consistent with the requirements of EPA Method 21 from Appendix A of 40 CFR 60. Calibrations and testing shall also be performed consistent with 40 CFR 61.355(h).

## *3.8 Monitoring of Operations (40 CFR §§61.14 and 61.354)*

Compliance monitoring must be performed as outlined below:

| COMPLIANCE STANDARD | MONITORING METHODS AND FREQUENCY |
|---|---|
| Remove benzene to a 10 ppmw concentration [§61.348(a)(1)(l)]. | Sample exiting streams on a monthly basis using the methods prescribed by §61.355(c); or, monitor a parameter or parameters on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter. |
| Remove benzene from the waste stream by 99 percent or more on a mass basis [§61.348(a)(1)(ii)]. | Monitor a parameter or parameters on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter. |
| Destroy benzene in the waste stream by incinerating the waste in a combustion unit that achieves a destruction efficiency of 99 percent or greater for benzene [§61.348(a)(1)(iii)]. | Monitor a parameter or parameters (e.g., temperature) on a continuous basis to assure proper system operation and inspect recorded data daily for each monitored parameter. |

| COMPLIANCE STANDARD | MONITORING METHODS AND FREQUENCY |
|---|---|
| Meet control device performance requirements for carbon canisters as specified in §61.349(a)(2) | Replace canister at a specified interval as determined through engineering calculations; or, monitor the VOC content in the exhaust on a daily basis or at an interval not to exceed 20% of the design carbon replacement interval. |

## *3.9 Recordkeeping Requirements (40 CFR §61.356)*

All records required by Subpart FF shall be maintained in a readily accessible location at the facility site for a period not less than two years, unless otherwise specified below. The records that must be maintained include:

- A list of the streams subject to Subpart FF compliance and whether or not the waste stream is controlled for benzene emissions (§61.356(b)).

- For each waste stream not controlled in accordance with Subpart FF, all test results and other documentation used to define the stream identification, water content, whether or not the waste stream is process wastewater, annual waste quantity, range of benzene concentrations, annual average flow-weighted benzene concentration, and annual benzene quantity (§61.356(b)(1)).

- For each waste shipment sent offsite for treatment, the date the waste is shipped offsite, quantity of waste shipped offsite, the name and address of the facility receiving the waste, and a copy of the notice sent with the waste shipment (§61.356(c)).

- Engineering design documentation for all control equipment. The documentation should be retained for the life of the facility (§61.356(d)).

- A signed and dated statement certifying that the treatment unit is designed to operate at the documented performance level when the waste stream entering the facility is at the highest flow rate and benzene concentration. This signed statement should be retained for the life of the facility (§61.356(e)(1)).

- For closed-vent systems and control devices, a signed and dated statement certifying that each system and device is designed to operate at the documented performance level when the waste management unit vented to the control device is or would be operating at the highest load or capacity expected to occur. This signed statement must be retained for the life of the unit (§61.356(f)).

- If engineering calculations are used to demonstrate compliance with the general standards for treatment facilities [§61.348(a)(1)(I) - (iii)], a complete design analysis that includes supporting technical information (e.g., design specifications, etc.) should be maintained for the life of the facility (§61.356(e)(2)).

- For all performance test results used to demonstrate compliance with the general standards for treatment facilities [§61.348(a)(1)(I) - (iii)], maintain for the life of the facility the documentation required in 40 CFR §61.356(e)(3).

- A signed and dated statement certifying that the closed vent system and control device is designed to operate at the documented performance level at the highest load or capacity expected to occur (§61.356(f)(1)).

- If engineering calculations are used to determine control device performance, then a design analysis should be retained for the life of the control device that includes specifications, drawings, and other documentation supporting the calculations. For carbon canisters, the design analysis should include information required in 40 CFR §61.356(f)(2)(I)(G).

- For all test results used to determine control device performance, maintain testing results for the life of the control device as outlined in 40 CFR §61.356(f)(3).

- Visual inspection records that include the date of each inspection, the treatment unit or control equipment inspected, description of any problem identified, a description of the corrective action taken, and the date the corrective action was completed (§61.356(g)).

- Method 21 inspection records that include the dates of inspection, background level measured, and the maximum concentration measured at each potential leak interface. If a leak is detected, then the records shall include the location where the leak was detected, a description of the problem, a description of the corrective action taken, and the date the corrective action was completed (§61.356(h)).

- Dates of start-up and shutdown of the treatment unit, and periods when the treatment unit is not operating as designed (§61.356(i)(1) & (5)).

- Dates of start-up and shutdown of the closed-vent system, and periods when the closed-vent system is not operating as designed (§61.356(i)(1) & (3)).

- Testing results from all monthly waste stream sampling performed in accordance with 40 CFR §61.354(a)(1). The results should also include the date each test is performed (§61.356(i)(2)).

- Descriptions of any process parameters that are monitored to ensure the treatment unit is operating in compliance with Subpart FF. The descriptions should include reasons why the parameter(s) was/were selected. This documentation should be maintained for the life of the facility (§61.356(i)(3)).

- Descriptions of any process parameters that are continuously monitored to ensure the control device is operating in compliance with Subpart FF. The descriptions should include the control device's specifications, and reasons why the parameter(s) was/were selected. This documentation should be maintained for the life of the facility (§61.356(j)(2)).

- Periods and durations when the closed-vent system and control device are not operated as designed (§61.356(j)(3)).

- Date and time when the carbon canisters are monitored (if applicable), when breakthrough is measured (if applicable), and when the canister is replaced (§61.356(j)(10)).

### *3.10 Reporting Requirements (40 CFR §§61. 13(f) and 61.357)*

The following reports shall be submitted to EPA Region IX:

- Performance test reports. These reports shall be submitted within 31 days following testing and should include the information required in 40 CFR §61.356(e)(3) or §61.356(f)(3), as applicable (§61.13(f)).

- Initial Subpart FF report. This report should have been submitted by April 7, 1993 for existing facilities, and be submitted at start-up for facilities constructed after January 7, 1993. The contents of the report are outlined in 40 CFR §61.357(a)(1) - (3).

Annual Subpart FF TAB report (Appendix D).1 As outlined in the rules, if the total amount of benzene waste included in the Facility TAB is equal to or greater than 1.0 Mg/yr (1.1 ton/yr), but less than 10 Mg/yr (11 ton/yr), the operator shall submit a report by April 7 each year updating the TAB, identifying the controlled/uncontrolled and organic/aqueous designations of each waste stream, along with other data described in 40 CFR §61.357(a)(1)-(3) (§61.357(c)).[2] If the Facility's TAB is 10 Mg/yr or greater, additional reporting is required pursuant to 40 CFR §61.357(d), including certification of equipment installation and quarterly reporting. The Facility may be deemed to know its TAB calculation throughout the year as wastes are received, and it is therefore essential that the Facility track this information continuously so that it can respond immediately before its TAB ever equals or exceeds 10 Mg/yr.

## 4.0 EVOQUA WATER TECHNOLOGIES, PARKER, ARIZONA FACILITY COMPLIANCE PLAN

### *4.1 NESHAP Subpart FF Applicability to the Parker, Arizona Facility*

NESHAP Subparts A and FF apply to the spent carbon storage and treatment processes within the facility. All affected process units and storage tanks are equipped with controls

1 If the facility TAB is less than 1 Mg/yr, then no TAB report is required unless there is a change that could cause the TAB to increase to 1 Mg/yr or more.

2 Chemical plants, coke by-product recovery plants and refineries with a TAB equal to or greater than 1 Mg and less than 10 Mg/yr are usually not subject to BWON control requirements. 40 C.F.R. §61.342(a). Thus, the purpose of the annual report for these facilities is typically to confirm that the TAB remains below 10 Mg. However, TSD facilities that treat BWON-regulated wastes received from off-site facilities must provide the same degree of control as the generating facility would so they may be subject to BWON control even if their TAB is less than 10 Mg/yr.

to benzene emissions to the atmosphere.

The specific process components subject to Subpart FF compliance are as follows:

| I.D. NO. | DESCRIPTION | APPLICABLE STANDARD | COMMENTS |
|---|---|---|---|
| N/A | Spent Carbon Containers | §61.345 | Subpart FF wastes are stored in drums, vessels, and supersacks. |
| N/A | Debris Bin and Associated Drums | §61.345 §61.342(f) | Benzene wastes shipped offsite must meet the container reqts., and offsite shipment reqts. |
| H-1 H-2 | Spent Carbon Unloading Hoppers Nos. 1 and 2 and associated transfer lines | §61.346(b) | These hoppers are individual drain systems, which are equipped with covers; additional controls of fugitive emissions from the hoppers is provided by carbon adsorption (WS-2). |
| T-1 | Spent Carbon Storage Tank | §61.343 | Tank vapors controlled by carbon adsorption (WS-1). |
| T-2 | Spent Carbon Storage Tank | §61.343 | Tank vapors controlled by carbon adsorption (WS-1). |
| T-5 | Spent Carbon Storage Tank | §61.343 | Tank vapors controlled by carbon adsorption (WS-1). |
| T-6 | Spent Carbon Storage Tank | §61.343 | Tank vapors controlled by carbon adsorption (WS-1). |
| T-9 | Recycle Water Tank | §61.343 | Tank vapors controlled by carbon adsorption (WS-1). |
| T-18 | Furnace Feed Hopper | §61.343 | Tank vapors controlled by carbon adsorption (WS-3) |
| RF-2 | Reactivation Furnace No.2 | §61.348 | Regenerated carbon must meet product specifications |
| AB-2 | Afterburner No. 2 | §61.349(a)(2)(i)(c) | Minimum residence time of 0.5 seconds at a minimum temperature of 1400 F |
| C-5 | Dewater Screw | §61.346(a) | Emissions routed to the afterburner (AB-2) |
| C-16 | Weight belt | §61.346(a) | Emissions routed to the afterburner (AB-2) |
| WS-1 | Carbon Adsorber No. 1 | §61.349 | Carbon Canister replaced prior to design breakthrough |
| WS-2 | Carbon Adsorber No. 2 | §61.349 | Carbon Canister replaced prior to design breakthrough |
| WS-3 | Carbon Adsorber No. 3 | §61.349 | Carbon Canister replaced prior to design breakthrough |

The Parker, Arizona facility is required to regenerate spent carbon to a useful product. Compliance with 40 CFR §61.348 also requires that the upstream tanks, containers, individual drain systems and control devices noted in the table above must meet the applicable requirements of Subpart FF (i.e., §61.343, §61.345, §61.346 and §61.349).

The debris bin and associated drums, which are used to store FF wastes from the facility, must not only meet the container requirements of 40 CFR §61.345, but also the requirements of 40 CFR §342(f). Section 342(f) requires that a notice accompany each waste shipment indicating that the wastes must be treated in accordance with the standards of Subpart FF. Records must be maintained indicating the date the waste is shipped offsite, quantity of waste shipped offsite, the name and address of the facility receiving the waste, and a copy of the notice sent with the waste shipment (§61.356(c)).

Hoppers H-1 and H-2 are used to convey Subpart FF wastes from containers and other waste management units to the regeneration system. As such, these units are considered individual drain systems, which meet Subpart FF requirements under 61.346(b). Each of the units is equipped with a cover, which is kept closed when the hoppers are not being used to convey Subpart FF wastes. The associated lines that convey Subpart FF wastes from H-1 and H-2 to the Spent Carbon Storage Tanks (T-1, T-2, T-5 and T-6) are hard piping are inspected quarterly for any evidence of leaks (open valves, indications of low liquid levels, rips, tears, or cracks in equipment, etc.). Any repairs that are identified as required during these quarterly inspections are performed within 15 days, as required (See Section 4.4, below).

The process wastewater stream associated with the wet scrubber control system has been specifically excluded from NESHAP applicability since it does not come in contact with Subpart FF waste streams. Additionally, water that comes in contact with Subpart FF waste is also exempt from Subpart FF treatment requirements under 40 CFR §61.342(c) since it contains less than 10 ppmw total benzene on an annual weighted average basis. The drain system is also exempt from Subpart FF compliance since it does not handle Subpart FF waste. Subpart FF wastes, which are contained in closed drums and roll-offs are managed so that none of these materials is allowed to enter the maintenance drains within the facility during surface cleaning operations.

## *4.2 Compliance Responsibilities*

The Plant Manager has the primary responsibility for overseeing the NESHAP Subpart FF compliance program for the Parker, Arizona facility. More specifically, the Plant Manager assures that all permitting, notifications, monitoring, inspections, recordkeeping, and reporting are performed in accordance with the applicable regulations. The Plant Manager is responsible for assuring that all needed repairs and other maintenance activities are performed as required. The Plant Operator is responsible for monitoring the day-to-day operation of the facility.

## *4.3 Permitting and Notifications*

All proposed changes to the Parker, Arizona facility are reviewed by the Plant Manager or his designee to determine if the modification provisions of the NESHAP regulations have been triggered. In making this determination, the Environmental Plant Manager or his/her designee will determine whether or not the changes can potentially increase benzene emissions. If the changes will not increase benzene emissions, then the NESHAP modification provisions are not triggered. If the changes have the potential to increase

facility benzene emissions, then the Environmental Health and Safety Manager or his/her designee will determine if the capital expenditure threshold will be exceeded by the project. As noted in Section 3.2, a capital expenditure is incurred for NESHAP applicability when the cost of the changes exceeds seven percent of the original facility cost.

If the changes are deemed as "modifications", the Environmental Health and Safety Manager or his/her designee will prepare a permit application that conforms to the requirement of Section 3.3 and submit it to EPA Region IX. No facility changes will be made until EPA approves the application.

The Environmental Health and Safety Manager or his/her designee is responsible for making all notifications required by NESHAP Subpart A and Subpart FF. The contents of these notifications are outlined in Section 3.4. Copies of relevant notifications are maintained in Appendix B of this plan.

### *4.4 Inspection and Repair*

The Environmental Health and Safety Manager or his/her designee performs all routine quarterly visual inspections of the facility. During these inspections, the Environmental Health and Safety Manager or his/her designee examines the stationary equipment listed in Section 4.1 and its interconnecting piping for cracks, gaps, or other problems. In addition, the Environmental Health and Safety Manager or his/her designee visually inspects all spent carbon containers maintained onsite for more than one quarter year. Each visual inspection is documented on the Visual Inspection Form and copies of completed forms are maintained in Appendix E.

The Environmental Health and Safety Manager or his/her designee performs the Method 21 inspections annually during periods when the facility is processing Subpart FF waste. During these inspections, the Environmental Health and Safety Manager or his/her designee inspects all potential leak sources listed on the Annual Method 21 Inspection Form (See Appendix F). The Environmental Health and Safety Manager or his/her designee documents the results of the inspection on the Annual Method 21 Inspection Form and maintains copies of the completed forms in Appendix F. Spent carbon containers maintained onsite for more than one year must be included in this inspection.

The initial inspections of Subpart FF waste containers delivered to the Parker, Arizona facility are completed by the respective generator of the waste. This inspection includes both a visual inspection of the container and a Method 21 inspection of all potential leak interfaces. As noted above, containers maintained for more than one quarter year at the facility, will be visually inspected by the Environmental Health and Safety Manager or his/her designee during the routine quarterly visual inspection. Furthermore, containers maintained onsite for more than one year must be inspected using Method 21.

The debris bin and baghouse drum shall be visually inspected and inspected using Method 21 by the Environmental Health and Safety Manager or his designee following initial loading with Subpart FF containing wastes. In addition, the debris bin and containers will be visually re-inspected if it is onsite for more than 90 days (with the exception of the debris bin which cannot be stored longer than 90 days). These inspections shall be

documented in the Debris Bin and Associated Drums Inspection Log found in Appendix G.

All leaks (defined as an instrument reading exceeding 500 ppmv over background), openings, cracks or other problems identified during the visual and Method 21 inspections will be repaired within the time frames established in Table 1 (see Section 3.6, above). The Environmental Health and Safety Manager or his/her designee who detects the leak will work with the Plant Manager or his/her designee to complete the repair. Completed repairs will be documented on the affected inspection forms in Appendices F, G, or H.

If a repair cannot be completed within the specified time without a partial or complete facility shutdown, the Environmental Health and Safety Manager or his/her designee will document in the affected inspection form in Appendices F, G, or H the reason why the repair is delayed. The Environmental Health and Safety Manager or his/her designee will ensure that all repairs are completed during the next process unit shutdown, and document in the affected inspection form the completion of the repair.

### *4.5 Monitoring*

Compliance with the general treatment requirements are monitored as follows:

| EQUIPMENT COMPONENT / MATERIAL | APPLICABLE STANDARD | MONITORING METHOD | FREQUENCY |
|---|---|---|---|
| Afterburner (AB-2) | §61.349(a)(2)(i)(c) | Temperature | Continuous |
| Wastewater in Contact with Spent Carbon Discharged to POTW | §61.342(c)(2) | Benzene concentration (minimum of three (3) samples) determined by methods prescribed by §61.355(c)(2) | Annual |
| Carbon Adsorber (WS-1) | §61.349(a)(2)(ii) | Calculations in Appendix C show that the canister must be replaced at least every 7.88 days. | 7.88 days at a maximum or more frequently |
| Carbon Adsorber (WS-2) | §61.349(a)(2)(ii) | Calculations in Appendix C show that the canister must be replaced at least every 100 days. | 100 days at a maximum or more frequently |
| Carbon Adsorber (WS-3) | §61.349(a)(2)(ii) | Calculations in Appendix C show that the canister must be replaced at least every 38 days. | 38 days at a maximum or more frequently |

The Plant Operator reviews all temperature readings on a daily basis to assure that the reactivation furnace is operating as designed, and the afterburner is maintained at a temperature greater than 760°C (1400°F). If the temperature data for the afterburner indicate a performance problem, the Plant Operator will correct the problem as soon as possible. The reasons justifying the use of temperature as the main monitoring parameter are provided in Appendix H.

To comply with the requirements of 40 CFR §61.356(b), the Environmental Health and Safety Manager or his/her designee shall verify on an annual basis the annual flow rate and the benzene concentration in the untreated wastewater in contact with spent carbon (minimum of 3 samples). Determinations shall assure that the benzene concentration in the wastewater is less than 10 ppmw and records will be maintained in Appendix J.

The Plant Manager or his/her designee will replace the carbon in adsorbers WS-1, WS-2, and WS-3 in accordance with the schedule identified above. Immediately following adsorber replacement, the Plant Manager or his designee will document the change-out in the Carbon Canister Replacement Log included in Appendix I.

Any periods of malfunction, equipment start-up and shutdown will be logged by the Plant Operator in the Process Monitoring log. These logs are maintained in the file room.

### *4.6 Performance Testing*

No emissions testing has been performed to demonstrate compliance with the applicable standards of Subpart FF. All compliance determinations have been performed through engineering calculations. Calculations documenting the performance of the carbon adsorbers are included in Appendix C.

### *4.7 Recordkeeping*

The following table identifies all applicable Subpart A and FF records required to be maintained at the Parker, Arizona facility, the individual responsible for its maintenance, and the location where the records are stored. Unless otherwise noted in the table, the records will be maintained for a minimum of two years, as required by NESHAP regulations.

**NESHAP FF RECORDKEEPING PLAN**
**EVOQUA WATER TECHNOLOGIES**
**PARKER, ARIZONA FACILITY**

| Record Description | Individual Responsible | Comments/Location |
|---|---|---|
| Notifications (§§61.09, 61.10, 61.13(c), and 61.342(f)) – *Note: the initial notification should be retained for the life of the facility* | Plant Manager | Appendix B of the Compliance Plan (see Section 3.4) |
| List of streams subject to Subpart FF | Plant Manager | Section 4.1 of the Compliance Plan |

## NESHAP FF RECORDKEEPING PLAN
## EVOQUA WATER TECHNOLOGIES
## PARKER, ARIZONA FACILITY

| Record Description | Individual Responsible | Comments/Location |
|---|---|---|
| Total annual benzene reports | Plant Manager | Appendix D of the Compliance Plan |
| Date the debris bin and associated drums shipped offsite, quantity of waste shipped offsite, name and address of facility receiving waste (§61.356(c)) | Plant Manager | Waste manifests in Plant Manager's office |
| Engineering design documentation of control equipment (§61.356(d))* | Plant Manager | Plant Manager's office |
| Engineering calculations demonstrating Control Equipment performance (§61.356(f)(2)(i)(G))* | Plant Manager | Appendix C of Compliance Plan |
| Test results demonstrating control equipment performance (§61.356(f)(3))* | N/A | Not Applicable. Calculations have been used in lieu of testing results. |
| Visual inspection records (§61.356(g)) | Plant Manager | Appendices F and H of the Compliance Plan |
| Method 21 inspection records (§61.356(h)) | Plant Manager | Appendices G and H of the Compliance Plan |
| Dates of start-up, shutdown, and malfunction of treatment unit (§61.356(i)(1) & (5)) | Plant Operator | Process Monitoring Log maintained in Plant Manager's office |
| Testing results from all monthly sampling (§61.356(i)(3)) | N/A | Not Applicable. No monthly sampling of regenerated carbon required since regenerated carbon is a product |
| Descriptions of process parameters monitored to ensure treatment unit performance (§61.356(i)(3))* | Plant Manager | Appendix H of the Compliance Plan |
| Dates of startup, shutdown, and malfunction of the carbon absorbers (§61.356(j)(1) & (3)) | Plant Operator | Process Monitoring Log maintained in Plant Manager's office |
| Descriptions of process parameters monitored to ensure control device performance (§61.356(j)(2))* | N/A | Not Applicable. The Carbon Absorbers (WS-1, WS-2 and WS-3) are changed-out on a predetermined frequency; no monitoring is performed. See Appendix C of the Compliance Plan. |
| Date and time when the carbon | Plant Manager | Replacement Logs are |

**NESHAP FF RECORDKEEPING PLAN**
**EVOQUA WATER TECHNOLOGIES**
**PARKER, ARIZONA FACILITY**

| Record Description | Individual Responsible | Comments/Location |
|---|---|---|
| absorbers are monitored and replaced (§61.356(j)(10)) | | maintained in Appendix I of the Compliance Plan; monitoring for these units not required. |

Records noted with an asterisk (*) must be maintained for the life of the facility. Otherwise, facility is to maintain records for two years (§61.356(a)).

## *4.8 Reporting*

The Environmental Health and Safety Manager or his/her designee shall prepare the Annual Subpart FF Report and submit it to EPA to EPA Region IX by April 7th of each year whenever the facility TAB is 1 Mg/yr or greater. This report will cover the previous calendar year's activities and meet the requirements of 40 CFR 61.357(a)(1)-(3). Copies of the report will be maintained in Appendix D.