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AIR 14-603

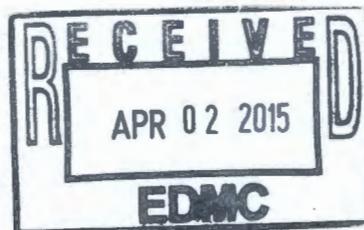


STATE OF WASHINGTON  
DEPARTMENT OF HEALTH  
OFFICE OF RADIATION PROTECTION  
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June 5, 2014

**CERTIFIED MAIL**

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Mr. Kevin W. Smith, Manager  
United States Department of Energy  
Office of River Protection  
P.O. Box 450, MSIN: H6-60  
Richland, Washington 99352

Re: Standards and Maintenance Requirements for the Ventilation Systems in the Tank Farm Facilities

Dear Mr. Smith:

This letter is to convey compliance concerns the Washington State Department of Health (DOH) has identified pertinent to the ventilation systems in the tank farm facilities. We are concerned about a decline in the maintenance and condition of the ventilation control and monitoring systems in the tank farms that have resulted in the release of radiological materials. Through our inspections and the environmental notifications received from your office there is evidence these aging systems are deteriorating and actions need to be taken to ensure the protection of public health and safety.

The requirements for operation of these emission units are called out in the United States Department of Energy (USDOE) Radioactive Air Emission License (RAEL) FF-01. In addition to specific requirements called out for each emission unit, general requirements are called out in Section 1.9, "Compliance with Standards and Maintenance Requirements".

***1.9 Compliance with Standards and Maintenance Requirements.***

*Compliance with numerical emission limits shall be determined in accordance with emission tests established in §61.13 or as otherwise specified in an individual subpart. (61.12(a))*

*Compliance with design, equipment, work practice, or operational standards shall be determined as specified in an individual subpart (Subpart H). (61.12(b))*



*The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source. (61.12(c))*

Listed below are the issues we have identified to date:

### **Issue 1: Aging HEPA Filters Operation**

296-A-42 "A" and "B" train filters are currently operating past their ten year combined shelf/service life and were installed just before their 10 year lifetime (from date of manufacture) was to expire. Washington River Protection Solutions (WRPS), the contractor for Tank Farms, has stated there are filters currently in operation as old as 27 years. The manufacturer recommended lifetime is ten years (from date of manufacture), and only five years for high moisture conditions. These lifetimes may be further reduced depending upon chemical constituents in the air flow. WRPS asserts the in-place testing is sufficient to ensure the integrity of the filters. DOH does not agree that in-place testing is an appropriate substitute for scheduled replacement of equipment. In-place testing is intended to detect premature failure.

**Regulatory Citation:** Washington Administrative Code (WAC) 246-247-040(3): All new construction and significant modifications of emission units commenced after August 10, 1988 (the date this chapter originally became effective), shall utilize Best Available Radionuclide Control Technology (BARCT) (see Appendix B).

**Consequence:** The consequence of a filter failure is the potential release of the accumulated radioactive material as a single event.

**Compliance:** Develop a list of powered emission units with filter ages and a schedule for replacement of filters currently operating past their ten year combined shelf/service life.

### **Issue 2: Maintenance of Moisture Control and Condensate Control Equipment**

**Radiological contamination resulting from failure of condensate control:** The seal pot to 296-P-47 was originally designed to gravity drain to C-103. With the completion of C-103 retrieval and isolation from 296-P-47 drains, seal pot pumps were added to the seal pot to route the condensate to a tank that would not accommodate gravity drains. In December 2013, and again in February 2014, freezing weather caused the freezing of sensor lines and the failure of the seal pot pumps. Liquids accumulated and backed up into filter house and fan housing located

downstream of the filters. This portable exhauster is now radiologically contaminated on the filter systems and into the downstream fan housing.

**Radiological releases resulting from failure of moisture control:** The C Farm portable exhauster for 296-P-47 ventilates tanks C-108, C-109, C-111, and C-112. The retrieval activities increase the moisture loading for the ventilation system. On November 19, 2013, we received informal notification of a leaking housing transition piece attached to 296-P-47. On January 19, 2014, the pre-filter and first stage of filters were changed due to a high differential pressure, and changed out again on February 24, 2014. When the filters were changed out on February 24, 2014, the filter bagging system was discovered to be filled with water and the pre-filter and first stage of filters were observed to be damp and sagging.

USDOE informally reported the increase in differential pressure on the filters was due to a combination of freezing temperatures and moisture loading that overloaded the demister. We were also informed the demister was dirty, had not been replaced for many years, and is at the end of its life cycle. These issues ultimately released radiation as demonstrated by the alarm of the Continuous Air Monitor on the emission unit when the system was going through initial restart after filter replacements.

**Related maintenance concern:** The recent discovery of a bird carcass on the inside face of the final filter during filter change out demonstrates maintenance issues.

**Regulatory Citation:** Code of Federal Regulations (CFR) 40 CFR 61.12(c): The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source.

**Consequence:** Failure of the maintenance system to ensure emission units are operated as designed could lead to a release of radioactive material to the environment. Additionally, unplanned shutdowns of emission units due to maintenance issues have the potential to delay retrieval of single shell tank waste in C-Tank Farm.

**Compliance:** Provide a plan to improve the maintenance and reliability of the current moisture and condensate control systems to protect the integrity of the High Efficiency Particulate Air (HEPA) filters.

### **Issue 3: Sample Probe Obstruction**

Following evaluation of a declining stack flow (296-A-47) indicating the sampling system was not operating as designed, dead birds were discovered in the sampling area. Mold, algae, and other biological materials were also discovered in the stack. This sample probe disturbance impacts the representativeness of the sample, as required by state and federal regulation, and draws into question the validity of the sample. The sampling system may have been compromised for over a year.

**Regulatory Citation:** WAC 246-247-075(2) Monitoring, testing, and quality assurance (2):  
Equipment and procedures used for the continuous monitoring of radioactive air emissions shall conform, as applicable, to the guidance contained in American National Standards Institute (ANSI) N13.1, ANSI N42.18, ANSI N323, ANSI N317, reference methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17 of 40 C.F.R. Part 60, Appendix A, 40 C.F.R. Part 52, Appendix E, and any other methods approved by the department.

**Consequence:** Total emissions and doses to the public cannot be accurately determined.

**Compliance:** Provide and implement a plan to address the issue of material entering the stacks causing sample probe obstruction in this and other standby stacks. Provide justification that samples collected (during the period of time in which dead birds were present in the stack) are representative of the actual emissions released during that time period.

### **Issue 4: Non-Operational Emission Units**

Emission units 296-P-43 and 296-P-44 are not operational; however, they are still physically attached to the tanks and are not blanked or shut off through valves. These units are missing insulation on portions of the duct work and do not reflect the conditions depicted in their respective licenses. For the emission units to be in an operational condition, significant repair will be necessary.

**Regulatory Citation:** 40 CFR 61.12(c): The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source.

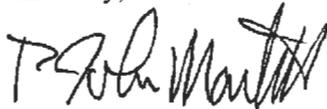
**Consequence:** Non-operational units that have not been properly maintained and isolated allow a potential diffuse pathway to the environment.

**Compliance:** Provide documentation that each licensed emission unit is currently able to perform the function that it was licensed for. For emission units that are no longer operational, isolate from the environment and relicense to current conditions or decommission the emission unit. In a letter (AIR 14-102), DOH instructed WRPS to provide maintenance procedures on how WRPS will isolate emission units from the environment; this information is scheduled to be received by September 30, 2014.

We require that you provide a written plan, within 120 days of receipt of this letter, detailing how you will correct these issues. We are available to assist you to develop a plan acceptable to DOH. However, if action is not taken, we will take additional actions to ensure tank farm facilities meet the requirements of state and federal law and protect public health.

A request to extend the time to achieve compliance for good cause may be submitted to the DOH if you require additional time. If you have any questions or require assistance, please feel free to contact me at (509) 946-3798.

Sincerely,



P. John Martell, Manager  
Radioactive Air Emissions Section

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