



**OFFICE OF RIVER PROTECTION**

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

**FEB 04 2013**

13-ECD-0004

Mr. Charles A. Simpson, Contracts Manager  
Washington River Protection Solutions LLC  
2440 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Simpson:

CONTRACT NO. DE-AC27-08RV14800 – SUBMITTAL OF U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION SURVEILLANCE REPORT S-13-ECD-TANKFARM-001, ON 296-P-107, POR-107 PORTABLE EXHAUSTER OPERATION AT 241-C-101

This letter transmits Surveillance Report S-13-ECD-TANKFARM-001 for POR-107 Portable Exhauster Operation. The purpose of the surveillance was to verify that the tank farm contractor was following air permit requirements. The surveillance team identified no findings, and one opportunity for improvement.

This letter is not considered to constitute a change to the Contract. In the event the Contractor disagrees with this interpretation, it must immediately notify the Contracting Officer orally, and otherwise comply with the requirements of the Contract clause entitled 52.243-7, "Notification of Changes."

If you have any questions, please contact me, or your staff may contact Paul G. Harrington, Assistant Manager, Technical and Regulatory Support, (509) 376-5700.

Thomas W. Fletcher  
Contracting Officer's Representative

ECD:PL

Attachment

cc w/attach:  
S. L. Dahl, Ecology  
Administrative Record  
Environmental Portal, LMSI  
WRPS Correspondence

Attachment  
13-ECD-0004  
(13 Pages)

POR-107 Portable Exhauster

Surveillance Report S-13-ECD-TANKFARM-001

**Surveillance Report Number:** S-13-ECD-TANKFARM-001

**Division Performing the Surveillance:** Environmental Compliance Division

**Integrated Assessment Schedule Number:** 404

**Title of Surveillance:** 296-P-107, POR-107 Portable Exhauster Operation at 241-C-101  
Surveillance

**Date Surveillance Conducted:** January 3, 2013

**Surveillance Team:** Pam Logan, Office of River Protection; Phil Miller, North Wind LLC

**Summary of Surveillance Activities:**

The surveillance was conducted using document review and interviews. The Lines of Inquiry were developed during the initial documentation review and provided to Washington River Protection Solutions LLC (WRPS) staff to allow sufficient time for WRPS staff to assemble the response information. On January 3, 2013, the surveillance team met with WRPS staff to discuss the Lines of Inquiry and operation of the exhauster. During the interviews, additional documentation was provided and reviewed.

**Documentation Reviewed for Surveillance:**

Pre-interview

1. Operating Procedure TO-060-108, Operate POR-107 Portable Exhaust Ventilation System.
2. AIR-12-307, Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations.
3. AIR-12-343, U.S. Department of Energy (DOE) FF-01 Renewal License All Emission Units, Emission Unit 1293.
4. DE05NWP-002, Revision 2, Approval of Criteria and Toxic Air Emissions Notice of Construction (NOC) Application, Hanford Single-Shell Tank (SST) Waste Retrieval Hanford Air Operating Permit (AOP) 00-05-006, 200 Area Diffuse/Fugitive – Tank Farms, 200 Area SST Categorical Waste Retrieval.
5. TFC-ESHQ-ENV\_PP-C-02, Environmental Requirements Management Process.
6. TFC-ESHQ-ENV\_FS-C-01, Environmental Notification.

Post-interview

1. Letter 12-EMD-0074, DOE/RL-2012-19, Revision 0, Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 2011.
2. ABCASH 2 Report, December 27, 2012.

3. Letter AIR 12-1003, "Washington State Department of Health (WDOH) Approval of Annual Possession Quantity (APQ) Logs for U.S. Department Of Energy (USDOE), Office of River Protection (ORP)."
4. Operator Rounds, TO-060-108, Data Sheet 1, POR107 Shift Readings, November 30, 2012.
5. 296-P-107 Filter dP trend report, January 2, 2013.
6. RPP-RPT-48292, Revision 0, Factory Acceptance Test Report for Portable Exhauster POR107.
7. Test Plan for 241C107 Waste Retrieval Ventilation System, 241C107-TP-008 R. 008.
8. RPP-PLAN-51198, Process Control Plan For Tank 241-C-102 Waste Retrieval.
9. Compliance matrix, Notice of Construction for Categorical Tank Farm Facility Waste Retrieval and Closure: Phase II Waste Retrieval Operations, August 2011.
10. Radiological Control Scheduled Radiation Survey Task Description, C00-W052.
11. Spreadsheet Verification and Release Form 1839, Revision 1, Vacuum Waste Retrieval System Release Factor.
12. Spreadsheet Verification and Release Form 1845, Revision 0, Modified Sluicing Waste Retrieval System Release Factor.
13. H-14-108928, Exhauster Train POR107 Piping and Instrumentation Diagram, Sheet 1 and 2.
14. RPP-ENV-47814, Revision 1, American National Standards Institute (ANSI)/Health Physics Society (HPS) N13.1 Compliance matrix for Portable Exhauster POR107.
15. RPP-46436, Revision 1, Generic Effluent Monitoring System Qualification 3000 Cubic Feet per Minute (CFM) Exhaust Stack.
16. PNNL-14545, Release Fraction Evaluation.
17. RPP-21568, Revision 1, Specification for a Primary Exhaust System for Waste Tank Ventilation.
18. ARP-T-351-00107, Revision A-5, Respond to Alarms at POR107.
19. TFC-WO-12-2595, POR107, Rad Sensing Element Check.
20. TFC-WO-12-2802, POR107, YYC-350 PLC Clock Speed Check.
21. TFC-WO-12-3092, POR107, Qtrly Stack Flow Xmtr PDIT-551 Check.
22. 3-FCD-833, Revision A-2, ANSI N13.1 Compliance for POR107 Portable Exhauster.
23. TO-060-108, Data Sheet 1 – POR107 Shift Readings, November 5, 2012.
24. TO-060-006, Operate POR-008 Exhauster, Checklist 1 – Maintenance Activities, October 17, 2012.
25. TO-060-010, Operate POR03 Exhauster, Data Sheet 1 – POR03 Readings, July 11, 2011.
26. RPP-PLAN-53916, Revision 0, Sampling and Analysis Plan for Tank 241-C-101 Stack Chemical Emissions During Retrieval.
27. IHSP-COPC-RC-02, Industrial Hygiene Sample Plan, November 15, 2012.
28. Environmental Operational Activities Notification, TOC-ENV-NOT: 2012-0020.
29. Email Michael G. Peloquin to Washington State Department of Ecology (Ecology), Annual Installation and operations activities schedule for SST retrieval exhausters, December 19, 2012.
30. Environmental Operational Activities Notification, TOC-ENV-NOT: 2012-0128.
31. Environmental Operational Activities Notification, TOC-ENV-NOT: 2012-0009.
32. Programmatic Self-assessment Schedule for WRPS Fiscal Year (FY) 2013, Revision 0.
33. Table, FY 2012 Management Observation Program (MOP) Trending, March thru September.
34. WRPS-PER-2012-0653.
35. WRPS-PER-2012-1018.

36. WRPS-PER-2012-1526.
37. TOC-ENV-RIM-0013, Revision 1, AOP Ecology Non-Rad 200 Area SST Categorical Waste Retrieval (DE05NWP-002, Rev 2) compliance matrix.
38. TOC-ENV-RIM-0014, Revision 1, Categorical Tank Farm Waste Retrieval and Closure: Phase II Waste Retrieval Operations (NOC825)(AIR 12-343) compliance matrix.
39. HNF-EP-0479, Facility Effluent Monitoring Plan for the Tank Farms.

**Discussion of Area(s) Reviewed:**

The operation of the 296-P-107 (POR107) retrieval exhauster was reviewed against requirements contained in the Hanford Site AOP and the WDOH Operating License FF-01 (FF-01).

**Conclusion:**

The surveillance team found that the ongoing operation of the 296-P-107 retrieval exhauster is in compliance with current Washington State agency issued operating permits and licenses.

**Findings and Observations:**

No findings were identified. One Opportunity for Improvement (OFI) was noted:

OFI S-13-ECD-TANKFARM-001-001

HNF-EP-0479, Facility Effluent Monitoring Plan for the Tank Farms, is cited in RPP-ENV-47814 Revision 1 as the basis of action levels used for POR-107 but does not include POR-107.

Discussion:

RPP-ENV-47814, Revision 1, ANSI/HPS N13.1 Compliance matrix for Portable Exhauster POR107, provided details on POR-107 compliance with ANSI standards governing air sampling systems for exhauster stacks used to protect the environment from release of airborne radionuclides. On Page 13 the compliance matrix stated that "The actions levels and CAM alarm levels are discussed in the most recent revision of HNF-EP-0479, "Facility Effluent Monitoring Plan for the Tank Farms." However the latest revision of HNF-EP-0479, Revision 2, did not contain any mention of POR-107. It was issued in 2005, before POR-107 was placed in service. To determine whether or not POR-107 is in compliance, it was necessary to refer back to RPP-ENG-47814 where it stated on Page 12 that the POR-107 stack and effluent monitoring system is identical to the 241-AN stack and Environmental Monitoring System (EMS). Compliance information for the 241-AN stack and EMS was provided in HNF-EP-0479, implying that POR-107 was also compliant. However, read literally, the reference to HNF-EP-0479 in the POR-107 compliance matrix was erroneous because the required information for POR-107 was not in the referenced document.

**Personnel Interviewed:**

1. WRPS Retrieval and Closure Project Environmental Compliance Manager

2. WRPS Retrieval and Closure Project Environmental Compliance Engineer (3)
3. Mechanical and HVAC Engineering Manager
4. Mechanical and HVAC Engineering Engineer
5. Cognizant System Engineering Engineer

**Attachment:** Table showing lines of inquiry, compliance determination, and notes.

Assessor or Lead Assessor: *Pamela Logan* Date: 1/30/13  
Pamela Logan

Director, Environmental Compliance Division: *Lori Huffman* Date: 1/31/13  
Lori Huffman

296-P-107, POR-107 Portable Exhauster Operation at 241-C-101 Surveillance  
S-13-ECD-TANKFARM-001

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
296-P-107 Portable Exhauster	AIR-12-307, Categorical Tank Farm Facility Waste Retrieval and Closure; Phase II Waste Retrieval Operations	The total abated emission limit for this NOC is limited to 1.31 E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-to-Emit for this NOC is limited to 1.61E+03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).	XX		The total abated emissions are tracked in the annual Radionuclide Air Emissions Report for the Hanford Site. The latest version of the report is DOE/RL-2012-19, Revision 0, for Calendar Year 2011. The data for the annual report is obtained from the ABCASH system. The ABCASH data base contains the analytical results obtained from analysis of exhaust stream sample media.
	AIR-12-343, USDOE FF-01 Renewal License All Emission Units	How does the tank farm contractor track emissions against these limits? How does the tank farm contractor track Annual Possession Quantity under this NOC? Is a Department of Health approved tracking log used?	XX		The annual possession quantity is tracked in the Tank Waste Information Network System (TWINS). The use of TWINS as the tracking log was approved by WDOH on October 12, 2012, by letter AIR 12-1003.
		The differential pressure readings for the pre-filters and both stages of HEPA filters shall be monitored, recorded, and trended daily. The exhaust system shall be configured to automatically shutdown at 5.9 inches of water (or less) pressure differential pressure across the HEPA filter(s) for the first filter in series or multiple filters in series as indicated by the local readout. If the final HEPA filter in the system exceeds 5.9 inches of water pressure differential across the filter, the cause will be determined and WDOH will be notified through normal established channels.  What process is in place to ensure that differential pressure is trended daily? How is the 5.9 inches water shutdown tested and verified? On what frequency is it tested? How has the reporting criteria	XX		Data is collected using operator round sheets. The system engineer reviews the system flow rate and HEPA filter dP data daily and utilizes a data base to trend the data. A software interlock will shut down the system is the HEPA dP reaches 5.9 inches. A warning alarm has been set at 5.4 inches. As an additional margin of safety, the filters are designed to withstand a pressure differential of up to 10 inches. The software interlock was tested approximately two years ago during acceptance testing. The system hardware that supplies the signal to the software is calibrated annually. WRPS is preparing a procedure change to TFC-ESHQ-ENV_FS-C-01, Environmental Notification, to incorporate the 5.9 inch reporting criteria.

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
		above been documented?			
		During waste retrieval operations the maximum pressure for any waste retrieval method shall not exceed 37,000 psig. How is this limit implemented?	XX		The sluicing system design limits the pressure to 5000 psig. Pressure relief valves are installed to ensure 5000 psig is not exceeded. The permit allows operation up to 37,000 psig to bound operation of the Salt Mantis which may be used in the future.
		While the exhauster is operating, and or tank waste retrieval is underway, all ductwork connections shall have a radiological survey performed monthly to ensure ductwork connections are not degrading.	XX		WRPS has implemented a Radiological Control Scheduled Radiation Survey Task, C00-W052, to meet this requirement. WRPS exceeds the requirement as they perform the survey weekly.
		Operating License FF-01 categorizes 296-P-107 as a Major emission unit and the AOP categorizes it as a Minor emission unit. Is the tank farm contractor pursuing resolution of the discrepancy? If so, what is the course of action?	N/A	N/A	WRPS has identified the discrepancy to the State agencies and Ecology will correct and reissue the AOP. The correct status is Major.
	AIR-12-343, USDOE FF-01 Renewal License All Emission Units	A pre-operational Non-destructive Analysis (NDA) of the exhauster(s) HEPA filters and a post-operational NDA will be performed the first time each of the four waste retrieval methods when placed into service. When and how are the NDAs being carried out? How are the results recorded?	XX		Two of four retrieval methods have been used to date. WRPS provided copies of the NDA analysis and report performed under this condition for the two methods utilized.

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
		<p>The emission unite stack monitoring system shall meet the requirements of ANSI/HPS N13.1-1999 including the stack monitoring inspection requirements:</p> <p>(Section 4.4) What are the action levels associated with stack effluent monitoring and the actions associated with them? How were they determined?</p> <p>(Excerpt 1)[See Page 13] How does the Tank Operations Contractor (TOC) demonstrate compliance with this requirement? Is testing performed in a manner that ensures that the system will work effectively under off-normal and accident conditions?</p> <p>(Excerpt 2) [See Page 13] How has the TOC defined "off-normal" and "accident" conditions and what is the basis for the definitions? How does the TOC demonstrate compliance with this requirement? Is testing performed in a manner that ensures that the system will work effectively if large particles are present in the effluent stream? How do you minimize false negatives and false positives?</p> <p>(Section 4.4.4) What is the availability of the system</p>	XX		<p>Action levels are established through alarm response and emergency response procedures.</p> <p>HNF-EP-0479, Facility Effluent Monitoring Plan for the Tank Farms, is cited as the basis of action levels used for POR-107 but it is dated 2005 and does not include POR-107. RPP-ENV-47814, Revision 1, ANSI/HPS N13.1 Compliance matrix for Portable Exhauster POR107, states that POR-107 is identical to the 241-AN stack environmental monitoring system; therefore the requirement is fulfilled, but the information has not been flowed into HNF-EP-0479. (S-13-ECD-TANKFARM-001-001)</p> <p>ARP-T-351-00107, Revision A-5, Respond to Alarms at POR107 PNNL-14545, Release Fraction Evaluation</p> <p>The sample system is in operation whenever the exhauster is operating with the exception of</p>

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
		and how is it measured or verified?			maintenance periods. During system maintenance, there is no retrieval activity allowed. The exhaust system is interlocked to shut down upon loss of the sample system vacuum pump.
		(Section 5.1.5) What is the assumed particle size distribution and how was it determined for various conditions (normal, off-normal, accident)?			PNNL-14545 Release Fraction Evaluation determined that the mean particle diameters range from 3 to 8 $\mu\text{m}$ .
		(Section 5.2.2.1) Do you have a way to detect the presence of cyclonic flow in the stack? What is it? Is there any cyclonic flow? If so, what do you do about it?			A and AW Systems, which have a stack design similar to POR-107, were tested and determined not to have cyclonic flow; see RPP-46436, Revision 1, Generic Effluent Monitoring System Qualification 3000 CFM Exhaust Stack
		Where in the exhauster system do you sample effluent? Why?			The sample is obtained 4 to 5 feet below the exhaust stack exit and at least 10 stack diameters from the last flow obstruction.
		(Excerpt 3)[See Page 13] How does the Tank Farm Contractor demonstrate compliance with this standard?			3-FCO-833, Revision A-2, ANSI N13.1 Compliance for POR107 Portable Exhauster
		(Section 6.4.2) How does the TOC monitor and remediate or prevent corrosion in components of the exhauster?			RPP-21568, Revision 1, Specification for a Primary Exhaust System for Waste Tank Ventilation

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
296-P-107 Portable Exhauster	DE05NWP-002, Rev 2, Approval of Criteria and Toxic Air Emissions NOC Application, Hanford Single-Shell Tank Waste Retrieval	<p>Visible Emissions from each tank ventilation exhauster stack or aggregated exhauster stack shall not exceed five percent.</p> <p>Compliance and monitoring shall be met by Tier 3 visible Emissions Survey requirements of the Hanford AOP, Section 2.1.</p> <p>Should visible emissions be observed which are not solely attributable to water condensation, compliance shall be met by performing an opacity determination utilizing 40 CFR 60, Appendix A, Method 9, providing that such determination shall not place the visible emission observer in hazard greater than that identified for the general worker.</p> <p>How does the Tank Farm Contractor demonstrate compliance with this condition?</p>			<p>Per Hanford Site Title V AOP Program Plan, Doe/RL-2001-25, Section 4.1.1 Tier 3, visible emission surveys for emission units having HEPA filters installed are not performed due to required abatement control technology being maintained.</p> <p>The program plan implements Hanford Site AOP Number 00-05-006, Attachment 1, Section 2.1 Tier 3 requirement "Maintain abatement control technology as required in Attachment 2 for that particular emission unit."</p> <p>Required abatement is being maintained (operating exhauster, moisture de-trainer, pre-heater, and HEPA filter).</p> <p>The TOC has established a visual check of the emission point as an operator round. If visible emission is observed, an opacity determination is performed by one or both certified opacity inspectors on the TOC environmental staff.</p> <p>Both inspectors are certified to U.S. Environmental Protection Agency (EPA) Reference Method 9.</p>
		<p>Tank ventilation exhauster systems for the 241-C SST Farm 100 series tanks (241-C-101 through 241-C-112) shall not exceed cumulative flow rates of 7,000 ft<sup>3</sup>/min (standard temperature and pressure) for three exhausters, individually limited to 1,000 ft<sup>3</sup>/min, 3,000 ft<sup>3</sup>/min, and 3,000 ft<sup>3</sup>/min,</p>	XX		<p>Exhauster system design incorporates engineered flow rate limits.</p> <p>TO-060-108, Data Sheet 1 – POR107 Shift Readings. HEPA filter dP and stack temperatures are obtained each operating shift.</p>

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
		respectively. Compliance with Approval Condition 1.2.2 shall be demonstrated by stack gas flow and temperature measurement. How does the Tank Farm Contractor demonstrate compliance with this condition? All Toxic Air Pollutants (TAP), as submitted in the permittee's NOC Applications, shall be below their respective Acceptable Source Level Impacts (ASIL) or Screening Level of Table 1 in Approval Order DE05NWP-002, Revision 2.			
		Compliance and monitoring with this condition shall be met by: (1) Operating the exhauster systems only when in accord with Toxics Best Available Control Technology (T-BACT) emission controls found for this project (operation of the tank ventilation exhauster systems with moisture de-entrainment, pre-heater, and HEPA filtration in service in the treatment train). (2) Development and implementation of a Sampling and Analysis Plan (SAP) for each tank retrieval. For each retrieval, the SAP shall address the emission of a minimum of the three TAPs with the higher potential ambient concentration relative to their ASILs of WAC 173-460-150 and WAC 173-460-160 or relative	XX		The exhaust system contains, and is operated with, moisture de-entrainment, pre-heater, and HEPA filtration in service in the treatment train meeting the T-BACT standard and the requirements of DE05NWP-002, Revision 2.  TWINS data base is used to select the compounds to be analyzed on a tank by tank basis. The data is used to prepare the SAP. The current plan is RPP-PLAN-53916, Revision 0, SAP for Tank 241-C-101 Stack Chemical Emissions During Retrieval. It calls for samples to be taken twice: at the start of the retrieval and when retrieval is approximately 50%

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
		to their Screening level of Table 1 of the Approval Order DE05NWP-002, Revision 2. The TAPs addressed in the SAP shall be identified from Table 2 of the Approval Order DE05NWP-002, Revision 2, and based upon the best engineering judgment and most current tank content data. Analytical methods for the analysis shall be the United States EPA, Occupational Safety and Health Administration, or National Institute for Occupational Safety and Health approved, or by approved equivalent method.			complete.
		How does the Tank Farm Contractor demonstrate compliance with this condition? Notification shall be made at least ten (10) days prior to initial operation of any exhauster system covered by the ORDER DE05NWP-002 when installed to ventilate a tank not previously actively ventilated under this ORDER.	XX		Notification to Ecology was performed using TOC-ENV-NOT-2012-0020 on March 5, 2012.
		How does the Tank Farm Contractor demonstrate compliance with this condition? An annual schedule (Federal fiscal year basis) of anticipated operations and installations of exhauster systems shall be submitted by November first of each year. How does the Tank Farm Contractor demonstrate compliance with this condition?	XX		The required notification was completed in Calendar Year 2011 under TOC-ENV-NOT-2011-0009. The required notification for Calendar Year 2012 was approximately six weeks late. The 2012 notification was performed on December 19, 2012, by email and TOC-ENV-NOT-2012-0128. WRPS self-disclosed the late notification. Corrective action

296-P-107, POR-107 Portable Exhauster Operation at 241-C-101 Surveillance  
S-13-ECD-TANKFARM-001

Criteria or Component	Reference (e.g. Permit Condition No. or document no.)	Requirement (e.g. Permit Condition Description)	Compliant		Notes
			Yes	No	
					has already been completed. Previously, the annual report requirement was entered into the Electronic Suspense Tracking and Routing System (ESTARS) program which was to alert WRPS staff of the requirement as the due date approached. That alert did not happen. WRPS has corrected the entry in ESTARS and has added to requirement to the WRPS Reporting Calendar. This action should prevent a future issue with the reporting.
	N/A	Has the Tank Farm contractor developed and implemented a self-assessment program for portable exhausters?	N/A	N/A	WRPS has established an internal self-assessment program. Under that program, a quarterly schedule is published. Each portable exhauster is assessed on an annual basis. In addition, WRPS environmental staff performs monthly MOP surveillances of environmental requirements, including the exhausters.
296-P-107 Portable Exhauster	N/A	Have the environmental requirements for 296-P-107 been identified? How have the requirements been documented?	XX		<p>The requirements have been documented in the following compliance matrices.</p> <ul style="list-style-type: none"> <li>• TOC-ENV-RIM-0013, Revision 1, AOP Ecology Non-Rad 200 Area SST Categorical Waste Retrieval (DE05NWP-002, Revision 2) compliance matrix</li> <li>• TOC-ENV-RIM-0014, Revision 1, Categorical Tank Farm Waste Retrieval and Closure: Phase II Waste Retrieval Operations (NOC825)(AIR 12-343) compliance matrix</li> </ul>

ANSI excerpt 1

The system design chosen to supply aerosol samples to either a continuous air monitor or an in-line record sample filter (or both) shall be designed and evaluated to meet minimum performance objectives under normal, off-normal, and accident conditions with respect to the efficiency of particle transport to the filter, bias with respect to size or kind of particle, and allowable total random error. As discussed in the balance of this standard, performance objectives for these conditions will include many factors in addition to the central concern for providing an representative sample of the effluent.

ANSI excerpt 2

This document is primarily directed to sampling particles that pose inhalation risks. Thus, the particle sizes of major concern are generally less than or equal to 10  $\mu\text{m}$  AD. If, however, there is a process or source feeding a sampled effluent that can release aerosol particles much larger than these sizes into the effluent stream, a special sampling apparatus located in the duct near the process should be designed that would reliably detect failure of emission controls on that source.

ANSI excerpt 3

**6.3.4.8 Maintenance**

The sampling nozzle shall be checked annually for alignment, presence of deposits of foreign materials and other factors that could degrade the performance of the sampling system. If there are background aerosols that can produce deposits, a cleaning schedule should be established that will not allow over 5% of the inlet area of a nozzle to be occluded. For nozzles that are used to sample HEPA-filtered air, the nozzle should be cleaned if there are visible deposits of material on either the internal or external regions of the nozzle.