WORKING COPY

VERIF. DATE: _____

INTIALS: _____

CP4-HS-2000 **FRev. 2A**	**TITLE**: Industrial Hygiene Sampling	Page 1 of 15

DOCUMENT CATEGORY: ☒ Administrative ☐ Technical (Operations) ☐ Technical (Support)

LEVEL OF USE: ☒ Information Level ☐ Reference Level ☐ Continuous Use

FUNCTIONAL AREA Health, Safety, Security & Quality **SUBJECT MATTER AREA**: Industrial Hygiene	**SUBJECT MATTER EXPERT**: Sam Boss CIH, Industrial Hygienist Senior
NUCLEAR SAFETY REVIEW DOCUMENTATION: FRNP-19-0343-S	**APPROVED BY/DATE**: (signature on file): Rich Rhoads Safety and Health Program Manager 6/12/19
REQUIRED REVIEW DATE (or expiration date for temporary change): 2/28/2022	**EFFECTIVE DATE**: 6/19/19

REVISION/CHANGE LOG

Revision/Change Letter	Description of Changes	Pages Affected	Date of Revision/Change
FR0	Initial Release	All	10/20/2017
FR1	Non-intent revision to incorporate bluesheeting changes and to update to current format	All	12/13/2017
FR2	Revise to include illumination testing and correct formatting throughout document.	All	2/28/19
FR2A	Insert new Section 6.12 on Industrial Ventilation and add acronym for feet per minute (FPM).	10-11,13	6/12/19

TABLE OF CONTENTS

1.0 PURPOSE AND SCOPE 3
1.1 Purpose 3
1.2 Scope 3
2.0 REFERENCES 3
2.1 Use References 3
2.2 Source References 3
3.0 COMMITMENTS 3
4.0 RESPONSIBILITIES 4
4.1 IH Specialist 4
4.2 Data Entry Specialist 4
4.3 IH Manager 4
5.0 GENERAL INFORMATION 4
6.0 INSTRUCTIONS 6
6.1 IH Sample Requests 6
6.2 Calibration of Personal and Area Air Sampling Equipment 6
6.3 Personal Air Sampling 6
6.4 Area Air Sampling 7
6.5 Submitting Samples for Lab Analysis 8
6.6 Calculation of Data Results and Open Range Database Entry 8
6.7 Direct Read Air Sampling 9
6.8 Detector Tube Air Sampling 9
6.9 IH Wipe Sampling 10
6.10 Noise Monitoring 10
6.11 Illumination Monitoring 10
6.12 Post Sampling Activities 11
7.0 RECORDS 12
7.1 Records Generated 12
7.2 Records Disposition 12
APPENDIX A – ACRONYMS/DEFINITIONS 13
APPENDIX B – RECOMMENDED MAXIMUM SAMPLE CYCLE TIME (CALENDAR DAYS) [A] 15

1.0 PURPOSE AND SCOPE

1.1 Purpose

The purpose of this procedure is to establish a uniform method of performing industrial hygiene (IH) sampling used for the identification, detection, measurement, characterization, and assessment of potentially hazardous substances and physical agents that may be encountered in work operations and processes. Measurements may be qualitative or quantitative as deemed appropriate by a qualified industrial hygienist. This may include the collection of samples for dusts, asbestos and other fibrous materials, liquids, gases, vapors, fumes, and physical agents.

1.2 Scope

This procedure applies to IH sampling performed at Paducah Deactivation and Remediation Project (PDRP) managed facilities at the Paducah Gaseous Diffusion Plant (PGDP) in Paducah, Kentucky.

2.0 REFERENCES

2.1 Use References

- CP2-HS-2011, *Illumination Plan*
- CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program*
- CP3-HS-2038, *Industrial Hygiene Measuring and Test Equipment Program*
- CP3-RD-0010, *Records Management Process*
- CP4-HS-2001, *Surface Wipe Sampling*

2.2 Source References

- CP2-HS-2000, *Worker Safety and Health Program*
- National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods (Latest Edition)
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values & Biological Exposure Indices for Chemical Substances and Physical Agents (Latest Edition)
- Occupational Safety Health Administration (OSHA) Chemical Sampling Information (Latest Edition)
- OSHA Technical Manual (Latest Edition)
- Title 29 Code of Federal Regulations (CFR) § 1910, *General Industrial Standards*
- 29 CFR § 1926, *Construction Standards*

3.0 COMMITMENTS

None

4.0 RESPONSIBILITIES

4.1 IH Specialist

4.1.1 Adheres to the ethical guidelines of the profession as published by the American Industrial Hygiene Association and implements this procedure as instructed.

4.1.2 Assures understanding and comprehension of instructions received, and shall seek additional guidance as warranted. Advice may come from professional peers, supervisor(s), management or other appropriate resources when in doubt of the nature or details of assigned work place sampling tasks.

4.1.3 Prior to conducting a sampling event, confirms the purpose of such sampling; the guideline(s) to be used for data interpretation; the manner in which the samples will be analyzed; and the protocol to be used for sample collection, handling, shipping, and analysis.

4.2 Data Entry Specialist

4.2.1 Assures data is handled and processed in strict confidence, in a timely manner, with attention to detail and accuracy, and without error.

4.2.2 Seeks advice for work instructions, data clarification, and comprehension as warranted.

4.3 IH Manager

4.3.1 Performs Quality Assurance (QA) review of a minimum of 10% of completed samples per survey.

4.3.2 Completes documentation as the QA Reviewer for each survey.

5.0 GENERAL INFORMATION

5.1 This program procedure shall receive documented review by the Industrial Hygiene Program Manager at least every two years; more frequently as warranted. Such review shall address the effectiveness of the program; adequacy of resources used to support the program; skills and training of staff; compliance with applicable codes, standards, and regulations; and use of industry accepted best practices and protocols. Additional topics may be added at the time of review. This review may be delegated to an alternate qualified industrial hygienist of similar education, training, experience, and professional certification.

5.2 This program will be implemented in a manner that ensures achievement of both short term sampling objectives, such as characterizing new work activities and/or assessing potential health hazards, and longer term sampling objectives such as verifying continuing regulatory compliance in the work environment.

5.3 The program shall regard all data collected as potentially useful in health surveillance research and as litigation related evidence; due diligence in recording and data integrity shall be a primary responsibility in all sampling events.

5.4 The IH Specialist shall verify they are current in their Job Performance Measurement (JPM) training and record before using sampling equipment. Each specific type of sampling equipment (such as., manufacture, model, etc.) has a unique JPM. Prior to a sampling effort, a Sample Plan should establish the purpose of the sample, and how a positive, a negative, and an indeterminate sample or sample set will be acted upon.

5.5 Sample Management organization shall be notified of the anticipated date samples will be ready for shipment and request initiation of a purchase order for required analytical services.

5.6 IH sampling shall be performed according to the requirements of the Occupational Safety and Health Administration (OSHA) *Chemical Sampling Information, National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods (NMAM)*, *OSHA Technical Manual*, or other industry recognized standards. Common hazards and processes sampled for potential exposures are documented based on these references and indexed. Unique or "first time" sampling methods are to be researched and documented under IH Exposure Monitoring Worksheet, and peer reviewed by a qualified Senior Industrial Hygienist Certified Industrial Hygienist (CIH) or Industrial Hygiene Manager.

5.7 Required personal protective equipment (PPE), including respiratory protection as warranted, shall be worn according to applicable work control documents and job hazard assessments (JHAs) while performing sampling.

5.8 Employees and their supervisors shall be notified of personal air sampling results within 10 days of receipt of laboratory analysis data, or as specified by applicable regulations, and documented in the Exposure Assessment Database.

5.9 **If** sampling is performed in a radiological area, **then** the sampling equipment shall be appropriately surveyed prior to removal from the radiological area.

5.10 IH sampling equipment shall be entered into the instrument calibration and recall schedule, as required in CP3-HS-2038, *Industrial Hygiene Measuring and Test Equipment Program*. Only currently calibrated and properly functioning equipment will be used. Consumable IH sampling supplies such as media, "Ghost Wipes", and similar products are **NOT** regarded as equipment; however, "Lot" numbers shall be recorded on sampling data sheets when applicable.

5.11 New IH sampling equipment or equipment returned from vendor calibration or maintenance shall be checked for proper operation prior to use.

5.12 IH sample data shall be voided under the following circumstances:

- The difference of the pre-sampling and post-sampling calibration *flow rates* (see definitions) is greater than 10%.
- Samples are overloaded based on visual evidence of material **NOT** bound within the media matrix.
- Air *sampling pump* (see definitions) stops **OR** malfunctions during the sampling period.
- Sample *collection device* (see definitions) is lost **OR** does **NOT** maintain integrity during the sampling period.
- Sample is determined to **NOT** be representative of work environment or process to be assessed. This includes, but is not limited to, samples that exhibit characteristics of tampering or intentionally biased sampled collection.
- Voided samples will be recorded on sample data forms and in the Exposure Assessment Database with an explanation of the reason for being voided.

6.0 INSTRUCTIONS

6.1 IH Sample Requests

IH Specialist

NOTE:

Typically, this form will be generated by a the responsible project industrial hygienist; however, it may be completed by the IH Specialist conducting sampling when instructions are received verbally or in the course of routine surveillance of an ongoing project activity. This form is used for the planning, selection, and determination of sampling protocol and requirements.

6.1.1 Verify CP4-HS-2000-F04, *Field Sample Request Form*, has been completed prior to IH Exposure Monitoring sampling activity.

6.1.2 Save in the file, S:\HSS&Q\Safety & Health\IH\IH Sampling Request-Plans

6.2 Calibration of Personal and Area Air Sampling Equipment

IH Specialist

6.2.1 Use IH sampling equipment according to CP3-HS-2038, *Industrial Hygiene Measuring and Test Equipment Program*.

6.2.2 Perform a leak test on calibration equipment prior to each day's use according to manufacturer's instructions.

6.2.3 Verify calibration equipment's periodic factory calibration is current.

6.2.4 Obtain current results for required pre-use leak, bump, or other test **and** record in the IH equipment calibration binder.

6.2.5 Ensure that the sampling equipment battery is fully charged according to manufacturer's specifications.

6.2.6 Assemble the sampling train.

6.2.7 Perform pre-sampling calibration of air sampling equipment according to the appropriate analytical method.

6.2.8 Record the pre-sampling calibration data in the IH equipment calibration binder.

6.2.9 Perform post-sampling calibration of air sampling equipment, as required, by the end of the same shift that the air sampling was conducted.

6.2.10 Record the post-sampling calibration data in the IH equipment calibration binder.

6.3 Personal Air Sampling

IH Specialist

6.3.1 Ensure sampling pumps are pre-calibrated according to Section **6.2**.

6.3.2 Record employee's name, badge number, location, workplace conditions, etc. on CP4-HS-2000-F05, *Personal Sampling Assessment Form*.

6.3.3 Place the sample collection device and/or media (charcoal tube, filter cassette, etc.) in the *breathing zone* (see definitions).

6.3.4 Place the collection device in a downward vertical position **and** open the inlet orifice prior to starting the sampling pump.

6.3.5 Start the sampling pump **and** record the sample start time on CP4-HS-2000-F05, *Personal Sampling Assessment Form*.

6.3.6 Periodically check the sample to ensure sample integrity is maintained throughout sampling period.

6.3.7 Record employee's work practices **and** other relevant observations made during the sampling period.

6.3.8 Upon completion of the sampling period, turn the sampling pump off **and** record the stop time.

6.3.9 Remove the sample pump **and** seal and/or close the inlet orifice.

6.3.10 Ensure sampling pumps are post-calibrated according to Section **6.2.10**

6.3.11 Document sampling information on the sampling forms as soon as possible, but **NOT** more than 8 working days or 2 weeks of the sampling event; ***leave NO text fields on the form blank***, using N/A (not applicable) when warranted.

6.4 Area Air Sampling

<u>IH Specialists</u>

6.4.1 Ensure sampling pumps are pre-calibrated according to Section **6.2**.

6.4.2 Place the sampling pump in a fixed location within the work area.

6.4.3 Place the sample collection device in a downward vertical position with the inlet orifice open prior to starting the sampling pump.

6.4.4 Ensure the sample collection device is placed between four to six feet from the ground to represent an employee's breathing zone.

6.4.5 Turn on the sampling pump **and** visually verify that the flow rate has stabilized.

6.4.6 Document appropriate information, including location, workplace conditions, work-place activities, start time, and relevant data on CP4-HS-2000-F06, *Area Air Sampling Form*.

6.4.7 Upon completion of the sampling period, turn off the sampling pump **and** record the stop time on CP4-HS-2000-F06.

6.4.8 Seal the inlet orifice.

6.4.9 Ensure sampling pumps are post-calibrated according to Section **6.2.10**.

6.4.10 Document sampling information on the sampling forms as soon as possible, but **NOT** more than 8 working days or 2 weeks from the sampling event; ***leave NO text fields on the form blank***, using N/A (not applicable) when warranted.

6.5 Submitting Samples for Lab Analysis

Performer

6.5.1 Seal **and** label each sample, complete a chain-of-custody form(s) for each sample set.

6.5.2 Package the set in a uniquely marked segregated container (such as a re-sealable plastic bag) **and** place in the designated location in the industrial hygiene equipment trailer.

6.5.3 Notify the Industrial Hygiene Equipment Coordinator, or designated alternate, that the samples are ready for processing for the sample handling and shipping personnel.

NOTE:

The recommended maximum sample cycle time, from sample collection to laboratory data receipt, is identified in Appendix B, *Recommended Maximum Sample Cycle Time (Calendar Days)*. Sample holding or processing times that exceed, or are anticipated to exceed, these guidelines are to be verbally reported to the Industrial Hygiene Manager immediately. Follow up notification shall be made in an e-mail to the Industrial Hygiene Manager and Safety & Health Program Manager, documenting the facts and reason for such delay.

6.6 Calculation of Data Results and Open Range Database Entry

Data Entry Specialist

NOTE:

Analytical data should be entered into Open Range within a maximum of five workdays after receipt of sample data from the laboratory.

6.6.1 Upon receipt of data from the analytical laboratory, perform required calculations in Open Range for comparison to the appropriate standard.

6.6.2 Review **and** verify an assessment of the analytical data to be entered into the Open Range system before it is submitted for entry.

6.6.3 For personal air sampling results, generate a notification report for each employee monitored **and** send the report to the IH Specialist who performed the sampling for approval.

NOTE:

If a delay in reporting is anticipated, **then** notification of such delay shall be provided, including the reason for such delay. The notification reports are **NOT** to be released without the approval of the IH Specialist performing the sampling.

IH Specialist

6.6.4 Verify the calculations reported by the Open Range software **and** verify the data entered is accurate and current. This may **NOT** require a line-by-line or field-by-field verification of the data but does require the IH to determine the range of values anticipated and investigate out outliers.

6.6.5 Regardless of the use of PPE, **if** a calculated time-weighted average (TWA) (see definitions) concentration is above an action level (see definitions), the short-term exposure limit (STEL) (see definitions), the excursion limit (see definitions), the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), or permissible exposure limit (PEL) (see definitions), **then** report the data to the IH Manager or designated alternate as soon as possible, but in all cases within 24 hours.

6.6.6 Sign the notification report **and** provide them to the employee's supervisor, to review the report with the employee who was monitored, and obtain their respective signatures.

6.6.7 Obtain signatures from supervisors and employees on notification reports as soon as practical, but always within 10 days of the receipt of such data, **unless** an alternate time requirement is specified by applicable standards (such as, asbestos, 5 days).

6.6.8 Return the signed notification report(s) to the Data Entry Specialist.

Data Entry Specialist

6.6.9 File the IH air sampling forms and pertinent documentation as records in the appropriate repository.

6.7 Direct Read Air Sampling

IH Specialist

6.7.1 Calibrate direct reading instruments per manufacturer's instructions **and** document in the IH *calibration* (see definitions) binder **or** in the associated equipment computer software.

6.7.2 Document appropriate information, including location, workplace conditions, workplace activities, instrument description, and any other important data on, CP4-HS-2000-F07, *Direct Reading Instrumentation Monitoring Form*.

6.7.3 Record the air monitoring data on CP4-HS-2000-F07 at the completion of sampling.

6.8 Detector Tube Air Sampling

IH Specialist

6.8.1 Prior to use perform a leak test on detector tube air sampling pumps according to manufacturer's instructions.

6.8.2 Document results of leak test, pump and detector tube information, (including Lot number), work activities, and other applicable information on, CP4-HS-2000-F08, *Detector Tube Sample Form*.

6.8.3 Record air monitoring data on CP4-HS-2000-F08 at the completion of sampling.

6.9 IH Wipe Sampling

IH Specialist

6.9.1 Perform surface wipe sampling according to NIOSH or OSHA analytical methods.

6.9.2 Ensure surface sampling is conducted in compliance with CP4-HS-2001, *Surface Wipe Sampling.*

6.9.3 Document the agents that will be analyzed **and** record results on CP4-HS-2001-F01, *Industrial Hygiene Wipe Data Form*.

6.10 Noise Monitoring

IH Specialist

6.10.1 Conduct area and personal noise monitoring according to CP2-HS-2002, *Occupational Noise Exposure and Hearing Conservation Program*.

6.10.2 Document area noise monitoring results and all applicable information on, CP4-HS-2000-F10, *Area Noise Monitoring Form*.

6.10.3 Document personal noise monitoring data and applicable information on CP4-HS-2000-F11, *Personal Noise Sampling Assessment Form*.

6.11 Illumination Monitoring

IH Specialist

6.11.1 Conduct area light monitoring according to CP2-HS-2011, *Illumination Plan*.

6.11.2 Evaluate concerns relating to illumination deficiencies using a functional, calibrated light meter to determine appropriate lighting levels in the workplace.

6.11.3 Document illumination monitoring results and all applicable information on CP4-HS-2000-F15, *Illumination Monitoring Form*.

6.12 Industrial Ventilation

Chg A

6.12.1 Conduct pre-work industrial ventilation surveys of local exhaust ventilation hoods used for all welding, plasma arc cutting and other hot work fumes and combustion gases capture using a calibrated air velocity meter, or thermoanemometer.

6.12.2 Measure fume capture velocities at varying distances from exhaust hood to identify distance at which the average capture velocity equals or exceeds 100 feet per minute (FPM).

NOTE:

For a local exhaust ventilation hood used in Metal Inert Gas (MIG) welding, the average capture velocity shall be within the range of 100 – 150 FPM, in order to maintain sufficient shielding gas cone around welding arc.

6.12.3 Record average capture velocity measurements and recommended hood placement distance on CP4-HS-2000-F07, *Direct Reading Instrumentation Monitoring Form*.

6.12.4 Conduct smoke testing of local exhaust ventilation hoods used for all welding, plasma cutting and other hot work. Record all smoke test observations on CP4-HS-2000-F07, *Direct Reading Instrumentation Monitoring Form*.

6.12.5 Record Maximum required hood placement distances will be recorded in the appropriate Work Control Document, IHWP, JHA, or Work Package History Log

6.13 Post Sampling Activities

IH Specialist

6.13.1 **If** multiple agents will be analyzed on the same collection media, **then** complete CP4-HS-2000-F12, *Air Sample Documentation Form - Multiple Analytes* to record agents that will be analyzed for that sample.

6.13.2 Complete CP4-HS-2000-F13, *IH Sampling Cover Sheet*, and other applicable IH sampling forms **and** turn the survey in to the Data Entry Specialist. Include a sample cover sheet for each sample set collected.

6.13.3 Complete CP4-HS-2000-F14, *Sample Chain of Custody* or vendor laboratory's equivalent **and** maintain chain-of-custody for each sample. Multiple samples may be entered on the chain-of-custody form used.

Data Entry Specialist

6.13.4 Ensure all IH sampling forms are filled out completely.

6.13.5 After information is entered into the Open Range database, sign the bottom of the IH sample cover sheet (Form CP4-HS-2000-F13, *IH Sampling Cover Sheet*).

IS/IH Specialist

NOTE:

An IH may **NOT** perform QA review of their own work; an appropriate IH peer or the IH Program Manager must sign such work.

6.13.6 For the purpose of this procedure, the IH Manager or designee will sign the form, as the Quality Assurance Reviewer.

6.13.7 Contact the sample management organization to confirm a purchase request for analytical services has been issued to an American Industrial Hygiene Association (AIHA)-accredited laboratory that will provide data within the cycle time specified in Appendix B, *Recommended Maximum Sample Cycle Time (Calendar Days)*.

6.13.8 Contact the Radiological Control (RADCON) group to conduct off-site surveys for samples.

IH Manager or designee

6.13.9 Sign the bottom of the CP4-HS-2000-F13, *IH Sampling Cover Sheet* as the Quality Assurance Reviewer for each survey; each survey must include QA review of a minimum of 10% of completed samples per survey.

7.0 RECORDS

7.1 Records Generated

The following records may be generated by this procedure:

- CP4-HS-2000-F04, *Field Sample Request*
- CP4-HS-2000-F05, *Personal Sampling Assessment Form*
- CP4-HS-2000-F06, *Area Air Sampling Form*
- CP4-HS-2000-F07, *Direct Reading Instrumentation Monitoring Form*
- CP4-HS-2000-F08, *Detector Tube Sample Form*
- CP4-HS-2000-F10, *Area Noise Monitoring Form*
- CP4-HS-2000-F11, *Personal Noise Sampling Assessment Form*
- CP4-HS-2000-F12, *Air Sample Documentation Form – Multiple Analytes*
- CP4-HS-2000-F13, *IH Sampling Cover Sheet*
- CP4-HS-2000-F14, *Sample Chain-of-Custody*
- CP4-HS-2000-F15, *Illumination Monitoring Form*
- Employee Notification Reports

7.2 Records Disposition

The records are to be maintained in accordance with CP3-RD-0010, *Records Management Process*.

Appendix A – Acronyms/Definitions

ACRONYMS

ACGIH - American Conference of Governmental Industrial Hygienists

AIHA - American Industrial Hygiene Association

CIH - Certified Industrial Hygienists

FPM - feet per minute Chg A

HSS&Q - Health, Safety, Security and Quality

IH - Industrial Hygiene

JHA - Job Hazard Analysis

JPM - Job Performance Measure

NIOSH - National Institute of Occupational Safety and Health

NMAM - National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods

OSHA - Occupational Safety and Health Administration

PEL - Permissible Exposure Limit

PPE - Personal Protective Equipment

QA - Quality Assurance

STEL - Short Term Exposure Limit

TLV - Threshold Limit Value

TWA - Time-Weighted Average

DEFINITIONS

Action Level - The level of an airborne contaminant at which the use of engineering and/or administrative controls to minimize exposure is required.

Air Concentration - The calculated concentration of an airborne contaminant based on the volume of air sampled and the duration of sampling.

Area Sample - Sampling performed in an area to obtain information on possible airborne contaminant concentration at the perimeter of or outside of the work area.

Breathing Zone - The area within six to nine inches of an individual's face.

Calibration - Measurement of the flow rate of a sampling pump against a primary standard.

Appendix A - Acronyms/Definitions (Continued)

Collection Device - Medium used to collect samples of airborne contaminants (for example, a charcoal tube or a filter cassette).

Excursion Limit - A 30-minute exposure limit to airborne asbestos particles, which is representative of an employee's highest potential for exposure.

Flow Rate - The volume of air pulled through a sampling pump during a given period; usually expressed as liters per minute.

Permissible Exposure Limit - Regulatory limits established by OSHA for airborne concentrations of substances to which it is believed that nearly all workers may be repeatedly exposed day after day without adverse health effects.

Personal Sample - An *air sample* (see definitions) taken with a sampling pump directly attached to an individual with the collection device placed in his/her breathing zone.

Sampling Pump - A vacuum pump, usually battery operated, capable of being calibrated and remaining at a reasonably constant flow rate.

Short-Term Exposure Limit - A 15 minute TWA exposure limit that should not be exceeded at any time during the work shift.

Time-Weighted Average - The average exposure over a specified time period (10 hours, 8 hours, 15 minutes, etc.)

Appendix B – Recommended Maximum Sample Cycle Time (Calendar Days) [a]

Analyte Grouping	Recommended Maximum Sample Collection to Sample Shipment Time	Estimated Analytical Laboratory Cycle Time	Anticipated Total Cycle Time [b]
Asbestos	7	10	17
Metals	7	10	17
Mold/Fungi [c]	1	14	15
Volatile & Semi volatile Organic Compounds [c]	7	10	17
Gravimetric Methods	7	10	17
Summa Canisters [c]	7	10	17
Crystalline Silica	7	10	17
Miscellaneous [c]	7	10	17

Note:

[a] - Samples should be packaged and processed promptly for shipment if the use of an off-site analytical service laboratory is required; this is the recommended maximum sample time for handling IH samples. A deviation exceeding the duration specified requires the concurrence of the Industrial Hygiene Manager and Health, Safety, Security and Quality (HSS&Q) Director. The reason for such delay shall be documented in an e-mail to the concurring individuals.

[b] - Two additional calendar days should be anticipated for radiologically contaminated or security classified samples.

[c] – Reference specified analytical procedure; controlled temperature and maximum hold times may apply. Samples must be submitted and processed as required by the specified procedure.