

ADVANCED MEDICAL SYSTEMS OPERATING PROCEDURE

PORTABLE AIR SAMPLES

ISP-9 Rev. 01/95

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1.0 PURPOSE: To provide a standardized method of monitoring airborne contamination levels under various working conditions.

2.0 PRECAUTIONS AND LIMITATIONS:

2.1 Air samples shall be performed during, but not limited to, the following:

- a. Hot Cell opening.
- b. Work performed in areas having $>40,000$ dpm/100cm² loose surface contamination.
- c. Work in areas where the potential exists to exceed 1.0×10^{-6} uCi/ml airborne activity.
- d. As directed by the RSO.

2.2 Use care when handling air samples to prevent the spread of contamination or cross-contaminating samples.

3.0 INSTRUCTIONS:

3.1 All portable air samplers should be operated in accordance with the manufacturers instructions.

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Approved by: *R Meschter*

Date: *1-24-95*

3.8 Set the alarm trip points to a value slightly below the source readings and verify proper alarm responses on the Master Alarm Panel and ADT Control Panel.

3.9 Remove the planchet source, replace the probe and set the alarm set point as follows:

Sample Volume (SV) is based on continuous operation for twenty four (24) hours at four (4) cfm, therefore;

$$SV = 4 \frac{\text{cf}}{\text{min}} \times 24 \text{ hrs} \times \frac{60 \text{ min}}{\text{hour}} \times 2.83 \times 10^4 \frac{\text{ml}}{\text{cf}} \quad \text{or,}$$

$$\text{Sample Volume} = 1.63 \times 10^8 \text{ milliliters}$$

$$C_{cpm} = (1.0 \times 10^{-8})(SV)(2.22 \times 10^6)(C_{eff})$$

C_{cpm} is the value above background that the alarm set point should be set.

3.10 Report any discrepancies to the RSO immediately for the appropriate actions or repairs.

NOTE: The ratemeter is calibrated separately every six (6) months.

INTERNAL EXPOSURE TRACKING

ISP-9A

NAME: _____ SSN: _____

SAMPLE DATE: _____ RWP: _____

SAMPLER DATA

SAMPLER: _____ SER #: _____ CAL DUE: _____

FLOW RATE: _____ VERIFIED BY: _____ DATE/TIME: _____

TIME ON: _____ TIME OFF: _____ TOTAL TIME: _____

TOTAL VOLUME: _____ milliliters

COUNTING DATA

COUNTER: _____ SER #: _____ CAL DUE: _____

EFF: _____ BKG: _____ MDC: _____ *

COUNTED BY: _____ DATE/TIME: _____

GCPM: _____ CCPM: _____ ACTIVITY: _____ uCi/ml

$$\text{ACTIVITY} = \frac{\text{CCPM}}{(2.22 \times 10^6)(C_{\text{eff}})(\text{volume})}$$

24 HOUR DECAY: _____ uCi/ml

DAC-HR CALCULATION

Performed by: _____ DATE/TIME: _____

DAC-HR: _____ INTAKE: _____ uCi

$$\text{DAC-HR} = \frac{\text{Activity} \times \text{Time (hrs)}}{1.0 \times 10^{-6}}$$

$$\text{INTAKE} = (\text{Time min.}) \times (2.0 \times 10^4 \text{ ml/min}) \times (\text{Activity})$$

* Ref: ISP-4

Reviewed by RSO: _____ Date: _____

- 3.2 The air sample should be taken as close as practicable to the breathing zone for the area where the work is being performed. All steps possible shall be taken to ensure the most representative sample is obtained. If an air sample in the breathing zone is impractical, place the air sampler down wind of the work area, but as close as possible to the work area without interfering with personnel.
- 3.3 Complete the appropriate section of the Internal Exposure Tracking Form, Form ISP-9A for each individual that the air sample was taken for.
- 3.4 Calculate activity per ISP-3.
- 3.5 Calculate air sample concentration as follows:
$$\text{uCi/ml} = \frac{\text{sample cpm} - \text{bkg cpm}}{(\text{sample volume})(2.22 \times 10^6)(C_{\text{eff}})}$$
- 3.6 In twenty four (24) hours, calculate the activity of the sample again and record the results.
- 3.7 Complete Form ISP-9A, for BZAs, or Form ISP-9B, for general area air samples, as appropriate.
- 3.8 Submit Form ISP-9A or 9B to the RSO for review.