

THREE MILE ISLAND NUCLEAR STATION
STATION HEALTH PHYSICS PROCEDURE #1606
AIR SAMPLING FOR RADIOACTIVE IODINE

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Approval NA Date —
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Unit 2 Superintendent Approval

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THREE MILE ISLAND NUCLEAR STATION
STATION HEALTH PHYSICS PROCEDURE - 1606
Air Sampling for Radioactive Iodine

1.0 PURPOSE

The purpose of this procedure is to outline the steps to be taken for sampling for Airborne Radioactive Iodine.

2.0 DISCUSSION

Iodine has a vapor pressure that will allow it to vaporize at room temperature; therefore, it cannot be held on a plain filter paper with any type of reproducible efficiency. The technique for monitoring iodine is to use a medium that will react with the iodine to convert it to a form that will hold it. The simplest technique is to trap the iodine using activated charcoal.

NOTE: The maximum flow rates through the charcoal cartridges are as follows:

CESCO "B" - 2 cfm

CP-100 - 9 cfm

3.0 REFERENCES

3.1 Title 10, Part 20, Code of Federal Regulations.

3.2 Radiological Health Handbook, 1970.

3.3 P.C.P. 1958.

4.0 EQUIPMENT

4.1 Air Sampling Instrument

4.2 Charcoal Cartridges - (CESCO "B", CP-100 or equivalent)

4.3 GeLi/Multi-Channel Analyzer System (MCA).

4.4 Stop Watch.

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4.5 Particulate filter, G-5 or equivalent.

5.0 OPERATING INSTRUCTIONS

The results of the calculation for air samples are reported in $\mu\text{Ci/cc}$.

The conversion from ft^3 to cc is as follows:

$$(\text{cu ft/min}) (\text{cc/l cu ft}) = \text{cc/min}$$

$$(\text{cc//min}) (\text{time counted}) = \text{cc which will be the volume}$$

2.832×10^4 is a constant for changing cubic ft to cc

5.1 Air Sampler

5.1.1 Place a particulate filter and a charcoal cartridge in the air sampler.

NOTE: Place the particulate filter ahead of the charcoal cartridge.

5.1.2 Start the air sampler and stop watch (if needed).

NOTE: For routing sample, run sampler long enough to get $\approx 4 \times 10^6$ cc sample volume.

5.1.3 When the cartridge is removed, it will be marked as to location, sample time, date, and volume.

NOTE: To calculate volume, multiply flow rate times time.
Volume should be in cubic centimeters (cc).

5.1.4 Take the cartridge to the H.P. Lab and count, calculate, and record results as per PCP 1958.

TMI DOCUMENTS

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