Approved: RB
Chairman - RHSC

WORCESTER POLYTECHNIC INSTITUTE
HEALTH PHYSICS PROCEDURE HP-06
ACTIVITIES AND RELEASES

1. PURPOSE:

To report the activity of quarterly releases and disposals, and to inspect the radioactive waste storage for radiation levels of contamination.

2. FREQUENCY:

This procedure shall be performed semiannually

3. MATERIALS, TOOLS, AND EQUIPMENT:

3.1. Form(s): Activities and Releases (Form_09)

3.2. Vacuum Pump

3.3. Filter paper or another appropriate material

3.4. Multi-channel analyzer

3.5. G-M tube survey meter or an ionization chamber

3.6. Alcohol (if necessary)

3.7. Gas-flow proportional counter or equivalent detection equipment

4. PRECAUTIONS:

4.1. Ensure that all appropriate health physics precautions are followed throughout the procedure

4.2. Take all necessary precautions to avoid the spread of possible contamination

4.3. Perform an operability check on all instrumentation used. Ensure that the instrumentation has been calibrated within the proper limit

5. INSTRUCTIONS:

5.1. Ar-41 releases

5.1.1. Ensure that the Ar-41 monitor has been calibrated within the last 6 months

5.1.2. Review the Reactor Console Log Book to ensure that the Ar-41 levels have been within the allowable limits

5.2. Air Sampling

5.2.1. Use a vacuum pump and a filter disc assembly to sample the dust in the air leaving the reactor facility via the ventilation exhaust system

5.2.1.1. Cut a piece of filter paper to fit the filter holder on the vacuum pump

5.2.1.2. Attach the hose to the ventilation system duct

5.2.1.3. Energize the vacuum pump

5.2.1.4. Collect the sample for a minimum of 8 hours

5.2.2. Use a multi-channel analyzer, calibrated to measure gamma rays of up to at least 2 MeV, to analyze the sample

5.2.2.1. Count the filter paper for a minimum of 2 hours

5.2.2.2. Compare the resulting spectrum to a background spectrum

5.2.2.3. Identify by energy all peaks not present in the background spectrum

5.2.2.4. Save the spectrum analysis information and file

5.2.3. The Radiation, Health, and Safeguards Committee shall promptly review all non background results

5.3. Effluent releases:
Record the date, the volume, and the total activity of each release into the sanitary sewerage system

5.4. Radioactive waste storage

5.4.1. Radiation survey

5.4.1.1. Use a G-M tube survey meter or an ionization chamber
5.4.1.2. Record the highest level detected and its location

5.4.2. Contamination survey

5.4.2.1. Use filter paper or another appropriate material. If necessary, moisten the filter paper with alcohol

5.4.2.2. Take at least two swipes of each storage area not associated with periodic laboratory surveys, one of which should be taken at the entrance. Record the location of each swipe. Typically, each swipe should be taken using as S-shaped motion and should cover an area of 100 cm^2

5.4.2.3. Count the swipes using either a gas-flow proportional counting system or equivalent detection equipment. Prior to counting:

5.4.2.3.1. Allow the swipes to dry to prevent the shielding of alpha and beta radiation

5.4.2.3.2. Use alpha and beta calibrated sources to calibrate the equipment

5.4.2.3.3. Take a background count.

5.4.2.4. Investigate alpha counts 3 cpm above background or beta/gamma counts 10 cpm above background

6. RESTORATION:

None

7. REFERENCES:

7.1. Code of Federal Regulations Part 10, Chapter 20

7.2. Radiation, Health and Safeguards Committee Radiation Regulations