

SAMPLING TECHNIQUES TO BE USED IN PRR-1

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OUTLINE

Objectives

Sampling points/Area/Location

Procedure for Sampling Vapor Sample for Tritium

Procedure for Smear/Swipe Test

Procedure for Air Samples for Air Contamination

Procedure for Sampling Surface Coating/Paint

Procedure for Sampling Ion-exchange Resin

Procedure for Sampling Water Samples

Procedure for Sampling Metal/Wood

Procedure for Sampling Soil Samples

Procedure for Sampling Concrete

Objectives

- To get samples from the reactor building for laboratory analysis
- To document and label properly the samples taken
- To map the sampling points with proper label
- To take picture of the sampling point using digital camera
- To ensure safety of personnel, public and environment
- To satisfy regulatory requirements

SAMPLING POINTS/AREAS

1. Places where neutron activation took place.
2. Places where reactor coolant may have carried and deposited fission/activation products.
 - a. Interior of primary pipes and tanks.
 - b. Reactor building sump pit.
 - c. Surfaces that may have been wetted by spilled primary coolant.
3. Primary coolant purification system.
4. Places where materials irradiated in the reactor were handled or stored.
5. Laboratories inside the reactor building.
6. Drains
7. Septic tank.
8. Grounds.

Vapor Sample Collection for 3H Determination

Materials:

- Glass jar, 1L capacity, clean and dry
- Dry ice
- Petri dish
- Sharp bladed spatula
- Glass beaker, 100 ml
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Vapor Sample Collection

Procedure:

1. Close windows and laboratory door.
2. Fill the glass jar half-full with dry ice.
3. Place jar on a dish.
4. Let it stand for 1-2 hrs.
5. Scrape off the accumulated "snow" and ice in the side of the jar into the glass beaker.
6. Set aside beaker for sample to thaw out.
7. Label the sample.
8. Record to logbook (where? when? who?).
9. Take picture of location.
10. Bring samples to the storage/preparation room.

Smear/Swipe Test

Materials:

- Filter paper/cotton swabs
- Water/alcohol
- Disposable gloves
- Forceps/Tongs
- Plastic bag (zip lock type)
- Labeling kit (marking pen etc.)
- Holding box
- Logbook
- Digital camera

Continuation... Smear/Swipe Test

Procedure:

1. Map the area of sampling points.
2. Wear disposable gloves.
3. Moisten the filter paper.
4. Hold the filter paper using fingertips.
5. Get swipe samples at least 100cm² (outside to inside stroke with just enough pressure)
6. Place swipe samples into the plastic bag.
7. Label the plastic bag properly.
8. Place the plastic bag to the holding box.
9. Record to logbook (where? when? who?).
10. Take picture of location.
11. Send samples for analysis.

Air Samples for Air Contamination

Materials:

- Air sampler (model#, S.N., technical specs.)
- Plastic bag
- Filter paper
- Tweezers
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Air Samples for Air Contamination

Procedure:

1. Wear appropriate clothing and personal dosimeter.
2. Put clean filter paper to air sampler holder.
3. Install/Set-up air sampler in appropriate location.
4. Set collection time.
5. Put on the air sampler.
6. Take out the filter paper using tweezers.
7. Place the samples in plastic bag.
8. Label the plastic properly
9. Record to logbook (where? when? who?)
10. Take picture of location.
11. Send samples for analysis.

Surface Coatings/Paints

Materials:

- Sharp bladed spatula/chisel
- Plastic bags
- Labeling kit (marking pen etc.)
- Holding box
- Logbook
- Digital camera

Continuation... Surface Coatings/Paints

Procedure:

1. Mark the area of sampling points.
2. Scrape the coatings/paints.
3. Collect the scraped samples.
4. Place the samples in the plastic bags.
5. Label the plastic bag properly.
6. Place the plastic bag to the holding box.
7. Record to logbook (where? when? who?)
8. Take picture of location.
9. Bring samples to the storage/preparation room.

Ion-Exchange Resin Samples

Materials:

- Plastic container
- Plastic bag
- Disposable gloves
- Adjustable wrench
- Scaffolding
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Ion-Exchange Resin Samples

Procedure:

- Set up scaffolding for top cover removal.
- Isolate the resin tank.
- Drain water level up to resin level.
- Remove top cover of the resin tank.
- Get resin sample.
- Place sample in plastic bag.
- Label the bag properly.
- Record to logbook (where? when? who?).
- Take picture of location.
- Bring samples to the storage/preparation room.

WATER SAMPLES

Materials:

- Disposable gloves
- Polyethylene bottle with cover
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Water Samples

Procedure:

1. Locate the sampling area.
2. Get water samples.
3. Place in polyethylene bottle.
4. Label the bottle.
5. Record to logbook (where? when? who?).
6. Take picture of location.
7. Bring samples to the storage/preparation room.

METAL AND WOOD SAMPLES

Materials:

- Electric Drill with Drill Bits
- Core Drill with Core Bits
- Scraper
- Plastic Bag
- Holding Box
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Metal and Wood Samples

Procedure:

1. Locate the sampling area.
2. Get sample from area using electric drill/scraper.
3. Place the sample in plastic bag.
4. Label the plastic bag properly.
5. Place the plastic bag to the holding box.
6. Record to logbook (where? when? who?).
7. Take picture of location.
8. Bring samples to the storage/preparation room.

SOIL SAMPLES

Materials:

- Plastic Bag
- Spatula
- SS pipe
- Disposable gloves
- Working gloves
- Labeling kit (marking pen etc.)
- Logbook
- Digital camera

Continuation... Soil Samples

Procedure:

- Locate the sampling area.
- Get soil samples using spatula or SS pipe.
- Place and label sample in plastic bag.
- Record to logbook (where? when? who?).
- Take picture of location.
- Bring samples to the storage/preparation room.

Concrete Samples

Materials:

- Hilti Coring Device
- Plastic Bags
- Coring Bits
- Labeling kit (marking pen etc.)
- Holding box
- Logbook
- Digital camera

Continuation... Concrete Samples

Procedure:

- Mark the area of sampling points.
- Set up the coring device properly.
- Drill to required depth.
- Remove the core samples from coring device.
- Place the samples in plastic bags.
- Label the plastic bags properly.
- Place the plastic bags to the holding box.
- Record to logbook (where? when? who?).
- Take picture of location.
- Bring samples to the storage/preparation room.





