

**West Valley Site Management Program
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SUBJECT: Radiation and Contamination Surveys on the Retained Premises

RP-RPP005.00

1.0 PURPOSE

This document establishes the West Valley Site Management Program's (WVSMP) requirements for conducting area radiation and contamination surveys at the Western New York Nuclear Service Center (WNYNSC) (in areas other than the State-Licensed Disposal Area) that are under NYSERDA's Part 50 license but outside the authority of the West Valley Demonstration Project (WVDP) Act. Radiation surveys and contamination monitoring will be conducted to determine the magnitude and extent of radiation levels, concentrations or quantities of radioactive material present in the work area, and the potential radiological hazards involved in the work. Resulting hazard identification information will be included in safety documentation prepared for the task. Survey types and frequencies will be based on the potential radiological conditions associated with the area and activity. This procedure does not apply to radiation contamination monitoring of personnel.

2.0 SURVEY INSTRUMENTATION

Radiation surveys and contamination monitoring will be conducted by trained and qualified personnel using instrumentation calibrated in accordance with RPP013, *Instrument Calibration*.

Radiation levels will be measured using a survey meter sensitive enough to detect 0.1 milliroentgens per hour.

Contamination monitoring will be performed using a pancake-type Geiger-Mueller probe or equivalent to measure total contamination from beta-gamma emitters. When necessary, additional probes or instruments may be used for monitoring (e.g., a liquid scintillation counter [for tritium]; a low-background proportional counter for alpha/beta, etc.). Additional instrumentation required for specific conditions will be described in task-specific work documentation prepared for the work.

3.0 AREA SURVEYS

At a minimum, area radiation surveys will be performed in any area for which there is a reasonable expectation that radiation levels will exceed two millirems per hour (20 microsieverts per hour [$\mu\text{Sv}/\text{hour}$]).

Area radiation surveys will be performed when using and/or handling radioactive materials that have a potential to emit a radiation dose rate above 500 microrem per hour (5 $\mu\text{Sv}/\text{hour}$). Radiation levels exceeding one millirem per hour (10 $\mu\text{Sv}/\text{hour}$) will be noted and the need for corrective action evaluated.

4.0 CONTAMINATION MONITORING

Objects and equipment that may have been contaminated with radioactive material will be monitored and/or isolated (e.g., bagged, boxed, wrapped, etc.), and tagged prior to their removal from the

radiological work area or transfer to other work areas. Contamination surveys will be performed on all disturbed soils and sediments located in areas that historically contained radioactive materials and/or areas downstream in potentially contaminated sections of the surrounding waterways. Contamination surveys will verify that surface contamination levels are below the limits in Table 1: Acceptable Surface Contamination Levels (see below).

Radioactivity on equipment or surfaces will not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

Table 1: Acceptable Surface Contamination Levels (excerpted from <i>Guidelines for Decontamination of Facilities and Equipment prior to Release for Unrestricted Use or Termination of Licensed Byproduct, Source, or Special Nuclear Material, NRC, 1993</i>)			
Nuclides^a	Average^{b c f}	Maximum^{b d f}	Removable^{b e f}
U-nat, U-235, U-238, and associated decay products	5,000 dpm α / 100cm ²	15,000 dpm α / 100cm ²	1,000 dpm α / 100cm ²
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm / 100cm ²	300 dpm / 100cm ²	20 dpm / 100cm ²
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm / 100cm ²	3,000 dpm / 100cm ²	200 dpm / 100cm ²
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm βγ / 100cm ²	15,000 dpm βγ / 100cm ²	1,000 dpm βγ / 100cm ²

^a Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma emitting nuclides should apply independently.

^b As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^c Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

^d The maximum contamination level applies to an area of not more than 100 cm².

^e The amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

^f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement will be presumed to be contaminated in excess of the limits.

Removable contamination will be measured using wipe tests sensitive enough to detect levels specified in Table 1 for the contaminant(s) involved or suspected to be present. Wipes will be counted in a low-background area. When an item is found to be contaminated, such items will be decontaminated as soon as practicable, or appropriately packaged and disposed of as radioactive waste. Decontamination will be performed to reduce removable contamination as low as reasonably achievable (ALARA) unless the item or material is going to be disposed of as radioactive waste.

5.0 REVIEW

The WVSMP safety staff, including the Radiation Safety Officer, will review the results of surveys and contamination monitoring. These results are incorporated into the quarterly ALARA Report, which is submitted to the Part 20 Radiation Safety Committee for their review and approval.

6.0 RECORDKEEPING

A record of survey results will be maintained in the WVSMP central files and include the following information:

- Location, date, and identification of equipment used, including the serial number and counting efficiencies
- Name of the person conducting the survey

Records of routine surveys will include:

- Drawing of the area surveyed, including relevant features such as active storage and waste areas
- Measured exposure rates keyed to locations on the drawing (rates requiring corrective action will be highlighted)
- Detected contamination levels keyed to locations on the drawing

Survey records will be maintained for a minimum of three years. Survey records pertinent to dose assessments or the evaluation of radioactive effluent releases to unrestricted areas will be retained until the Nuclear Regulatory Commission terminates the license.

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