

SECTION IV. CONSTRUCTIONS AND MODIFICATIONS

61.94(b)(8): Constructions and Modifications

A brief description of constructions and modifications that were completed and/or reviewed in 2000, but for which the requirement to apply for approval to construct or modify was waived under 61.96, is provided here. The Air Quality Group for LANL/DOE maintains the documentation developed to support the waiver.

Project #99-0191: Nontraditional In-Situ Vitrification near PRS 21-018A

Nontraditional in-situ vitrification (ISV) was evaluated to demonstrate its effectiveness for stabilization of radionuclides in contaminated soil. The demonstration involved 13,200 ft³ of contaminated soil from an absorption bed. Using a vibrating drill, four electrodes were inserted into the contaminated soil. Then, a hood was placed over the affected area to collect any off-gas. The contaminated area was heated to melting, turned to glass, cooled, and sampled. The off-gas passed through HEPA filters, scrubbers, and a thermal oxidizer before it was exhausted to the environment.

Air-emission estimates for a number of radionuclides were based on soil characteristics and contamination data. Controlled emissions were estimated using Appendix D release factors and control factors (for HEPA filtration) to determine the applicability of Radionuclide-NESHAP preapproval requirements. In addition, the

enhanced rule was applied when applicable. Dose assessments of these air emissions were calculated using CAP88. Based on the modeling results, the potential effective dose equivalent from the point source at the nearest receptor was 4.8×10^{-2} mrem/yr. and was below the permitting threshold of 0.1 mrem/yr. specified in the Radionuclide-NESHAP.

Furthermore, uncontrolled emissions were estimated based on the retention factors supplied by the contractor performing the demonstration to determine the applicability of Radionuclide-NESHAP monitoring requirements. Dose assessments of these air emissions were calculated using CAP88. Based on the modeling results, the potential effective dose equivalent from the point source at the nearest receptor was 5.3×10^{-2} mrem/yr. and was below the monitoring threshold of 0.1 mrem/yr specified in Radionuclide-NESHAP. Therefore, monitoring was not a compliance requirement. An air sampler, located approximately 50 meters from the operation, confirmed this low potential for emissions.

SECTION V. ADDITIONAL INFORMATION

This following section is provided pursuant to DOE guidance and is not required by Subpart H reporting requirements.

Unplanned Releases

During 2000, the Laboratory had no instances of increased airborne emissions of radioactive materials that required reporting to the Environmental Protection Agency. There were two instances of unplanned events. Equipment malfunction at TA-21, building 209, resulted in the release of 215 Ci of tritium during the period of March 22–28. Routine emissions at TA21-209 were typically less than 50 Ci a week during most of CY 2000. The Weapons Engineering Tritium Facility (WETF) at TA-16 had a typical release rate of about 5 to 10 Ci a week during CY 2000. However, on October 5, a release of about 90 Ci of tritium (³H) occurred due to process problems; the release occurred over a 6-hour period.

Environmental Monitoring

The LANL Air Quality Group operates an extensive environmental monitoring network that includes several environmental monitoring stations located near the LANSCE boundary inhabited by the public. Measurement systems at these stations include LiF thermoluminescent dosimeters, continuously operated air samplers, and in situ high-pressure ion chambers. The combination of these measurement systems allows for monitoring of radionuclide air concentrations and the radiation exposure rate. Results for air sampling are published

here and results for all monitoring data are published in the Annual Site Environmental Surveillance Report for DOE Order compliance.

Other Supplemental Information

- Collective effective dose equivalent for 2000 airborne releases: 1.0 person-rem;
- Compliance with Subparts Q and T of 40 CFR 6—Radon-222 Emissions;

These regulations apply to Radon-222 emissions from DOE storage/disposal facilities that contain byproduct material. “Byproduct material” is the tailings or wastes produced by the extraction or concentration of uranium from ore. Although this regulation targets uranium mills, LANL has likely stored small amounts of byproduct material used in experiments in the TA-54 low-level waste facility, Area G, and this practice makes the Laboratory subject to this regulation. Subject facilities cannot exceed a Radon-222 emissions rate of 20 pCi/m² s. In 1993 and 1994, LANL conducted a study to characterize emissions from the Area G disposal site.¹³ This study showed an average emission rate of 0.14 pCi/m² s for Area G. The performance assessment for Area G has determined that there will not be a significant increase in Radon-222 emissions in the future.¹⁴

- Potential to exceed 0.1 mrem from LANL sources of Radon-222 or Radon-220 emissions: not applicable at LANL;
- Status of compliance with EPA effluent monitoring requirements: As of June 3, 1996, LANL came into compliance with EPA effluent monitoring requirements.

REFERENCES

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2. U.S. Department of Energy, "Site-Wide Environmental Impact Statement for Continued Operation of the Los Alamos National Laboratory," Vol. Summary, DOE/EIS—0238, Albuquerque, NM, January 1999.
3. K. W. Jacobson, S. Duffy, and K. Kowalewsky, "Population and Agricultural Data Arrays for the Los Alamos National Laboratory," Los Alamos National Laboratory report LA-13469-MS (1998).
4. S. D. Terp, "2000 Radioactive Materials Usage Survey for Point Sources," Los Alamos National Laboratory report LAUR-01-2250 (2001).
5. Los Alamos National Laboratory, "Performance Requirements for Air Quality," Air Quality Group Laboratory Implementation Requirement, LPR 404-10-00.0 (1998).
6. U.S. Environmental Protection Agency, Federal Register, Vol. 60, No. 107 (June 5, 1995).
7. U.S. Environmental Protection Agency, "The Clean Air Act Assessment Package—1988 (CAP-88): A Dose and Risk Assessment Methodology for Radionuclide Emissions to Air," Vol. 1: User's Manual, EPA/Washington D.C. (1990).
8. Radiation Shielding Information Center, "CAP-88 Clean Air Act Assessment Package," Oak Ridge National Laboratory, Tennessee (1990).
9. U.S. Environmental Protection Agency, "National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities," Code of Federal Regulations, Title 40, Part 61.90, Subpart H (1989).
10. K. F. Eckerman, A. B. Wolbarst, and A. C. B. Richardson, Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," Office of Radiation Programs, U.S. Environmental Protection Agency, Washington, D.C. (1988).
11. K.F. Eckerman and J.C. Ryman, Federal Guidance Report No. 12, "External Exposures to Radionuclides in Air, Water, and Soil; Exposure-to-Dose Coefficients for General Application," U.S. Environmental Protection Agency, Washington, D.C. (1993).
12. K. W. Jacobson, e-mail to Mr. George P. Brozowski, U.S. Environmental Protection Agency Region VI, March 18, 1999.
13. B. Eklund, "Measurements of Emission Fluxes from Technical Area 53, Areas G and L," Radian Corporation report, Austin, Texas (1995).
14. Los Alamos National Laboratory, "Performance Assessment and Composite Analysis for Los Alamos National Laboratory Materials Disposal Area G," Los Alamos National Laboratory report LA-UR9785 (1997).

61.94(b)(9) Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment (See, 18 USC., 1001).

Signature: _____ *Signature on File*

Date: 6/27/01

David A. Gurulé, P.E., Owner
Area Manager, Los Alamos Area Office
U.S. Department of Energy

Signature: _____ *Signature on File*

Date: 6/27/01

Dennis J. Erickson, Operator
Director, Environment, Safety and Health Division
Los Alamos National Laboratory

1999 LANL Radionuclide Emissions Report Errata, as noted by K.W. Jacobson

Table 16:

The station number for the LA Canyon air sampler should have read “60” and not “61.”

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