



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 10, 2005

Docket No. 03006172  
Control No. 137290

License No. 37-07653-02

Jamie K. Mackay  
Environmental Health and Safety Manager  
Alcoa, Inc.  
ALCOA Technical Center  
100 Technical Drive  
Alcoa Center, PA 15069

**SUBJECT: ALCOA, INC., REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR AMENDMENT TO LICENSE, CONTROL NO. 137290**

Dear Mr. Mackay:

This is in reference to your Radiation Safety Officer's letter dated June 21, 2005 requesting to amend Nuclear Regulatory Commission License No. 37-07653-02 and release the Alcoa Research Laboratory for unrestricted use. In order to continue our review, we need the following additional information:

1. Your amendment request should have been signed by a management representative rather than the Radiation Safety Officer. Please submit a letter signed by a management representative indicating that management has reviewed the amendment request and concurs in the statements and representations contained therein. Note also that a management representative should sign all future correspondence that requests a change in your license.
2. You are requesting to release for unrestricted use the Alcoa Research Laboratory site located at 600 Freeport Road, New Kensington, Pennsylvania. This site was first authorized to use licensed material in 1958. The site was removed from the license in 1971 and added to the license in 1978. Based on our records, we noted that Alcoa was authorized to use the following at this facility:

Unsealed Radioactive Material	Foil Sources	Sealed Sources
tritium	tritium	cobalt-60
strontium-90	nickel-63	krypton-85
any byproduct material with atomic numbers 1-83		strontium-90
		cesium-137
		promethium-147
		thallium-204
		americium-241

As part of this review, we note that an inspection conducted on September 28, 1961 identified Ag-110, Al-26, Co-60, Cs-137, C-14, Mn-54, Na-22, Ni-63, P-32, Sc-46, Sr-90, U-238, Zn-65, and H-3 stored at this site. Please provide a listing of the long-lived (half-lives greater than 120 days) radionuclides that were used as part of the unsealed material with Atomic numbers 1 through 83 at this site. The historical site assessment should identify all long-lived radionuclides.

3. Please indicate if any of the sealed sources used at this site had leak test results exceeding 0.005 microcuries.
4. In your Final Status Survey Plan and Report, you provided copies of the portable gauge leak tests. Please provide the last leak tests records for the other sealed sources used at this site.
5. The Final Status Survey Plan and Report included in your letter dated June 21, 2005 indicated that licensed materials were used in the mezzanine level of Building 44. Specifically, radioactive material was used in Room 600 (high level chem lab, metallographic prep room and dark room), Room 604 (Isotope Storage Room), Room 606 (low level chem lab), Room 608 (tritium/electronics lab), and Room 614 (counting room). According to our records, radioactive material could have been used in Buildings 29, 44, and 51 at the Alcoa Research Laboratory site. In an inspection record dated December 15, 1958, the inspector noted that in addition to the 5 rooms in Building 44, radioactive materials were being used at the following locations:
  - (1) A 10' x 15' laboratory in Building 29 that housed a gas handling system beneath a canopy-type hood. Waste from tritium gas experiments were vented from this laboratory.
  - (2) A 20' x 25' laboratory in Building 29 had a gas handling system for tritium experiments.
  - (3) A lathe in the press room in Building 29 was set aside for tool wear studies using radioactive materials (possibly cobalt-60).
  - (4) Gauges were used at the Alcoa foil mill. Please explain if the foil mill is located at the Alcoa Research Laboratory in New Kensington, PA.

Please ensure that all areas where licensed material were used and/or stored are properly surveyed following the guidance in NUREG-1757 Volumes 1 and 2.

6. In your letter dated October 16, 2003, you requested to release the Alcoa Research Laboratory for unrestricted use based on a radiological survey report dated October 1992. In this report, it was noted that uranium-238 was used in the basement of Building 29. In our response letter dated December 11, 2003, we explained that additional site specific information was needed that you should follow the guidance in NUREG-1757, Volume 1. In your latest letter dated June 21, 2005, there is no mention to the uranium-238 usage. According to a review of your license amendments, License No. 37-07653-02 did not authorize the use of uranium-238. Please provide an explanation as to the residual radioactive contamination remaining at the site and the potential for U-238 contamination.
7. 10 CFR 20.1402 requires, in part, that a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25mSv) per year. Appendix B of your Final Status Survey Plan and Report indicates that for Am-241, the quantile value of TEDE is 1.99E+01 to 2.54E+01 mrem per year. This latter value exceeds the release criteria. Please explain how you meet 10 CFR 20.1402. On page 6 of your Final Status Survey Plan and Report, you indicate that the Am-241 was contained in special form capsules in three Troxler Model 24091 density gauges. If this was the only use for Am-241, a copy of the last leak tests are acceptable and the Dand D code was not needed. Please explain.
8. Your Final Status Survey Plan and Report provided copies of documents dated June 18, 1971 regarding survey results for the posted laboratories of Building 44. These surveys do not include surveys of equipment that was previously used in the posted radioactive material laboratories. Please provide your surveys for drain lines, ductwork, and equipment used in these posted laboratories. If you intend to re-submit the survey data included in your letter dated June 18, 1971, please be sure to show that these surveys are in compliance with the current decommissioning guidance in NUREG-1757 Volumes 1 and 2.
9. Your Final Status Survey Plan and Report provides th results of your surveys, but does not provide the survey data matched to the survey location. Please provide the raw survey data and map or drawing divided into survey units.
10. Please provide the total square footage of each building and the square footage for the areas where radioactive materials were either used or stored. Please complete the following table:

	Building 29	Building 44	Building 51
Total square feet			
Square feet of radioactive material areas			

For example, in your Final Status Survey Plan and Report, you indicated that there was approximately 2,400 square feet of laboratory space used for radioactive materials in Building 44 and that the total Alcoa Research Laboratory occupied 14,126 acres. However, Attachment G to application dated March 28, 1961 indicated that the radioactive material use and storage area in Building 44 was approximately 1,600 square feet.

11. Please describe the specific uses (e.g., general office, laboratory, production, machining, etc.) of Buildings 29, 44 and 51.
12. Please describe the surrounding area at the Alcoa Research Laboratory, such as "residential", "industrial", "commercial", "mixed residential/commercial", etc.
13. Please confirm that there were no outdoor areas affected by the use of licensed materials at the Alcoa Research Laboratory.

Once we have reviewed your response to this letter, we will prepare an Environmental Assessment (EA) in accordance with 10 CFR Part 51 and provide a draft copy to the Commonwealth of Pennsylvania for comment. Then the EA will be published in the Federal Register and at that point, we will be able to amend your NRC license.

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Nuclear Materials; Medical, industrial, and academic uses of nuclear material**; then **toolkit index page**. Or you may obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 9:00 p.m. EST, Monday through Friday (except Federal holidays).

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office and refer to Mail Control No. 137290. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5251.

If we do not receive a reply from you within 30 calendar days from the date of this letter, we will assume that you do not wish to pursue your application.

Sincerely,

***Original signed by Kathy Dolce Modes***

Kathy Dolce Modes  
Health Physicist  
Materials Security and Industrial Branch  
Division of Nuclear Materials Safety

cc:  
Johan E. Peace, Radiation Safety Officer

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**SISP Review Complete: K. D. Modes**

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