Lic. 37-7653-2 (I - C)
Lic. C-4724 (II- B)

Form AEC-417
(4-58)

UNITED STATES ATOMIC ENERGY COMMISSION

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee

ALUMINUM COMPANY OF AMERICA
Aluminum Research Laboratories
Freeport Road
New Kensington, Pennsylvania

2. Date of inspection

July 21, 1959

3. Type of inspection Follow-up and Initial

4. 10 CFR Part(s) applicable

20-30-40

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

License No.	Date	Exp. Date
PART 30		
37-7653-2	4/18/58	4/30/60

SCOPE AND CONDITIONS: (See previous report, 12/2/58)

PART 40		
C-4724	5/5/59	5/31/60

SCOPE: 70 pounds of source material (thorium and uranium) for use as an analytical reagent.

CONDITIONS: This license extends to the following plants:

Alcoa, Tennessee	East St.Louis, Ill.	New Kensington,Pa.(Works)
Badin, No. Carolina	Edgewater, N.J.	Ft. Comfort, Texas
Bauxite, Arkansas	Massena, N.Y.	Rockdale, Texas
Cleveland, Ohio	Mobile, Alabama	Rosiclare, Ill.
Davenport, Iowa	New Kensington,Pa.	Vancouver, Wash.
Warrick, Ind.	(Alcoa Research Lab.)	Vernon, Calif.
		Wenatchee, Wash. (CONT'D)

6. Inspection findings (and items of noncompliance)

PART 30
37-7653-2
The follow-up inspection conducted to determine the corrective action taken by the licensee revealed that all items of noncompliance observed or noted during the course of the initial inspection had been corrected except as set out below:

20.203 "Caution signs, labels, and signals"
(f)(4) "Containers" - in that the waste drums in which were stored millicurie amounts of byproduct material, although labeled with a sign "Caution - Radioactive Material" and prescribed symbol, failed to show the kind, quantity and date of measurement of the quantity of radioactive material each contained. (See Item C, paragraph 10 of report details.)

PART 40
C-4724
Uranium and thorium compounds totaling approximately 10 pounds yearly are being used as analytical reagents by the Aluminum Company of America at New Kensington, Pennsylvania. The material is used under the supervision of Mr. A. L. Miller,

(CONT'D)

7. Date of last previous inspection

10-28-58(Lic. 37-7653-2)

8. Is "Company Confidential" information contained in this report? Yes ☐ No ☒
(Specify page(s) and paragraph(s))

DISTRIBUTION:

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Paul R. Nelson
(Inspector)

Approved by: Robert W. Kirkman, Director
Inspection Division, NYOO
(Operations office)

August 7, 1959
(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate item.

16—73814-2 U. S. GOVERNMENT PRINTING OFFICE

ITEM 5 (CONT'D)

PART 40
C-4724

CONDITIONS (Cont'd) Compliance with 10 CFR 20.

ITEM 6 (CONT'D)

PART 40
C-4724
Assistant Chief of the Analytical Chemistry Division. No items of noncompliance were noted during this inspection.

FOLLOW-UP

PART 30 INSPECTION

ALUMINUM COMPANY OF AMERICA
Aluminum Research Laboratories
Freeport Road
New Kensington, Pennsylvania

Date of Inspection: July 21, 1959

Persons Contacted by Inspector:

Mr. John E. Lewis, Radiation Safety Officer
Mr. L. M. Foster, Chief, Physical Chemistry Division

Persons Accompanying Inspector:

Mr. Andrew Mammarelli, Pennsylvania Dept. of Health, Division of Industrial Hygiene, Pittsburgh, Pennsylvania

DETAILS

9. Background Information

On October 28, 1958, an initial inspection of License No. 37-7653-2 was conducted by Bennett L. Harless of this office. The report was forwarded to Inspection Headquarters on December 15, 1958, noting the following items of noncompliance:

20.201 "Surveys"
(b) - in that (1) no evaluation has been made of the concentration of radioactive material in the exhaust air from the hood in the isotope storage area or of the concentration of radioactive materials in the air in the storage area during operations involving the evaporation to dryness of liquids containing radioactive waste material, and (2) the surface contamination surveys presently performed by the licensee are not sufficiently complete to detect the presence of contamination in the isotope storage room or in the chemistry laboratory in Building 44.

20.203 "Caution signs, labels, and signals"
(e)(1) "Additional requirements" - in that a laboratory containing approximately 10 millicuries of tritium, a laboratory containing approximately 20 curies of tritium, and the isotope storage room containing millicurie amounts of radioisotopes were not posted with the words, "Caution - Radioactive Material" and the standard radiation symbol.

(f)(4) "Containers" - in that a drum containing approximately 10 mc of radioactive waste material, in one of the tritium laboratories, although labeled "radioactive", was not labeled with the words, "Caution - Radioactive Material", a standard radiation symbol, and the type, assay, and date of assay of materials contained therein.

- in that the hood housing the tritium gas handling system containing approximately 20 curies of tritium,

although labeled, "Danger - Radioactivity" and displaying a standard radiation symbol, was not labeled with the words, "Caution - Radioactive Materials", or the type, assay and date of assay of materials contained therein.

- in that containers of radioactive material stored in the isotope storage room, although labeled with the words, "Caution - Radioactive Material", the radiation symbol, the date, and type of material contained therein, were not labeled with the assay of materials contained therein.

- in that drums of radioactive waste material stored in the isotope storage room, although labeled with the word, "Radiation", were not labeled with the type, assay or date of assay of materials contained therein.

- in that the 13 millicurie strontium-90 beta gauge, although labeled with the words, "Radiation Hazard" and the radiation symbol, was not labeled with the words, "Caution - Radioactive Material" and the type, assay and date of assay of materials contained therein.

20.401 "Records of surveys, radiation monitoring, and disposal"
(b) "Records of survey results" - in that the licensee has not maintained records of surveys conducted in the isotope storage room and isotope handling laboratory.

(b) "Records of waste disposal" - in that although the licensee maintains records of the shipment of radioactive materials, these records do not show the quantities of radioactive material.

It was felt that some hazard was entailed from the licensee's failure to make adequate surface contamination and air surveys. Therefore, a follow-up inspection was recommended. On May 15, 1959, DLaR informed the licensee of the items of noncompliance. On June 12, 1959, Mr. John E. Lewis notified DLaR of the corrective action which had been taken. The licensee's letter of June 12, 1959 was acknowledged by DLaR on June 19, 1959 by stating that it appeared adequate steps had been taken to correct the deficiencies brought to their attention.

10. Action Taken on Items of Noncompliance

A. Citation (DLaR's)

No surveys were made in the isotope storage area to evaluate the radiation hazards incident to the evaporation of liquids containing radioactive waste material. This constitutes a violation of Section 20.201(b), "Surveys". The concentrations of radioactive material existing in the air about the open canopy type hood during the evaporation process were not determined to assure compliance with Section 20.101(b), "Exposure of individuals in restricted areas." Also, no determination was made of the concentrations of radioactive material in the hood exhaust to determine compliance with Section 20.103(b), "Concentrations in effluents to unrestricted areas."

Although surveys were conducted in the isotope storage room and in the chemistry laboratory in Building 44, to evaluate levels of radiation, no surveys were made to determine possible levels of contamination in these areas as required by Section 20.201, "Surveys."

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that, "The evaporation method for concentrating liquid wastes for disposal has not been used since the inspection on October 28, 1958. When this activity is resumed, we will employ air sampling apparatus (supplied by our Industrial Hygiene Group) to evaluate the concentration of radioactive material in the air in the room and in the hood exhaust system. A smear test survey program was initiated in May, 1959 to determine contamination levels in the isotope laboratories and in the isotope storage area. Surveys of this nature are to be conducted monthly.

Current Status

Lewis re-confirmed the fact that the evaporation of liquids containing radioactive waste material had been discontinued, and therefore no air samples had been taken of the hood exhaust or room air. He also reported that the only work now being performed within this room (the isotope storage area) was the unloading approximately once every 3 months of radioactive shipments. It was noted that monthly routine dose rate and smear surveys are being made of their radio-isotope facilities. Maximum smear results, as counted in their micromil window detector, showed 18 counts per minute on the ledge of the hood in Room 606 and 49 counts per minute on the electronic bench in Room 608.

B. Citation (DL&R's)

The laboratory in Building 29 in which approximately 10 mc of Hydrogen 3 were stored, the tritium laboratory in Building 29 in which approximately 20 curies of Hydrogen 3 were stored and used, and the isotope storage room where millicurie quantities of byproduct material were stored were not posted as required by Section 20.203(e)(1), "Caution signs, labels, and signals."

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that, "All of the tritium storage and work areas have been transferred to the expanded isotope laboratories in Building 44 and the tritium work is confined to two hood enclosures in Rooms 600 and 608 of this Building. All of the areas in question have been posted as of January, 1959 with proper warning signs as required by Section 20.203(e)(1)."

Current Status

The laboratory facilities (gas handling systems) in Building 29 where tritium was stored or used have been transferred to Rooms 600 and 608 in Building 44. It was noted by the inspector and confirmed by Lewis that the laboratories in Building 29, which

previously housed the tritium facilities, were no longer being used for working with radioactive material and had been returned to a normal "cold" laboratory status. Laboratory rooms 600, 606, and 608 in Building 44 and the isotope storage room were posted with the sign "Caution - Radioactive Material" and prescribed symbol. In addition, the hood in Room 600, housing the tritium gas handling system and the tritium hood in Room 608 were posted with the sign "Caution - Airborne Radioactivity Area" and prescribed symbol. Radiation surveys by the licensee showed maximum accessible radiation dose rate of 1.4 mr/hr.

C. Citation (DLAR's)

The following containers of byproduct material were not labeled as required by Section 20.203(f)(1) and (f)(4), "Caution signs, labels, and signals":

The can containing about 10 millicuries of Hydrogen 3 located in a laboratory of Building 29; the gas handling system containing approximately 20 curies of Hydrogen 3 located in the tritium laboratory in Building 29; the drums of radioactive waste located in the isotope storage room; and the 13 mc Strontium 90 beta gauge located in the foil mill.

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that byproduct material, isotope containers, radioactive waste drums, and the Strontium 90 beta gauge had been labeled as of January 1959 in accordance with Sections 20.203(f)(1) and (f)(4).

Current Status

An inspection of those containers in which byproduct material was being used or stored revealed all were labeled with a sign "Caution - Radioactive Material" and prescribed symbol and showed the kind, quantity, and date of measurement of the quantity of radioactive material each contained, except for the drums of radioactive waste located in the isotope storage room, which lacked the information as to the kind, quantity, and date of measurement of the quantity of radioactive materials each contained.

D. Citation (DLAR's)

The byproduct material containers located behind the 12" brick wall in the isotope storage room were not labeled as required by Section 20.203(f)(4), "Caution signs, labels, and signals."

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that "byproduct material, isotope containers, radioactive waste drums, and the Strontium 90 beta gauge had been labeled as of January 1959 in accordance with Sections 20.203(f)(1) and (f)(4).

Current Status

Byproduct material containers in the isotope storage room were labeled with the sign "Caution - Radioactive Material" and prescribed symbol and showed the kind, quantity, and date of measurement of the quantity of radioactive material each contained.

E. Citation (DLAR's)

Records showing the results of surveys made in the radioisotope laboratories and in the isotope storage room were not maintained as required by Section 20.401(c), "Records of survey, radiation monitoring and disposal."

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that records of surveys conducted in isotope laboratories and the storage room were currently being maintained.

Current Status

Monthly routine surveys are being made of the facilities where radioisotopes are being used or stored, and the results recorded.

F. Citation (DLAR's)

Records showing the transfer and disposal of byproduct material were not kept as required by Section 30.41(a), "Records". Although shipment records were maintained, these did not specify the quantities of radioactive material involved.

Reported Action Taken

In his letter of June 12, 1959, Lewis reported that since January of 1959, records had been revised and consolidated to include records of transfer and disposal of byproduct material and that quantities of radioactive material were being inventoried in terms of curies or fractions thereof.

Current Status

Records of waste disposal and procurement have been consolidated. Since all byproduct material procured is disposed of by transfer to ORNL, the amount received is also the amount (less decay) listed for disposal by transfer.

11. Additional Information

It was noted that although dose rate and smear surveys are being routinely made in the radioisotope laboratories, the smears are not being counted for possible tritium contamination. Monthly urinalyses are being performed, however, for all tritium users, with maximum body burden to date being 8 microcuries.

The radiation instrument used by the inspector was a Nuclear Measurements GS-2, No. 5571, GM survey meter, calibrated 4-28-59.

INITIAL

PART 40 INSPECTION

ALUMINUM COMPANY OF AMERICA
425 Sixth Avenue
Pittsburgh 19, Pennsylvania

Date of Inspection: July 21, 1959

Persons Contacted by Inspector:

Mr. O. E. Proctor, District Purchasing Agent
Mr. G. O. Pratt, Senior Chemical Engineer Buyer

Persons Accompanying Inspector:

Mr. Andrew Mammarelli, Pennsylvania Dept. of Health, Division of Industrial Hygiene, Pittsburgh, Pennsylvania

DETAILS

Approximately 10 pounds of uranium and thorium compounds are used yearly as analytical reagents by the Aluminum Research Laboratories at New Kensington, Pennsylvania. The compounds, consisting for the most part of uranium acetate and oxide, are used in Building 29 under the supervision of Mr. A. L. Miller, Assistant Chief of the Analytical Division. Procurement and inventory records of the Aluminum Research Laboratories are being maintained by stores inventory cards. In addition, an inventory is taken yearly which is submitted to Mr. G. O. Pratt, Senior Chemical Engineer Buyer. The inventory report also includes an estimate of their yearly requirements. Pratt reported that he was responsible for seeing that source material procurement by all Aluminum Company of America plants does not exceed their license limit. This was accomplished, he explained, by not allowing individual plants to procure source material in excess of their yearly estimate without his approval. He reported that the total yearly estimates for all plants were well within the license limit. Pratt stated that occasionally a plant would procure source material in excess of their yearly estimate, but only after a check had been made by himself to ensure that total procurements for all plants would not exceed the license limit.

It was noted that the source material inventory for the Aluminum Research Laboratories as of March 1, 1959, consisted of:

uranium	acetate	- 7.7 lbs.
"	chloride	- 0.25 lbs.
"	nitrate	- 0.50 lbs.
"	oxide	- 5.0 lbs.
thorium	chloride	- 0.5 lbs.
"	nitrate	- 0.625 lbs.

Proctor reported that the following source material had been procured by the Aluminum Research Laboratories:

1,812 grams of uranium acetate, 1-1-58 thru 12-31-58
113 grams of uranium nitrate, 1-1-58 thru 12-31-58
1,812 grams of uranium acetate, 1-1-59 to date.