

## COMPLIANCE INSPECTION REPORT

1. Name and address of licensee  <b>ALUMINUM COMPANY OF AMERICA Alcoa Research Laboratories Freeport Road New Kensington, Pennsylvania</b>	2. Date of inspection  <b>September 28, 1961</b>
	3. Type of inspection <b>Follow-up</b>
	4. 10 CFR Part(s) applicable  <b>20 - 30</b>

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

<u>License No.</u>	<u>Date</u>	<u>Exp. Date</u>
<b>37-7653-2 (Follow-up) amend. 2 (amended in its entirety)</b>	<b>9/20/61</b>	<b>4/30/62</b>

**Scope:** A. 2 curies of each byproduct material of any byproduct material between Atomic Nos. 1 and 83, inclusive, except the following, in any form; B. 10 millicuries, total possession limit for Items A & B is 10 curies of Strontium 90 in any form; C. 1 source of 13.5 millicuries of Strontium 90 as sealed source (Tracerlab, Inc. Model S-2A); D. 50 curies of Hydrogen 3 in any form, all to be used for research and development as defined in Section 30.4(k) of Title 10, Code of Federal Regulations, Part 30, "Licensing of Byproduct Material".

**Conditions:** #11-Byproduct material licensed in subitems C may also be used at the Aluminum Company of America, Fabricating Works, Foil Mill, 12th Street and 2nd Avenue, New Kensington, Pennsylvania. #12-The licensee shall comply with the provisions of Title 10, Part 20, Code of Federal Regulations, Chapter 1, "Standards for Protection Against Radiation". #13-Byproduct material shall be used by, or under the direct, personal supervision of, individuals approved by the Isotopes Committee, John E. Lewis, Chairman. #14-Byproduct material licensed as sealed sources shall not be opened by the licensee. (CONT'D)

## 6. Inspection findings (and items of noncompliance)

A follow-up inspection was performed to determine the corrective action taken by the licensee with respect to seven items of noncompliance noted during the first reinspection. All of these items had been corrected as required by the Commission. The inquiry into these items revealed certain conditions in which were observed or otherwise noted items of noncompliance. These items are as set out below:

## 20.105 "Permissible levels of radiation in unrestricted areas"

(b)(1) & (2) - in that a radiation level of 3.75 mr/hr existed in an unrestricted corridor outside of the radioisotope storage room such that an individual in the area could receive a dose in excess of 2 mrem in one hour and a dose in excess of 100 millirem in seven consecutive days. (See item 17.C. of report details.)

## 20.201 "Surveys"

(b)- in that the radiation surveys conducted in the vicinity of a 13.5 millicurie Sr-90 beta gauge were inadequate to measure the levels of ionizing radiation of very low penetrating power. (See item 16.C. of report details.)

- in that radioactive material had accumulated in the licensee's storage

(CONT'D)

7. Date of last previous inspection  <b>January 18, 1961</b>	8. Is "Company Confidential" information contained in this report? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Specify page(s) and paragraph(s))
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## DISTRIBUTION:

3 cys - CO-HQ  
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Approved by:

**Archibald J. Fleming**  
(Inspector)

**Robert W. Kirkman, Director**  
**Region I, Division of Compliance**  
(Operations office)

**November 2, 1961**

(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.

ITEM 5 (CONT'D)

<u>License No.</u>	<u>Date</u>	<u>Exp. Date</u>
37-7653-2 (Follow-up) amend. 2 (amended in its entirety)	9/20/61	4/30/62

Conditions: continued -

#15-Except as provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7 and 8 of this license in accordance with statements, representations, and procedures contained in his application dated March 16, 1960 and in his letter from John E. Lewis dated April 21, 1958. #16-Each sealed source of licensed material to be used outside of a shielded exposure device shall be acquired from the supplier with a durable, legible and visible tag permanently attached. The tag shall be at least 1 inch square, shall bear a conventional radiation symbol and a minimum of the following instructions: "Danger - Radioactive Material, Do Not Handle, Notify Civil Authorities If Found". #17-Written administrative instructions entitled "Radiation Protection Procedures, Alcoa Research Laboratories" submitted with application dated March 16, 1960 shall be followed and a copy of these instructions shall be made available to each individual using or having responsibility for the use of byproduct material. Any changes in these administrative instructions shall have the prior approval of the Isotopes Branch, Division of Licensing and Regulation. #18-Byproduct material shall not be used in or on human beings, in products distributed to the public nor in field applications where such activity is released.

- #19- A. Each sealed source acquired from another person and containing byproduct material with a half-life greater than 30 days and in any form other than gas, shall be tested for leakage and/or contamination prior to use. In the absence of a certificate from a transferor indicating that a test has been made within 6 months prior to the transfer, the sealed source shall not be put into use until tested.
- B. Each sealed source fabricated by the licensee shall be tested for leakage and/or contamination immediately after fabrication. If the test reveals the presence of 0.005 microcuries or more of removable contamination, the licensee shall repair and/or decontaminate and retest the source. Sealed sources fabricated for distribution and containing byproduct material (with the exception of solid metallic Iridium 192, byproduct material with a half-life not exceeding 30 days and byproduct material in the form of gas) shall, in addition to an initial test upon fabrication, be stored for a period of 7 days and retested prior to being distributed.
- C. Each sealed source containing byproduct material with a half-life greater than 30 days and in any form other than gas, shall be tested for leakage and/or contamination at intervals not to exceed 6 months, except that each source designed as an alpha emitting source shall be tested at intervals not to exceed 3 months.

ITEM 5 (CONT'D)

<u>License No.</u>	<u>Date</u>	<u>Exp. Date</u>
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Conditions: continued -

- D. The test shall be capable of detecting the presence of 0.005 microcuries of contamination on the test sample. The test sample shall be taken from the sealed source or from appropriate surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- E. If the test required in A or C above reveals the presence of 0.005 microcuries or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the Director, Division of Licensing and Regulation, U. S. Atomic Energy Commission, Washington 25, D. C., describing the equipment involved, the test results and the corrective action taken. A copy of such report shall be sent to the manager of the nearest AEC operations office listed in Appendix D of Title 10, Code of Federal Regulations, Part 20.

ITEM 6 (CONT'D)

bin, but a survey of the radiation level in the office below the bin had not been made to assure compliance with Section 20.202 "Personnel Monitoring" (a)(1), the need for personnel monitoring devices for the individuals working in the office. (See item 17.C. of report details.)

20.203 "Caution signs, labels and signals"

- (c) "High Radiation Areas" (2) - in that a high radiation area existing above a permanent storage facility had not been equipped with a control device which would make an individual entering aware of his entry into the area. (See item 17. C. of report details.)

20.401 "Records of surveys, radiation monitoring and disposal"

- (b) - in that records of the measurements of radiation levels in the working areas were not maintained. (See item 13.C. of report details.)

## PART 30 INSPECTION

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

Date of Inspection: 9/28/61 (Announced)

### Persons Accompanying Inspector:

Peter Rentos, Industrial Hygienist, Division of Occupational Health,  
Pennsylvania Department of Health

### Persons Contacted:

Mr. John Lewis, Research Engineer, Chairman of the Radioisotope  
Committee  
Dr. L. M. Foster, Chief Physical Chemistry Division

## DETAILS

### 9. Background Information

Mr. B. L. Harless conducted an initial inspection of the licensee's facilities on 10/28/58. The following items of noncompliance were noted:

- 20.201 "Surveys" (b)(1) - Evaporating procedures of radioactive waste were being done but no evaluation had been made of the concentration of radioactive material in the air effluent produced in these procedures. (2) - Surface contamination studies had been incomplete.
- 20.203 "Caution signs, labels and signals"
  - (e) "Additional requirements" (1) - areas (three instances) were not properly posted to indicate the presence of radioactive material.
  - (f) "Containers" (4) - storage containers (five instances) were not properly labeled to indicate the presence of radioactive material.
- 20.401 "Records of surveys, radiation monitoring, and disposal"
  - (b) - records of survey results and records of waste disposals were not properly maintained.

The initial inspection report was transmitted to the Division of Inspection on 12/15/58. The memorandum of transmittal recommended that a followup inspection be scheduled. DLAR received the inspection report on 1/20/59.

On 11/11/58, Mr. R. C. Williams of the Chicago Operations Office performed an assist inspection of the facilities of the Alcoa Research Laboratories at 3300 Missouri Avenue, East St. Louis, Illinois. No items of noncompliance were noted during this inspection.

DLAR, by letter dated 5/15/59, informed the licensee of the items of noncompliance noted in the initial inspection and requested notification

of corrective action within 30 days. Alcoa, by letter dated 6/12/59, informed DLAR that they had corrected the items of noncompliance noted in the initial inspection. DLAR, by letter dated 6/19/59, informed the licensee that matters determined at the initial inspection would be reviewed at the next inspection.

On 7/21/59, a follow-up inspection was conducted by P. R. Nelson of this office of the items of noncompliance determined at the initial inspection of 10/28/58. One item of noncompliance was found to be uncorrected as follows:

20.203 "Caution signs, labels, and signals"

(f)(4) "Containers"

- in that waste drums were not properly labeled to indicate the presence of radioactive material.

It was also reported that evaporation of liquid wastes had ceased, and if they were resumed, adequate evaluations would be made.

The follow-up inspection report was forwarded to DLAR on 8/10/59. DLAR, by letter dated 10/7/59, informed the licensee of the item of noncompliance, determined at the follow-up inspection.

On 1/18/61, Mr. E. Epstein of this office performed the first reinspection of the licensee's facilities. The inspection report dated 3/10/61 noted items of noncompliance. Under a memorandum dated 3/23/61, the inspection report was transmitted to the Division of Compliance, Headquarters. The memorandum stated that a follow-up inspection would be made.

On 4/4/61, the Division of Compliance, Headquarters forwarded the inspection report and memorandum to DLAR. The memorandum sent by the Compliance Division, Headquarters suggested a change in the substance of one of the items in the report, i.e., an item of noncompliance with Section 20.201(b).

DLAR, in a letter dated 8/1/61, informed the licensee that it appeared certain activities were not conducted in full compliance with the regulations. Items of noncompliance were listed in the letter. DLAR requested that corrective action be taken or instituted within 30 days. In a letter dated 8/29/61, Mr. John E. Lewis informed DLAR of the corrective action that the licensee had taken. DLAR, by letter dated 9/13/61, stated that the corrective action taken by the licensee with regard to the items, would be reviewed during the next inspection of the facility.

10. Current Status

A follow-up inspection was performed on 9/28/61. The details of the inspection are reported in the following manner: The paragraph noting the item of noncompliance in DLAR's letter of 8/1/61 is listed first (Subitem A). The corrective action taken on the item of noncompliance as stated in the licensee's letter of 8/29/61 is listed next (Subitem B). The current status at the time of the follow-up inspection is then listed (Subitem C). Additional information is included in Item 18 at the end of the report.

11. Paragraph 1 of DLAR's Letter Dated 8/1/61

A. "The 13.5 milliecurie Strontium 90 beta gauge was used at your Alcoa

Aluminum Foil Mill rather than the Alcoa Research Laboratories as required by License Condition No. 10, 'Authorized Place of Use'."

- B. "Application was made on August 23, 1961 to have our license amended to reflect the change in location of the gauge from Alcoa Research Laboratories to the Foil Mill, Fabricating Works, 12th Street and 2nd Avenue, New Kensington, Pennsylvania."
- C. On 9/20/61, DL&R issued Amendment No. 2 to the license authorizing the use of the 13.5 mc Sr-90 beta gauge at the Aluminum Company of America, Fabricating Works, Foil Mill, 12th Street and 2nd Avenue.

12. Paragraph 2 of DL&R's Letter

- A. "No copies of your written administrative instructions were supplied to individuals using or having responsibility for use of byproduct material in the Foil Mill, in violation of License Condition No. 18."
- B. "Copies of written administrative procedures have been distributed to plant personnel connected with the operation and supervision of the beta thickness gauge in the Foil Mill."
- C. John E. Lewis, Chairman of the Radioisotope Committee, confirmed that copies of written administrative procedures had been distributed to plant personnel. A copy of the procedures was also noted to have been posted on the employee's bulletin board at the north end of the Mill.

13. Paragraph 3 of DL&R's Letter

- A. "Surveys conducted in the General Chemistry Laboratory were inadequate to fully evaluate the radiation hazards incident to the evaporation of liquids containing radioactive material, in violation of Section 20.201(b), 'Surveys'. The concentrations of radioactive material existing near and about the enclosed exhaust hood were not determined to assure compliance with Section 20.103(a), 'Exposure of individuals to concentrations of radioactive material in restricted areas'. Also, no determination was made in the hood exhaust to determine compliance with Section 20.106(b), 'Concentrations in effluents to unrestricted areas'."
- B. "Liquid wastes have not been concentrated by evaporation since the first of the year. Liquid wastes have been processed by removing active materials via precipitation or converting the liquid to solid form by the addition of plaster of Paris.

We are awaiting receipt of air sampling equipment which has been ordered from the Gelman Instrument Company. The equipment has a sampling capacity of 4 cfm and will be used to monitor effluents in the vicinity of the exhaust hood and in the exhaust stack. Liquid waste processing by evaporation will not be resumed until this equipment is received."

- C. Mr. Lewis stated that activities causing radioactive wastes were surface reactivation studies, isotope dilution analyses, radioactivation analyses and surface film studies. These activities usually involved

one millicurie amounts per experiment of such radioactive materials as Co-60, Zn-65, Fe-55 and Fe-59. Larger amounts are handled on the occasions when materials are removed from their stock solutions. The studies have been continuing from November, 1960 to September, 1961. Co-60 and Zn-65 waste consists principally of solid machine chips which have been cut from aluminum ingots. The Fe-55 and Fe-59 was the principal type of material obtained in the form of liquid waste. Lewis confirmed that such liquid waste had not been concentrated by evaporation since the first of the year. Instead, residues of such waste were precipitated and the material was solidified by mixing it with plaster of Paris. Either Lewis or Robert Geiger, a Laboratory Technician, carried out this process in the hood in the hot laboratory or on the work benches in the laboratory when handling small amounts. Processing of waste was not a separate handling procedure but was done routinely in conjunction with their experiments. Lewis stated that the hardening of the material took from one to two hours; the handler's time in the area averaged about ten minutes. Pocket dosimeters were employed by the workers to monitor themselves in the working areas. Exposures were checked during the working periods by having the individual examine his self-reading dosimeter pin. Lewis stated that they checked their dosimeter exposures daily and recorded their results weekly. Lewis stated that he used Jordon survey meters to monitor the working area, but did not maintain records of these surveys. Radiation levels reportedly ranged up to 50 mr/hr.

Lewis reported that they had made only one shipment of radioactive waste to the Oak Ridge National Laboratory. The shipment was made on 9/26/61 via Associated Transport Motor Freight. Five 15 gallon drums were covered with snap ring covers and crated in white pine lumber. Contents of the cans were: (1) Aluminum ingot sections, (2) Aluminum machine chips, (3) Paper and rags, (4) Chemical residues combined with plaster of Paris, and (5) Aluminum machine chips. The amounts of waste material disposed were 10 mc of Co-60, 10 mc of Zn-65 and 10 mc of Fe-55 and Fe-59. The highest radiation level at the surface of the drums was noted to be 15 mr/hr.

In addition, 5 curies of tritium were disposed of in accordance with a method suggested by Oak Ridge. The tritium gas storage bulbs were surrounded with activated carbon. The material was imbedded in cement within a 4 gallon steel drum. The snap ring cover of the drum was welded to the drum.

Lewis reported that they had received all the auxiliary equipment for air sampling, but they had not received the air sampler itself. He said that on receipt of the equipment he planned to resume liquid waste processing by evaporation, because he considered it to be a more efficient method of waste disposal. He confirmed that he would use the sampler to monitor the effluents in the vicinity of the exhaust hood and in the vicinity of the exhaust stack.

14. Paragraph 4 of DIAR's Letter

- A. "The individual using a 13.5 millicurie beta thickness gauge in a restricted area in the Foil Mill was not instructed in the hazards

of excessive exposure to radiation or radioactive materials, and in the precautions to minimize exposure as required by Section 20.206 (a), 'Instruction of personnel; posting of notices to employees.' Further, he was not instructed in the applicable provisions of the Commission regulations as required by Section 20.206 (a)."

- B. "Arrangements are being made for the writer to present a lecture on the fundamentals of radioactivity and radiation protection to the personnel engaged in operating the equipment. Copies of NBS Handbook No. 66 'Safe Design and Use of Industrial Beta-Ray Sources' and 10 CFR, Part 20, will be made available to these people as supplemental information. A tentative date of September 8 has been set for the lecture."
- C. Mr. Lewis stated that he had presented three lectures on the fundamentals of radioactivity and radiation protection to the personnel engaged in operating the equipment. Copies of NBS Handbook No. 66, 'Safe Design and Use of Industrial Beta-Ray Sources' and 10 CFR 20 were found to be available to these people as supplemental information. In a company memorandum to Mr. George Kane, Head of the Metallurgical Division at the Foil Mill, Lewis noted the dates and times and personnel present at these lectures:

<u>Date</u>	<u>Time</u>	<u>Personnel</u>
9/8/61	2:30 - 3:00 p.m.	S. Anthony G. C. Kane Roll Operators - J. Dudkowski E. Bittcher J. King W. Smith
9/8/61	3 - 3:30 p.m.	Roll Operators - A. Hudak S. Hydeck J. Ward
9/11/61	2:30 - 3 p.m.	S. Condrick C. Cope Mr. Tirdil Roll Operators - J. W. Folk W. T. McIntyre W. Loos H. E. Menk W. E. Muder

Lewis reported that the equipment could be used by any of the above twelve roll operators during three working shifts at the Foil Mill. Lewis said that because of the separation of activities between the research laboratory and the Foil Mill, he had not been acquainted with Mr. Anthony Kurucker, the operator at the time of the prior inspection. He said that the lecture had been given to all the operators then currently working. Mr. J. Dudkowski, the Roll Operator at the time of this inspection, confirmed that he had received the lecture.



15. Paragraph 5 of DLAR's Letter

- A. "The company at the Aluminum Foil Mill did not post nor have available for their employees a copy of the AEC's 'Standards for Protection Against Radiation', Part 20, Title 10, Code of Federal Regulations, a copy of their byproduct material license and a copy of their written administrative procedures in violation of Section 20.206 (b), 'Instruction of personnel; posting of notices to employees'. Also, Form AEC-3, 'Notice to Employees' was not posted at the Foil Mill as required by Section 20.206 (c)."
- B. "Copies of Form AEC-3, our byproduct material license, 10 CFR, Parts 20 and 30 and our written administrative procedures have been posted on the bulletin board on the outside wall of the mill foreman's office. Interested parties have been informed of the availability of these documents. A copy of written administrative procedures has been included in the machine operating instructions manual which is kept at the machine equipped with the beta-ray gauge."
- C. The employee's bulletin board outside of the mill foreman's office was visited. The office was located at the entrance to the north end of the Foil Mill in which the beta gauge was being used. On the board were posted a copy of Form AEC-3 "Notice to Employees", a current copy of 10 CFR 20, a current copy of 10 CFR 30, a copy of their byproduct material license #37-7653-2 w/amend. #2, and a copy of their written administrative procedures. These were all available for review by the employees.

16. Paragraph 6 of DLAR's Letter

- A. "Records showing the results of surveys made of the 13.5 millicurie Strontium 90 beta thickness gauge were not maintained as required by Section 20.401 (b), 'Records of surveys, radiation monitoring and disposal'."
- B. "Film badges have been attached to various parts of the foil rolling machine to monitor radiation dosage. Records of the exposure registered on the badges, as interpreted by St. John's X-Ray Laboratory, are being maintained. Records of periodic radiation surveys are likewise being maintained."
- C. Lewis reported that three film badges had been attached to the foil rolling machine in the following positions: (1) Operator's console (above and to the left of the operator, about 7 ft. high), (2) Rewind spindel (below and to the right of the operator about 2½ ft. high), (3) On the support holding the beta gauge. Lewis reported that the third film had been ruined by oil spray from the machine. The others had been mounted by means of heavy adhesive tape. It was observed during the inspection that the tape completely covered the film. The period for which the films had been posted extended from 2/20/61 to 8/24/61. The exposures recorded by these films were 900 mrem (0.2 mrem/hr) and 600 mrem (0.14 mrem/hr) in the first and second positions, respectively. Lewis reported that he

had surveyed the area using his Jordan Radeator survey meter, Model AGB-50 SR. Records of these surveys were maintained. An independent radiation survey was made in the area of the 13.5 millicurie Sr-90 beta gauge. Radiation detection instruments used were a GS-2 GM survey meter, Serial #5584 and calibration date 9/6/61 and a Juno ionization chamber, Serial #1628 and calibration date 7/5/61. The radiation levels were measured at various distances from the gauge containing the Sr-90 source. The gauge was situated at a height of  $4\frac{1}{2}$  feet. The foil passed below the gauge. A component of the radiation was apparently being scattered off the foil into the area in front of the machine. The hard component of the radiation level, as measured with a closed window GM meter, was 5 mr/hr at 1 foot from the gauge, 3 mr/hr at 2 feet and 0.75 at 3 feet. The soft component of the radiation level as measured with the Juno meter (beta rejection shield open) was 60 mr/hr at 1 foot; 36 mr/hr at 2 feet, 12 mr/hr at 3 feet, and 7 mr/hr at 4 feet from the gauge. Mr. Dudkowski indicated that he stood at the latter distance when operating the foil machine. The skin of his face, arms, and upper shoulders were uncovered such that no shielding was provided by his clothes. When questioned as to the amount of time he spent working in the area, Dudkowski could not give a specific figure. He reported that he worked an 8 hour shift, 5 shifts per week both in and around the machine area. After discussion with Dudkowski and Lewis, the time in the area was believed to range between one and four hours. Under the conditions of highest exposure time, (4 hours per shift) the dose of the soft component of radiation to the skin of the individual would range up to 1.82 rem i.e.,  $24\frac{1}{2}\%$  of the  $7\frac{1}{2}$  rem limit per calendar quarter. Lewis reported that their surveys conducted with the Jordan survey meter had not measured the soft component of the radiation because of the thickness of the meter's window. Similarly, he agreed that because the adhesive tape had shielded the film, the film badge survey conducted had not measured the soft component of radiation. Lewis said that he had planned to hang a badge by a wire over the machine, but had decided the wire would not remain in place because of the ordinary wear and tear involved in the operations at the mill.

17. Paragraph 7 of DLAR's Letter

- A. "The radiation area existing in the radioisotope storage room was not posted as required by Section 20.203 (b), 'Caution signs, labels and signals'. Also, the radiation area existing near the Strontium 90 thickness gauge was not posted as required by Section 20.203 (b).'
- B. "The radiation areas in the radioisotope storage room in the Radiochemical Laboratory and near the beta gauge in the Foil Mill have been posted with 4" x 4" signs reading 'Caution - Radiation Area'."
- C. The radiation area existing near the Sr-90 beta thickness gauge was posted with a sign worded, "Caution - Radiation Area" and radiation symbol.

The radioisotope storage room, Room 604 is located on the third floor of the research building. The storage area was a ceramic brick rectangular bin (about 5 feet long, 3 feet wide and 2½ feet high) at the far end of the room against the wall of building. The bin had two plastic lids (about ¼" thick) which covered the radioisotopes in storage there. A yellow line was painted in front of the bin in order to designate a step-off area. Lewis reported that the following amounts of isotopes were being stored in the enclosure:

<u>Kind</u>	<u>Quantity</u>	<u>Date of Assay</u>
Ag-110	17 mc	2/23/59
Al-26	580 uc	3/7/57
Co-60	30 mc	4/25/58
	350	4/25/58
	70	8/25/58
	70	12/31/57
	115	3/12/56
	125	1/1/55
	60	2/14/61
Cs-137	100 mc	2/3/59
C-14	10 mc	3/30/56
	10 mc	1957
	1.25 mc	1957
	1 mc	1957
Mn-54	200 uc	2/3/59
Na-22	35 uc-	1952
Ni-63	300 uc	4/25/55
P-32	160 mc	4/18/61
Sc-46	20 mc	8/30/60
Sr-90	5 mc	6/11/53
U-238	1 mc	3/15/59
Zn-65	10 mc	2/3/59
H-3	10 c	1/24/61

The storage room was posted with signs worded, "Caution - Radiation Area" and radiation symbol and "Caution - High Radiation Area" and radiation symbol. Lewis stated that he had found the radiation level at the top of the safe to have ranged up to 300 mr/hr. He expressed some question as to whether he had to comply with Section 20.203 "Caution signs, labels, and signals" (c) "High radiation areas" (2)-A control device for a high radiation area. He said that time spent for transfer operations within the step-off area was usually less than one minute. An independent radiation survey was conducted around the storage bin using the Juno ionization chamber survey meter. The highest radiation level at the surface of the plastic cover was found to be 250 mr/hr. Along a distance of one and a half feet above the cover the radiation level was found to be 100 mr/hr. The area was accessible in that it would be possible for an individual to climb atop of the plastic cover. It was pointed out to Lewis that on the basis of the area being accessible and on the basis of the 1½ foot rule as discussed in

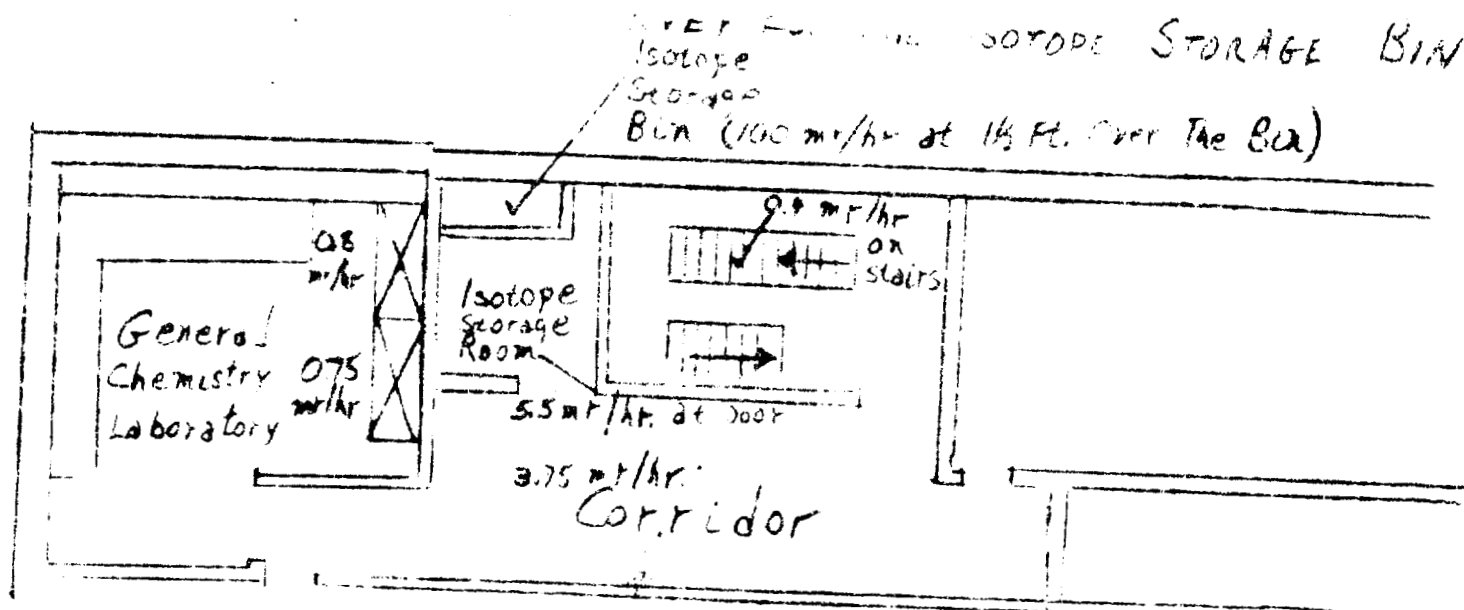
the inspection guide, the area is considered to be a high radiation area. Above the bin was the roof of the building. A radiation survey was made of the other areas around the storage room using the GS-2 GM survey meter. (See Exhibit "A"). In the corridor, the radiation level at a height of 3½' in front of the door to the room was 5.5 mr/hr; the radiation level at a distance of 3 feet from the door in the corridor was 3.75 mr/hr. Lewis reported that the corridor was unrestricted because deliveries were made through the corridor to the Organic Chemistry Laboratory on the same floor. The outside of the door to the room was posted with a sign worded, "Caution - Radioactive Materials" and radiation symbol.

In the room below the storage bin were the desks of two secretaries, M. Silvis and P. A. Petruny. The radiation at the desk directly under the storage bin was 0.8 mr/hr. (See Exhibit "A"). Lewis reported that the office area was restricted in that only Alcoa personnel were present in the room for a 40 hour work week and in that the licensee controlled access and occupancy in the room. It was calculated that under these circumstances an individual working in this area was likely to receive a dose in a calendar quarter in excess of 25 percent of 1½ rems. It was noted that the individuals did not wear personnel monitoring devices.

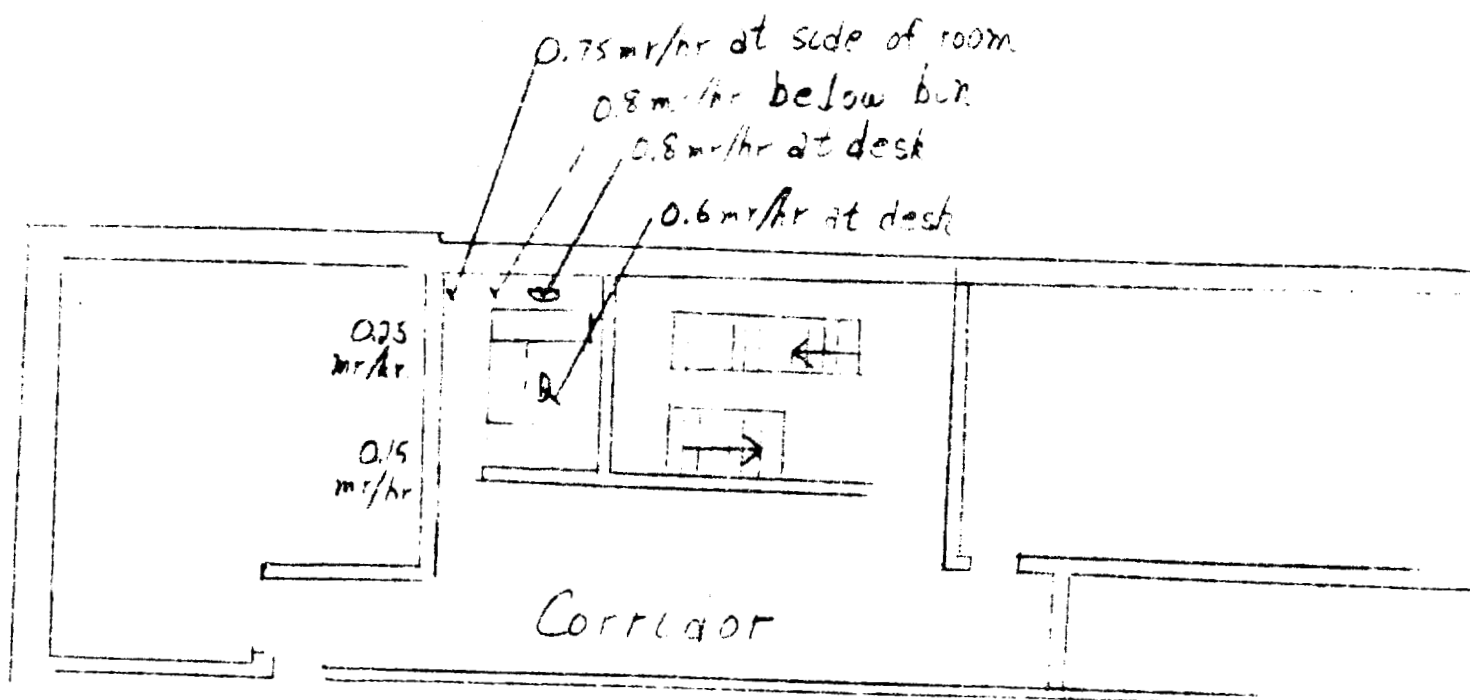
Lewis stated that he had surveyed the secretaries' room some time prior to the inspection but had not found such levels. He said that there had been a build-up of byproduct materials inventory in the storage bin which had brought about higher radiation levels in the area.

18. Additional Information

Lewis reported that tritium had not been used since February 1, 1961 because the authorized handler Mr. A. S. Gillespie, Jr., Research Engineer, had left the laboratories at that time. Mr. G. A. Seaman, Laboratory Technician, had also left. The only addition in personnel has been Mr. John E. Mrozinski, Laboratory Technician.



### Third Floor



### Second Floor

Exhibit "A"