

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee Wah Chang Corporation Albany, Oregon	2. Date of inspection June 14, 1960 3. Type of inspection Reinspection (1) 4. 10 CFR Part (s) applicable 10-CFR-20 and 40
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5. License number (s), issue and expiration dates, scope and conditions (including amendments)
 C-589 Feb. 17, 1960 - Feb. 28, 1961

6. Inspection findings (and items of noncompliance)
 The licensee used thorium oxide as a refractory agent in four electric induction furnaces from July 1957 through August 24, 1959. The material was removed from the furnaces and is now in storage pending sale or transfer. Records of surveys were available. Film badges were worn by personnel while working with thorium. Results indicated a maximum exposure of 180 mr for one two-week period. Exposures averaged less than 25 mr/wk. Written administrative instructions concerning the safe handling of thorium were viewed. The thorium was stored in a secured location. The only items of noncompliance observed or noted during the course of the inspection are as set out below:

Section 20.203 - Caution signs, labels, and signals

- (e)(2) - In that the storage shed containing 2639.4 lbs. of thorium oxide was not posted as specified. See par. 17, Details.
- (f)(2) - In that the 30-gallon and 3-gallon containers in which the 2639.4 lbs. of thorium oxide were stored were not labeled as specified. See par. 17, Details.

7. Date of last previous inspection October 16, 1958	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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 - 2 - Division of Licensing & Regulation, Wash.
 - 3 - Inspection Division, HA

Approved by: *[Signature]*
 Carl N. Zenger, Director
 Inspection Division
 Hanford Operations Office

June 28, 1960
 (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 root 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.

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Albany, Oregon

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June 14, 1960

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Reinspection (1)

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10-CFR-20 and 10

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Approved by

G. B. Yasberger
G. B. Yasberger
Carl N. Langer, Director
Inspection Division
Hanford Operations Office
(Operations office)

June 28, 1960
(Date report prepared)

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DETAILS

Inspection History

9. An initial inspection of the licensee (License No. C-3966) was made on March 27, 1958. Items of noncompliance were noted in that no surveys for air contamination had been made, and posting requirements were not adhered to. A follow-up inspection was recommended. The licensee was notified of the deficiencies by letter from DI&R, symbol: DIR:CMF 40-943, dated May 9, 1958. The licensee replied by letter dated June 3, 1958, indicating corrective action taken. A follow-up inspection was made on October 16, 1958, by HOO. The items of noncompliance were found to be adequately corrected. No other items of noncompliance were noted. License No. C-3966 expired on January 31, 1959. License No. C-4589 was issued on February 18, 1959, and renewed on February 17, 1960.

Inspection Party

10. An unannounced reinspection of the licensee was made on June 14, 1960, by G. R. Yesberger of the Hanford Operations Office. Mr. David Wagstaff of the Oregon State Board of Health was present during the inspection. Mr. A. G. Jones, assistant manager for manufacturing, was contacted and furnished the majority of the information included in the report. Information concerning the surveys and inventory was received by mail on June 22, 1960, from Mr. Daniel Long, department supervisor. He was on vacation at the time of the inspection.

Program

11. Thorium oxide was used in four electric induction furnaces as insulating material in the columbium reduction plant from July 1957 until August 24, 1959. The material was removed from the furnaces on August 24, 1959, when it was determined that graphite crucibles rather than tungsten crucibles could be utilized in the process. The refractory material was then changed from thorium oxide to carbon. The company was said to be still using the source material as a refractory agent in the furnaces in the Glen Cove plant at Long Island, New York. The source material at the Albany plant is in storage pending transfer or sale according to Mr. Jones.

Administrative Instructions

12. Safety rules concerning the handling of thorium oxide were said to be issued to all persons working with the material. The safety rules included such information as personal cleanliness measures, protective clothing and equipment procedures, and housekeeping methods. A copy of the procedure is being retained in the backup material.

Storage Facilities

13. The thorium oxide removed from the induction furnaces is stored in a shed, approximately 6'x15' in size, which is located on the south side of the Tantalum Building. The storage shed is kept locked, with the foreman of the building controlling the keys.

Surveys

14. Results of air samples taken during the month of December 1958, while loading the thorium oxide into the induction furnace indicated a maximum alpha activity of 0.70×10^{-13} uc/ml and beta-gamma activity of 0.14×10^{-13} uc/ml. A copy of the report analyzed by the Radiation Detection Company of Palo Alto, California, is being retained in the backup material. Personnel monitoring surveys were said to be made on each shift with an "Oramaster" GM, with ranges 0-.2, 2, and 20 mr/hr. The date, shift, person inspected, inspecting person, reading, and any remarks were recorded on a mimeographed form. The coveralls of the personnel were found to be contaminated on occasion. Following the removal of the thorium oxide from the furnaces and decontamination of the equipment, a radiation survey was made by Mr. John Cobb of the process engineering group. A copy of the letter received by the HOO Inspection Division from Mr. Cobb on June 22, 1960, is included as Exhibit #1.

Records of Receipt and Transfer

15. Records of receipts and transfers submitted by Mr. Long indicated the following:

<u>Purchased</u>		<u>Shipped</u>		
<u>Date Recd.</u>	<u>Weight</u>	<u>Date</u>	<u>Weight</u>	<u>To</u>
6-27-57	150 lbs.	3-17-59	500 lbs.	Davison Chem. Co.
12-12-57	150 lbs.	4-4-59	3 lbs.	Boeing Aircraft
1-1-58	100 lbs.			
1-2-58	500 lbs.	Total	503 lbs.	
1-2-58	1 lb. (Th(NO ₃))			
2-1-58	1000 lbs.			
2-2-59	1000 lbs.			
4-18-59	500 lbs.			
Total	3401 lbs.			

Balance to date

Received	3401 lbs.
Minus 0.5% moisture in received material	17 lbs.
Actual thorium oxide	3384 lbs.
Shipped	503 lbs.
	2881 lbs.
Actual Inventory	2639.4 lbs. (as oxide)
	241.6 lbs. (in waste containers as waste).

Personnel Monitoring

16. Film badges supplied by the Tracerlab Company were worn on a two-week basis by fifteen personnel working with the thorium oxide. A maximum exposure of 180 mr was recorded for the plant foreman for the period 3-2 to 3-18-59. Exposures averaged less than 25 mr per week. The film badge service was discontinued following the removal of the thorium oxide from the induction furnaces.

Posting

17. The outside of the thorium oxide storage shed was posted with a yellow and magenta sign 18"x18", with the approved radiation symbol and the words: Radiation Area. A total of six 30-gallon drums and eleven 3-gallon cans in which the thorium oxide and waste were stored were not labeled. These posting and labeling deficiencies were discussed with Mr. Jones and he agreed to post the storage shed with a sign having the words "Caution - Radioactive Materials" and that he would similarly label the drums.

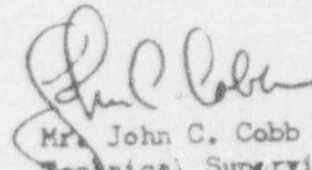
WAH CHANG CORPORATION
ALBANY DIVISION
ALBANY, OREGON

Memo. To: Mr. Yesberger, AEC, Richland, Washington

June 21, 1960

Subject: RADIATION SURVEY COLUMBIUM REDUCTION PLANT

After the utilization of thorium oxide as a furnace insulating material in the columbium reduction plant was discontinued, the processing area was thoroughly cleaned to remove residual thorium oxide. A radiation survey was made by the undersigned to determine the effectiveness of the cleanup. A Universal Atomics Model UAC 408 Survey Meter was utilized. Alpha count below 500 cpm and gamma-beta at or below background was considered adequate. The first survey cleared the production area except for an equipment locker. This was subsequently cleaned and a resurvey cleared the entire processing area.



Mr. John C. Cobb
Technical Supervisor, Separations Plant
Wah Chang Corporation, Albany, Oregon

JCC:mr