

COPY

UNITED STATES ATOMIC ENERGY COMMISSION

## COMPLIANCE INSPECTION REPORT

1. Name and address of licensee <b>Research Chemicals, Inc. 170 West Providencia Street Burbank, California</b>	2. Date of inspection <b>December 6, 1960</b>
	3. Type of inspection <b>Reinspection</b>
	4. 10 CFR Part(s) applicable <b>20 and 40</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>	<u>Scope and Condition</u>
C-4013	3-11-58	3-31-59	

6. Inspection findings (and items of noncompliance)

Research Chemicals, Inc., has received 50 tons of uranium extracted tailings since the date of the previous inspection. Approximately 500 pounds of this material has been processed to recover its rare earth content. A byproduct of the process is a residue containing an estimated 2.5% thorium. The licensee has retained this material for recycling. The licensee has disposed of approximately 190 microcuries thorium to the sanitary sewer. The licensee has maintained records of receipt of his starting material. The only item of noncompliance noted or otherwise observed during the course of this inspection is set out below:

## 10 CFR 20.401 Records of surveys, radiation monitoring and disposal

The licensee failed to record the disposal to the sanitary sewer of an estimated 190 microcuries of thorium. See paragraph 19 of report details.

7. Date of last previous inspection <b>October 16, 1960</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:

Original of report - Division of Compliance,  
Headquarters

One copy of report - Division of Licensing and Regulation, Headquarters

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PDR FOIA  
SIEFERT96-448 PDR

W. J. Cooley

(Inspector)

H. E. Book

San Francisco

(Operations office)

DEC 27 1960

(Date report prepared)

ORIGINAL SIGNED BY  
W. J. COOLEYORIGINAL SIGNED BY  
H. E. BOOK

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.

RECOMMENDATIONS SHOULD BE SET FORTH IN A SEPARATE COVERING MEMORANDUM

Section I  
General Information, Organization  
and Procedures, Inspection History

9. This unannounced reinspection visit was conducted by W. J. Cooley, SAN Compliance Division, at the facilities of Research Chemicals, Inc., Burbank, California. The visit was in the presence of Dr. P. V. Kleber, General Manager; Mr. F. Nathanson, Production Manager; and Mr. John Vaden, Radiation Safety Officer. No State representation was included in this visit.
10. An initial inspection of this licensee was conducted on October 16, 1959. At that time one item of noncompliance was noted in that containers of licensed material were improperly labeled. The licensee was notified of this deficiency and informed that labeling would be reviewed during the next inspection of facilities. This notification was by letter, Johnson to Kleber, dated November 18, 1959.
11. Research Chemicals, Inc., is a division of Nuclear Corporation of America. The interest of Research Chemicals is in the recovery of rare earths from rare earth rich "residues". In addition to Dr. Kleber and Mr. Nathanson, the licensee employs three technicians who are involved in the use of these rare earths. The licensee makes use of the services of Mr. John Vaden, Radiation Safety Officer of Isotopes Specialties Co., another Division of Nuclear Corporation of America.
12. At the time of inspection the licensee had in his possession approximately fifty tons of ore, i.e., rare earth rich material which contains 0.03% thorium. He also possessed approximately 500 pounds of process waste which contained approximately 2.5% thorium. Mr. Nathanson estimated the thorium content of the process waste. At the time of inspection Dr. Kleber estimated the thorium content of the rare earth residue starting material as 0.1%. He later corrected this to 0.03% thorium in a letter addressed to the inspector. A copy of this letter is attached to this report as Annex A. Dr. Kleber stated the starting material consists of tailings from a uranium extraction process and that it contains essentially no uranium. He stated that no uranium was detected in a sample of the material by spectrographic analysis. He further stated that the rare earth content of the material was approximately 13.5%.
13. The licensee receives his starting material from the General Services Administration from a stock pile of rare earth residues. Records of receipt of this residue is in the form of a sales contract and receiving invoice from GSA. The supply of 50 tons of thorium bearing ore was received on or about August 18, 1960 according to Dr. Kleber.

Section II  
Facilities and Equipment

14. Research Chemicals, Inc., shares the facilities of Isotopes Specialties Company (license 4-580-) in that all equipment and buildings used by both licensees exist within a common restricted area. The office areas of the two licensees are common, the laboratory facilities are separated by concrete walls, the two licensees share a common outdoor storage yard and also indoor storage buildings at the rear of the property.
15. Research Chemicals, Inc., <sup>processes</sup> rare earth rich ores on a pilot plant scale. Polyethylene drums are used as reaction vessels. The original ore is damp, the process a wet chemical process and the resultants damp, according to Dr. Kleber. The process with respect to thorium consists of two acid dissolutions. After the second dissolution the thorium (and other elements) are precipitated. This precipitated fraction is collected and stored for possible future recycling. The solution fraction is essentially free of thorium according to Kleber and is further processed for its rare earth content.
16. Research Chemicals stores its starting material and the thorium upgraded precipitant in 55-gallon drums which in turn are stored in a locked bay of Research Chemicals, Inc., buildings at the rear of the property. The 50 tons of ore is stored in 250 pound increments each drum containing approximately 0.075 pounds of thorium. The "upgraded" ore is stored in a total of 25 drums each containing an average of 0.05 pounds of thorium according to Nathanson. The keys to this storage facility are kept by Mr. Nathanson.

17. Research Chemicals' portion of the common restricted area is monitored by Mr. John Vaden, RSO of Isotope Specialties Company. This surveying is performed routinely on a weekly basis and is recorded as part of the Isotope Specialties survey program. The main purpose of these surveys is to determine spread of contamination from the Isotope Specialties operations which are of significantly higher level than Research Chemicals, Inc.'
18. Isotope Specialties Company provides a film badge service to Research Chemicals on a monthly basis. Copies of film badge reports are retained by Dr. Kleber. These reports were reviewed for the period January 1, 1960 through October, 1960. ~~No maximum~~ exposure recorded was approximately 180 mrem/month. No pocket dosimeters are used by Research Chemicals' employees. Mr. Vaden stated that any positive indications of exposure to Research Chemical personnel would be the result of radiation streaming through partitioning walls from the Isotope Specialties laboratories. He stated that the maximum levels encountered by Research Chemical personnel were a proximately 6 mr/hr.
19. According to Dr. Kleber, Research Chemicals has not disposed of any solid wastes or made any transfers of solid thorium bearing material. This licensee has disposed of approximately 500 gallons of thorium bearing liquid waste to the sanitary sewer. Mr. Nathanson stated that the solutions discharged probably contained 0.1 microcuries thorium/liter. Mr. Vaden stated that the effluent concentrations were below 10 CFR 20 limits. Mr. Nathanson stated that an evaluation of the effluent concentration had been made but that he could find no record of the disposal. Mr. Nathanson stated that the 500 gallons of liquid waste had been sent first to two 5,000 gallon sumps and then discharged to the sewer. On the basis of these figures furnished by the licensee, the inspector estimates that approximately 190 microcuries thorium were discharged to the sanitary sewer at a maximum concentration of  $5 \times 10^{-5}$  ~~mc/cc.~~

old MPC =  $1.5 \times 10^{-6}$   
new MPC =  $3 \times 10^{-5}$