

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I
970 BROAD STREET
NEWARK, NEW JERSEY 07102

A 87

201 645.3962

December 6, 1968

W. R. Grace & Company
Davison Chemical Division
Post Office Box 188
Pompton Plains, New Jersey 07444

Re: License No.: STA-422

Attention: Mr. Hugh Sweitzer

Gentlemen:

Enclosed you will find four copies of Form AEC-591 which list the items of noncompliance noted during our inspection of December 4, 1968. Please sign all copies, retain the original for your files and return the three carbon copies in the enclosed self-addressed envelope. You will receive no additional correspondence concerning this inspection.

Your cooperation is appreciated.

Very truly yours,

Robert W. Kirkman
Director

Enclosure:
AEC-591 (4 cys)
w/addressed envelope

Item J, 20.401 (b)

TO RSC

12/20/68

Enclosure

A-88

Inspector's Evaluation

W. R. Grace + Co.

Davison Chemical Division

Post Office Box 188

Longton Plains, New Jersey 07444

Lic # STA-422

No problems of great significance were found during this inspection, however, there were several areas which appeared somewhat weak. The weaknesses seemed to stem from the RSO's limited experience.

There were no established actions or guide levels as to when loose contamination would be cleaned up. Workers wearing special clothing for contamination protection took it home for washing. The RSO had never heard of lapel air samplers for true breathing zone evaluation.

I feel that, as a result of discussions during the inspection, these areas will

be reinforced, as both the RSO and management appeared quite willing to cooperate.

A reinspection is recommended for 6/76.

A-89

REGION I, DIVISION OF COMPLIANCE
NEWARK, NEW JERSEY

SPECIAL-LIMITED INSPECTION

1. Name and address of licensee: W. R. Grace & Company
Personnel Service Division
Post Office Box 188
Compton Plains, New Jersey 07444

2. Date of Inspection: 2-17-68

3. Type of Inspection: COMPLETION
(ANNOUNCED)

4. License number(s), docket number(s), number and date of last amendment for each license. Category and Priority of each license:
STA-422 FEB 26, 1968 I - II

5. Date of previous inspection: 1/17/66

6. Is "Company Confidential," or proprietary, or classified information contained in report?
 Yes _____ No X

(Specify paragraphs)

7. Scope of inspection:
PARTS 20 & 40

8. W. R. Grace
 Inspector
JES
 Reviewer

12/20/68
 Date of Report
6/6/69
 Date of Review

Licensee: WPA [unclear] on Air

Summary This operation which involves the processing of monominerals containing Th. nat. remains essentially unchanged from the previous inspections except for the discontinuance of waste burial on site.

Noncompliance and Safety Items

① Contrary to 10CFR 20.401(b), records of all surveys were not maintained.
(See J + Mary Inter.)

Unusual Occurrences

NONE

Status of Previously Reported Noncompliance or Safety Items

NONE

Management Interview

W Carino and Switzer
The Inspectors informed them that there would be one item of noncompliance - failure to keep all survey records - the air concentration records in particular.

(over)

Management Int. cont'd!

The Inspector told them about large air samplers which would seem to be desirable for this type of operation - men moving about and working in different areas. Both expressed interest in this instrument and indicated that one might be purchased and used.

Both indicated a willingness to cooperate and that all required survey records would be kept in the future.

Licensee: 2000 L.C. Division Div

DETAILS

A. Participants

Walter G. Collins, Plant Chemist - RSC
Hugh Switzer, Plant Manager

B. Scope of Licensee Program

Licensee is engaged in the refining of monazite sands for the production of rare earth, optical, polishing compounds. This plant together with a sister plant in Chattanooga, Tenn. are the largest producers of these compounds in the world. The monazite sands contain ~ 3% nat. Thor. weight.

C. Organization

Ernest Brooks, W.R. Grace + Co. President
Richard L. Stone, V. Pres. + Division Div. Manager
Hugh Switzer, Plant Manager
27 to 36 people employed at this plant, 20 of whom are issued film badges.

D. Administrative Control

- ① 8' chain link fence - restricts entire property with signs posted as per L.C. # 4
- ② RSO and Foreman instruct employees in radiation safety procedures, such as no eating in work areas, washing before leaving work area and wearing of special uniforms while working.

E. Use of Material

Carroll stated that ~ 2500 lbs. of monazite are processed in a day. This yields ~ 75 lbs. of nat. Th. as Thorium Oxide in 500 lbs. of waste. The residue is in the form of "press cake" which is transferred to the Chattanooga plant for disposal.

(over)
→

E. Cont'd | A process description is included in a letter from the licensee dated 2/13/68 and is also described in the previous inspection report. Garino stated that the process is essentially unchanged since 1952. Garino maintains an inventory which indicated that 11,407 lbs of nat Th were on hand contained in 198.5 Tons of monazite sands.

Garino stated that ~ 50% of the present operation involves Bastnaesite refining (ore contains only .02% Th nat.) and that all or essentially all of the dust that the Inspector noticed was due to these operations.

Licensee: W.P. Goss & Co. Madison Wis.

F. Facilities

Facilities are described in license application supplement dated 2/13/68 and report of previous inspection ~~dated 2/13/68~~ which was conducted 10/17, 1966.

G. Equipment (Radiation Monitoring)

- ① R.I.D.L. Scaler and internal gas flow proportional counter (calibrated ~ 1 year by Garino using standards.)
- ② Anton #5 G.M. counter (scale - 0 to .5) (ranges - X1, X10, X100) calibrated by manufacturer - 12/57.
Has .2m/HR caesium source which source used to

H. Radiological Safety Procedures

source inst. is working properly.
Procedures are included in license application supplement dated 2/13/68

I. Personnel Monitoring and Exposure to External Radiation

monthly film badges are supplied by St. Johns and AEC-5 are maintained by Garino. Inspector's review of the records indicated the following.

| YEAR | QTR | RESULT (mrem) |
|------|-----|---------------------------|
| 1966 | 4 | avg - 50 to 60 ; high 735 |
| 1967 | 1 | " " " " " 775 |
| | 2 | " " " " " 570 |
| | 3 | " " " " " 275 |
| | 4 | " " " " " 660 |

(over) ->

I. Cont'd

| YEAR | QTR | RESULTS (msec) |
|------|-----|---|
| 1968 | 1-3 | avg 50 to 60, high 600 in 1 st qtr. (high monthly of 220) |

All highs were to R. Silsbury who operates the
Flouride press.

Licensee: W. R. Grace & Co. American Div.

J. Exposure of Employees to Concentrations of Radioactive Materials

Garino stated that he takes an sample with a Taylor high volume air sampler (20 ft³/min for 5 min) at the places listed in the H.P. manual 1/1/67 (incorporated as procedures in L.C.S.). Procedures state that counts are to be taken quarterly. Inspector's review of records indicates no records of air samples between 1/1/66 and 1/1/67. A copy of the last survey record is included as attachment "A" (over)

K. Effluents to Unrestricted Areas

(See J for air samples)

A description of the liquid effluent system is given in paragraphs 18 thru 23 of the report of the inspection conducted on Nov 17, 1966. Daily samples are taken at the final release point and sample counts are averaged over a month.

L. Disposals

Garino stated that since 1966 the excess waste mentioned in E has been transferred to the Chabot plant for burial-storage. Material is shipped in closed steel drums (700 lbs ea.) on trucks rented from O + L Transportation Co., Butler, N.J. This is the sole use of these trucks which are under contract. Garino had current copies of the DOT regulations and had contacted the Bureau of (over)

M. Miscellaneous Surveys, Evaluations and Records

Garino maintains receipt, transfer, disposal and inventory records.

Garino performs quarterly radiation surveys and maintain records of these. GM survey inst. is used. Highest radiation level was 3' from monazite storage area ~ 3.5 mR/hr on last survey.

Garino performs semiannual contamination surveys with swipes which are counted on gas-flow proportional counter. Records are kept in units of $\mu\text{Ci}/\text{cm}^2$ (50 to 500)

J. Cont'd

Garino stated that he had taken the samples but must have misplaced the records. Garino stated that samples are taken during active processing of sands. Garino stated that the maximum man time in the Ball Mill Room was $\approx \frac{1}{2}$ hr/day. Records indicate that restricted areas are below MPC of 3×10^{-7} uci/cc. Garino stated and records indicated that samples at the boundaries of the restricted areas were shown no detectable alpha contamination. There are no stacks of fume hoods which would warrant sampling.

K Cont'd

Decoded results indicate levels of $\approx 2 \times 10^{-7}$ uci/cc which is 20% of MPC.

L Cont'd

Explosives. (See letter - Attachment "B")

~~State 33 CFR 155.100 (a) (1) (i) states that explosives are classified as Class A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ.~~

DOT Reg 173.391 (C)(1) states: "...and physical + chemical concentrations are contained 'low mass activity material.'" Garino states that he had surveyed packages for contamination before loading and trucks after they arrived. (GO TO 5.)

Licensee: W.R. Gray - C. Davison Div.

N. Special License Conditions

All appeared to be complied with.

O. Posting and Labeling

Garino had copies of license, procedures, and regulations Part 20 and 40. Garino stated that the Co. subscribes to the F.R. Garino stated that all men are instructed in the pertinent sections of these documents.

In view of I.C. 9, all posting + labeling appeared to be adequate. The Ball Mill area is posted with a CARH sign + standard radiation symbol.

P. Independent Measurements

NONE

Q. Operations Observed

TOURED FACILITIES AND WORK IN PROGRESS.
RSD PERFORMED RADIATION SURVEY - INSPECTOR NOTED LEVELS WHICH AGREED WITH HIS RECORDED ONES.

R. Incidents, Overexposures, Theft or Loss, Equipment Malfunction

NONE

Licensee: W. R. Garia, C. American Co.

S. Other Information or Continuation from Previous Paragraphs

L. Cont'd) Garia stated that necessary surveys (10 cm²/HR at 6' from external surface of vehicle and 2 cm²/HR in cab of vehicle) for radiation ^{radiation} & Inspector noted that these survey records were not maintained for shipment of 27 drums on 9/9/68 thru 9/12/68. Garia stated that he must have given them to the driver.

M. Cont'd) Records indicate levels of up to 10^{-3} nci/ft² in the monazite storage area and the Ball Mill area and 10^{-7} nci/ft² in the shipping platform and office area. Garia stated, in reply to the Inspector's question, that he recorded these levels but had no action ^{as to the work} guide levels established. Clean-up procedures would be used. After some discussion, the Inspector left Garia a copy of N.Y. State Dept of Labor Surface Contamination Limits to use as a guide.

In line with contamination control, Garia stated, ~~that~~ after contacting a few workers, that most of the workers ~~charged~~ took home their work clothes for washing. He later stated that the person most likely to have contaminated clothes washed them in a clotheswasher provided for that purpose (over) →

m cont'd

by the Co. Carino stated that he would perform surveys, ~~and~~ evaluate the adequacy of the present procedures and make a record of his determinations. The Inspector stated that this would be looked for in the next ~~at the~~ inspection.

General - Air-Samples

SURVEY OF RADIOLOGICAL AIR-BORNE CONTAMINATION

| Location | Date | Time | Type of Survey | Results |
|--------------------------|--------|-----------|---|---|
| PLANT SHIPPING ROOM | 9/8/68 | 9:15 Am | AIRBORNE ALPHA FILTRATION RATE 20 CU. FT. MIN. 100 CU. FT. SAMPLED | ALPHA COUNTS 11 1.1 X 10 ⁻¹² mc/ml |
| SOLVENTIZING- Room | " | 9:30 Am. | " | 10 9.1 X 10 ⁻¹³ mc/ml |
| CALCINING FURNACE | " | 10:15 Am. | " | 17 1.5 X 10 ⁻¹² mc/ml |
| PROCESS STORAGE AREA | " | 10:30 Am | " | 14 1.3 X 10 ⁻¹² mc/ml |
| BALL MILL ROOM | " | 10:45 Am. | " | 71 6.5 X 10 ⁻¹² mc/ml |
| MORAZITE STORAGE AREA | " | 11:00 Am | " | 17 1.5 X 10 ⁻¹² mc/ml |

Date 9/13/68

Fred J. Harris

"A" ATTACHMENT

BUREAU OF EXPLOSIVES

ASSOCIATION OF AMERICAN RAILROADS

63 VESEY STREET

NEW YORK, N. Y. 10007

FILE NUMBER

T. C. GEORGE, DIRECTOR AND CHIEF INSPECTOR

25-3 §73.392(c)

WFB-M

January 12, 1967

Davison Chemical Company
W. R. Grace & Company
Pompton Plains, New Jersey

Gentlemen: Attention: Mr. Peter J. Garino

This letter confirms the decisions reached during my recent visit to your facility.

It is our opinion that thorium phosphate sludge consisting of approximately 10% thorium with a high acid content is "low specific activity material" as defined by §73.391(c)(1) of the Interstate Commerce Commission Regulations.

Further, the shipment of this material in 55 gallon used open head steel drums with new ICC Specification 2U-55 gallon drum liners and/or new 55 gallon open head fiber drums with new ICC Specification 2U-55 gallon drum liners is, in our opinion, authorized under the provisions of §73.392(c) of the Interstate Commerce Commission Regulations. You are reminded that this paragraph of the Regulations specifically requires that the gamma radiation, or equivalent, not exceed 2 milliroentgens per hour in any normally occupied position in the tractor cab. Further, the vehicle must be placarded in accordance with §77.823 of the Interstate Commerce Commission Regulations.

It is our understanding that shipments shall be made utilizing vehicles which are operated under the control and direction of the Davison Chemical Company and shipments will be made from your facility in truckload lots.

For your information, I am attaching a copy of the pertinent sections of the Regulations.

It was indeed a pleasure to visit your facility and

ATTACHMENT

B⁴

JAN 13 1967

Davison Chemical Company

-2-

January 12, 1967

I want to thank you for the hospitality extended to me.

Yours truly,

T. C. George
Director and Chief Inspector

By

W F Black
Technical Assistant

Attach.

cc: Inspector James

ATTACHMENT "B"

A-91

I - II

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

| | |
|--|---|
| <p>1. LICENSEE</p> <p><i>[Handwritten Name]</i></p> | <p>2. REGIONAL OFFICE</p> <p><i>[Handwritten Office Name]</i></p> |
| <p>3. LICENSE NUMBER(S)</p> <p><i>[Handwritten License Number]</i></p> | <p>4. DATE OF INSPECTION</p> <p><i>[Handwritten Date]</i></p> |

5. INSPECTION FINDINGS

- A. No item of noncompliance was found.
- B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA.
10 CFR 20.203(b) or 34.42
- C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA.
10 CFR 20.203(c) (1) or 34.42
- D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA.
10 CFR 20.203(d)
- E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL.
10 CFR 20.203(e)
- F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL.
10 CFR 20.203(f) (1) or (f) (2)
- G. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)
- H. Form AEC-3 was not properly posted. 10 CFR 20.206(c)
- I. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 34.33(b)
- J. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 34.43(d)
- K. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained.
10 CFR 30.51, 40.61 or 70.51
- L. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 34.25(c)
- M. Records of inventories were not maintained. 10 CFR 34.26
- N. Utilization logs were not maintained. 10 CFR 34.27

(AEC Compliance Inspector)

6. LICENSEE'S ACKNOWLEDGMENT

The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.

(Date) _____
(Licensee Representative - Title or Position)

J. Paul R. Nelson, Sr. Radiation Specialist ^{cert 101} CV-1

Subject: Memo to File. Evaluation Re.
W. R. Grace. Brompton Plains NJ Lic STA-422.

Licenses operations and facilities have not changed in six years. No hazard appears to exist from processing low grade monazite ore. Facilities although generating dust are not occupied during such operations. Licensee personnel appear to take precautions to reduce uptake and minimize exposure.

The license is properly categorized as I with priority II. An extension of six months in reinspection frequency is recommended. The next inspection will be scheduled during
6/72.

Engene Eyster

591 NOTES

W. R. Grace & Company

DAVISON Chemical Division

Post Office Box # 185

Pompton Plains, N.J. 07444

~~#~~

Lic # STA-422

date of inspection 12/29/70

Docket No. 40-86

inspector F. EPSTEIN

I - II

announced - reinspection

pts 20-40

~~date~~

report by Eugene Epstein date 1/4/71

reviewed by M. du E. Cow date 6/25/71

for: P. R. Nelson

Accompanied by state officials were sufficient

Personnel Contacted

Mr. Mike Carino, P.S.O.

Mr. Renato Sique, Vice President, Social Services
Division

Report Details

Background Information

The license was last inspected on 12/1/68. The results of the inspection were reported using Form NPL-591 with an order of noncompliance set forth for items 20, 40, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000. The inspection noted that the firm was successful. Records of water surveys to determine air concentrations in reservoirs and unreservoired areas, stream surveys, direct physical surveys and analysis of water effluents were noted to be fully maintained with indicators for results fully documented.

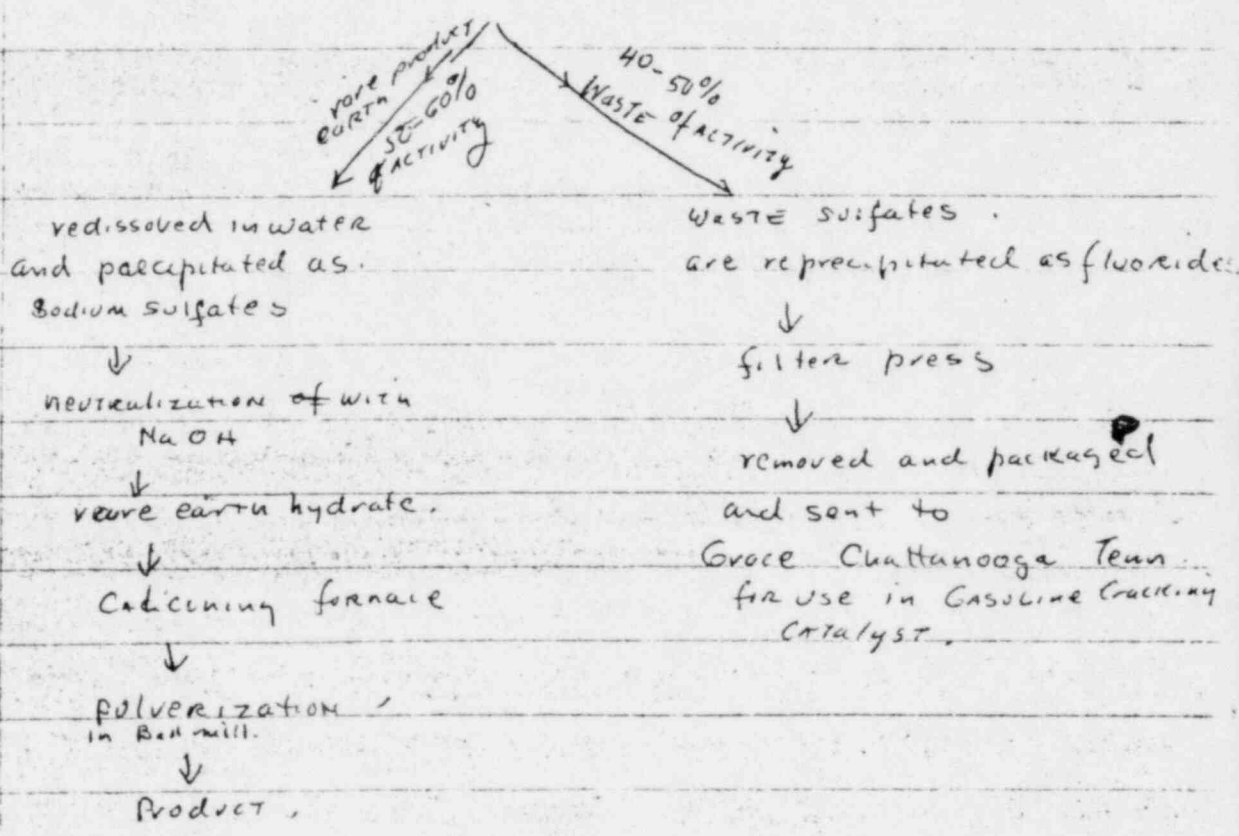
Facilities and Uses of Material

2. Results of recent inspection for noncompliance with air and water quality standards are fully documented and available to the public. The firm is in compliance with all applicable laws and regulations. The results of the inspection are as follows:

The refined thorium ¹⁵ is added to cerium oxide ¹⁵ to create product having 0.25% Th by wt. ¹⁵ in final product as ¹⁵ ~~containing that one percent natural thorium by weight~~ ¹⁵

(3) The process is fully described in the licenses letter dated 2/13/68 Briefly it consists of the following.

- (a) Monazite ore ¹⁵ attacked with conc. sulphuric acid in reaction kettles 4-6 hrs.
- (b) The reaction is quenched with water
- (c) contents of Kettle are precipitated as rare earth sulphates.



4 The inspector noted and Garino confirmed that there is only one stack exhausting air ^{from the installation} for the sulphuric acid addition phase ^{only}. The kettle fumes are drawn off by means of negative fume duct to a stack equipped with a water scrubber. GARINO stated and the inspector noted that

All other areas of use had only natural convection as ventilation

5 Carino stated however that personnel do not stand in the acid treatment room or in the Bull Mill Room during operations. These rooms are closed off during operations and personnel are specifically instructed not to enter.

Surveys

6 Carino stated that he takes surveys of all operations quarterly. He stated all operations are standard with no deviation and have not changed in the last six years. The surveys include determination of air concentrations in restricted areas, ^{air} concentrations in outside unrestricted areas, smear surveys direct physical radiation surveys and evaluation of activity in water effluent.

7 Survey records were ~~reviewed~~ ~~seen~~ from the date of the last inspection were reviewed and show the following:

RESTRICTED AREA AIR CONCENTRATIONS

8 The Bull mill and Sulfuric Acid areas have the highest concentrations. The Bull mill gives alpha activity in ~~the~~ air of a maximum of 6.9×10^{-12} uci/ft³ air. The Acid Sulfuric Acid areas gives a maximum of 3.7×10^{-12} uci alpha/ft³ air. ^{Other} 10 areas show activity less than the above. MPC in appendix B IHE I (I) is 3×10^{-11}

✓ what is the appendix B value?

9 The ^{1st} for beta and available components. Samples were taken using a Staphx hi low sampler. ^{isotopes are evaluated at 10}

OUTSIDE UNRESTRICTED AREAS:

9 Concentrations of alpha activity on the outside of the facility taken at 12 locations always show less than 1×10^{-4} uci Alpha
meals

Smear Surveys:

10 Smears are taken of some 20 areas and reported in units of uci/ft² UNRESTRICTED areas ^{office} have ^{reasonable} activity of 4.8×10^{-7} to 6.4×10^{-8} uci/ft² and RESTRICTED areas have activity ranging ~~2 to~~ 2.8×10^{-3} uci/ft² in the Storage Room ^{and} ~~to~~ 6.2×10^{-4} in the ball mill room and Sulfonation Room. 2.8×10^{-3} uci/ft² is equivalent to 1.3×10^3 dpm/100cm².

Direct Physical Surveys:

(11) Radiation levels according to records at process operations range from 1.5 ^{mrad/hr} ~~at~~ ^{one} ft from the ball mill to ~~2 mrad/hr~~ 2 mrad/hr at ~~the~~ one foot from the sulfonation kettle. General plant background was never to be approximately $0.3-0.45$ mrad/hr. according to records.

Inspectors Readings:

12 The inspector using a Geacine portable Alpha Scintillation meter model PAC-1SA made a survey of alpha activity in various sections of the plant which seemed entirely covered with a layer of dust. The following ~~reads~~ alpha readings were noted:

Surface of Oliver filter press 500 cpm/90 cm²

floor Oliver press room 3000 cpm/70 cm²

Case removed from Oliver press 5000 cpm/70 cm²

floor ball mill room 7000 cpm/70 cm²
Sulfonation kettle surface 2600 cpm/70 cm²
Sulfonation room floor 3000 cpm/70 cm²
floor locker room 2500 "

Rare earth conveyor belt. 6000 cpm/70 cm²

lunchroom trailer 200-400 cpm/70 cm²

office floors 100-300 cpm/70 cm²

13 Radiation levels were measured by the inspector using an Eberline E-120 GM survey meter with GM end window open probe. Radiation background in the ^{RESTRICTED} facility was noted as .3-4 mrad/hr. Radiation levels from apparatus at contact ran from 5-10 mrad/hr. Radiation levels in UNRESTRICTED ~~areas~~ office areas did not exceed 0.05 mrad/hr.

Waste Disposal

14 All solid waste is packaged and shipped to G.R. Grace, Chattanooga Tennessee, where they are reclaimed and used to manufacture thorium gas cracking catalyst.

Liquid waste is sent to the on site plant waste water treatment prior to disposal to the Pompton River. Garino stated that ^{WASTE} water treatment consists of the following

- (1) Neutralizing ph.
- (2) settling bed for suspended solids
- (3) Hardinge thickener which pumps out sludge to waste lagoon on site.
- (4) Final 55000 clarifying and settling tank.

(5) Supernatant liquid from final 55000 tank is disposed to Pompton River after passing over a measuring weir.

15 Garino stated that waste flow is adjusted to a release of 25,000 gallons/day. The average daily he stated he takes daily samples at the weir and evaporates one ml. of the effluent to dryness. Activity is counted using a R104 gas flow proportional counter and scaler. Daily activity does not exceed 2.3 dpm/ml/day.

$$\frac{2.3 \text{ dpm}}{4.4 \times 10^6 \text{ dpm}/\mu\text{Ci}} = 5.2 \times 10^{-7} \text{ } \mu\text{Ci}/\text{ml water}$$

This is below the limit of ~~5.2×10^{-7}~~ 1×10^{-6} $\mu\text{Ci}/\text{cc}$ expressed in Appendix B, table II Col 2.

Posting & Labeling

16

The inspector noted that the ^{Sulfuric Acid} ~~Sulfuric Acid~~ ^{Room} ~~Area~~ Bull Mill Room and Stock Room were posted with signs reading "CAUTION Airborne Radioactivity Area" w/ Symbol as well as signs reading "CAUTION Radiation Area" and "CAUTION ~~Restricted Area~~ Radioactive Materials" w/ Symbol. The stock room had signs indicating quantity on hand. Form AEC-3, Notice to Employees was also posted at the entrance to the restricted area.

17

License Conditions.

Cond #8. ~~Place of use was noted to be at the~~
~~license address as shown on the license~~
was noted to be in
Processing ~~is~~ accordance with the
application dtd 1/3/67 and supplement of 2/13/68

Cond 9. The licensee was noted to comply
with 20.203(e)(2)

Cond 10. Place of use was noted to be at
the listed address.

Management Review.

18

The status of the inspection was discussed
with Mr. Richard Stone, Vice President Special Products
Division, and form Act-591 clear was issued.
The inspector suggested a urine bioassay program
be adopted in view of the constant presence of
dust and removable contamination. He readily agreed
and stated he would institute a semiannual bioassay
to determine any possible uptake by workers.