FORM NRC-2
(7-77)
10 CFR 40

Approved by GAO
R0203

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part [illegible]0, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)	2. NAME OF APPLICANT
[x] (a) New license [ ] (b) Amendment to License No. ______ [ ] (c) Renewal of License No. ______ [ ] (d) Previous License No. ______	MOLYCORP, INC. 40-8794 3. PRINCIPAL BUSINESS ADDRESS P. O. Box 54945 Los Angeles, California 90054 [illegible] 19801

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED

Molycorp Plant
350 E. Sherman
York, Pennsylvania 17403

5. NAME OF PERSON TO BE CONTACTED CONCERNING THIS APPLICATION	6. TELEPHONE NO. OF INDIVIDUAL NAMED IN ITEM 5
W. N. Warhol	(213) 977-7524

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED

A). Low concentration Thorium Source Material is contained in semi-processed Rare Earth ores and concentrates used as feed stock to manufacture Rare Earth chemicals.
B). Low concentration Thorium Source Material is contained as an impurity in Cerium Fluoride product and Cerium Fluoride waste material.
C). Low concentration Thorium Source Material is contained in residue waste from the manufacture of other Rare Earth Chemicals.

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (kilograms)
NATURAL URANIUM	Uranium oxide, Uranium fluocarbonate	1). Bastnasite ore: 0.126% Th; -20 ppm U	315# Natural Uranium
URANIUM DEPLETED IN THE U-235 ISOTOPE	NONE	2). Cerium Conc: 0.225% Th; 20 ppm U	NONE
THORIUM [illegible]TOPE)	Thorium oxide,-hydrate, -fluoride,-fluocarbonate -phosphate.	3). Cerium Fluoride (tech); 0.2→0.8% Th; 30 ppm U 4). RE Chloride residue; 0.[illegible]→0.9% Th, 20 ppm U	100,000# Natural Thorium

(e) M[illegible] TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (kilograms)

100,3[illegible]5 pounds of Natural Thorium plus Natural Uranium

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL, OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES.

See Attachment No. 1, "Process Description"

10. LIST THE NAMES AND ATTACH A RESUME OF THE TECHNICAL QUALIFICATIONS INCLUDING TRAINING AND EXPERIENCE OF APPLICANT'S SUPERVISORY PERSONNEL AND THE PERSON RESPONSIBLE FOR THE RADIATION SAFETY PROGRAM (OR OF APPLICANT IF AN INDIVIDUAL).

See Attachment No. 2, "Radiological Monitoring & Safety Program"

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument).

See Attachment No. 1, "Process Description" and Attachment No. 2 "Radiological Monitoring and Safety Program"

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier).

See Attachment No. 2, "Radiological Monitoring & Safety Program

11(c). VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

See Attachment No. 1, "Process Description"

12. DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9; INCLUDE: (a) SAFETY FEATURES AND PROCEDURES TO AVOID NONNUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS.

See Attachment No. 3 "Molycorp, Inc. Emergency Procedures Manual"
and Attachment No. 4 "Pollution Incident Prevention Report"

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

See Attachment No. 3 "Molycorp, Inc. Emergency Procedures Manual",
Attachment No. 4 "Pollution Incident Prevention Report",
and Attachment No. 5 "Emergency Procedures as Affected by The Presence of Radioactive Materials"

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES

See attachment No. 1 "Radiological Monitoring & Safety."

13. WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here ☐ and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated. See attached "Process Description"

(b) Detailed procedures for waste disposal. To be included in further submittals before 9/15/81.

14. IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(This item must be completed by applicant)

15. *The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

BY: W. N. Warhol
(Signature)

Dated June 18, 1981

W. N. Warhol
(Print or type name)

Vice President, Manufacturing
(Title of certifying official authorized to act on behalf of the applicant)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

ATTACHMENT NO. 1

PROCESS DESCRIPTION

The Molycorp York Rare Earth Processing Plant carries on three basic processes which involve low concentration Thorium Source Material along with traces of Uranium Source Material.

The thorium and uranium both occur as low level contaminants naturally occurring in the feed minerals, and they tend to concentrate in either impurity residues or by-products.

RARE EARTH CHLORIDE PROCESS

This process converts bastnasite mineral concentrates produced at the Mountain Pass, California mine into a purified mixture of rare earth chlorides (REC). This plant produces about 6 million pounds per year and an expansion to twice this capacity is being designed.

Raw material feed to this process consists of code 4010 dry bastnasite concentrate, caustic soda and water. The bastnasite concentrate contains about 70% rare earth oxide in the form of fluocarbonates (R.E. FCO_3), and small amounts of barite ($BaSO_4$), celestite ($SrSO_4$) and other gangue minerals. An average of about 0.126 wt% thorium and 20 ppm uranium is present in this feed as various types of bastnasite and monazite impurities. The maximum permissible concentration (MPC) of bastansite dust, based only on radiation dose, is 531 mg/M^3 per calculations by Eberline Labs. A 3'x3'x5' bag house with 6 collector bags and a 500 cfm blower is used at the bastnasite feed point to capture and recycle any possible dust generated and thereby protect employees and the environment. All processing after the feed point is wet-processing.

A typical 5000# bastnasite reactor charge contains about 6.3 pounds thorium and 0.1 pounds uranium.

A slurry of the bastnasite concentrate in 50% caustic soda is prepared, intoduced into a pressure reactor and heated with steam to an elevated temperature and pressure to allow reaction to occur.

The reaction products consist of a slurry of insoluble rare earth hydrate and unreacted minerals and soluble sodium fluoride, sodium carbonate and excess caustic soda. The chemcial equation for this reaction may be represented as follows:

$$(RE)\,FCO_3 + 3NaOH \xrightarrow[\text{Heat}]{H2O} RE\,(OH)_3 + NaF + Na_2CO_3$$

Insol. (RE $(OH)_3$) Soluble (NaF + Na_2CO_3)

The slurry of rare earth hydrate is then discharged into water and a number of decantation washes with water are performed until the rare earth hydrate solids are essentially free of soluble sodium salts. At this point the thorium is present as either insoluble, unreacted feed material or insoluble hydrates, mixed with the rare earth hydrate solids.

The washed rare earth hydrate solids are then added to an excess of hydrochloric acid to form soluble rare earth chlorides. Rare earth hydrate is added until all excess acid is consumed. Any iron or thorium solubilized by the acid is precipitated and reports to the insoluble fraction. A chemical equation for this reaction is as follows:

$$R.E.\ (OH)_3 + 3\text{[illegible]} \longrightarrow RECl_3 + 3H_2O$$

The rare earth chloride solution/slurry is filtered to remove the solids and obtain a clarified liquor of rare earth chloride, suitable for evaporation to solid $RECl_3 \cdot 6H_2O$ or for precipitation of rare earth carbonates or other salt forms. The clarified liquor of rare earth chloride contains no significant quantity of thorium or uranium. A representative sample of solid product generally contains about 3.5 ppm thorium and 2 ppm uranium.

The filtered solids obtained from the acid dissolution step contains unreacted bastnasite, and other gangue minerals and all the thorium present in the starting material. Compared to the feed, the degree of thorium enrichment in this residue is several fold.

The filtered solid residue contains about 50% moisture and is fed damp into plastic-bag-lined 55 gallon steel drums for disposal. The thorium content (dry, basis) of the residue varies in the 0.4 to 0.9 wt % range and averages about 0.65 wt %. Roughly 1940 pounds of wet residue is produced from each reactor charge, and about two charges are processed per day as a long term average. About 115,000 pounds of residue (145 barrels) are produced in an average month.

95% CERIUM PROCESS AND CERIUM FLUORIDE PROCESS

This process converts code 5300 cerium mineral concentrate, produced at the Mtn. Pass, California mine, into a line of 95% pure cerium products. About 1½ million pounds per year of products can be made.

The cerium concentrate process feed material is a dry powder containing about 60% ceric oxide (CeO_2) of about 88% purity, in the form of a mixture of basic ceric oxide ($Ce(OH)_2O$) and cerous fluoride (CeF_3). Other gangue materials present include barite, celestite, monazite and silica. Thorium and uranium are impurities present at about 0.225% and 20 ppm, respectively. The MPC of cerium concentrate dust, based on radiation dose only, is 355 mg/M^3, per calculations by Eberline Labs,

A 30" diameter, 14 ft. high wet scrubber with 6 ft. of 2" CPVC Tellerettes is used at the cerium feed point to capture any possible fugitive dust and thereby protect employees and the surroundings. This scrubber is equipped with a 3000 cfm blower and circulates 45 gpm of scrubbing solution over the packed bed. Solids are collected in the 1000 gal. scrubber reservoir and are disposed of with the plant's waste treatment residue.

A typical cerium reaction charge is 4000# pounds per digest tank, containing about 9 pounds thorium and 0.08 pounds of uranium. All chemical processing after the initial feed dissolution is wet processing.

The cerium concentrate is reacted with an excess of strong hydrochloric acid in order to convert the basic ceric oxide present into a water soluble cerous chloride. Significant quantities of chlorine gas are produced due to oxidation of chloride ion by ceric form cerium. A chemical equation for the reaction is as follows:

$$2Ce(HO)_2O + 8HCl \longrightarrow 2CeCl_3 + Cl_2\uparrow + 6H_2O$$

Chlorine off gas from the reaction is scrubbed with caustic soda solution to form sodium hypochlorite.

Fluoride salts present in the concentrate are not significantly dissolved by this treatment, and they thus form the bulk of the insoluble residue. The thorium minerals contained in the feed cerium concentrate also do not dissolve, and hence, accumulate with the insoluable fluoride residue. This acidic reaction slurry is then centrifuged to separate unreacted solids from the cerium chloride liquor. This liquor is then further treated with sodium carbonate solution to produce a 95% pure cerous carbonate product with no significant thorium content.

The washed fluoride residue consists of a mixture of CeF_3, $BaSO_4$, and other unreacted gangue minerals, as well as essentially all of the thorium present in the original concentrate. The degree of thorium enrichment in this residue is about twofold. This fluoride residue contains about 50% moisture and is shoveled damp into plastic-bag-lined 55 gallon steel drums for disposal or for further processing to make technical grade cerium fluoride product. The residue thorium content varies in the 0.2 to 0.8 wt.% range and averages about 0.4[illegible] wt.%. About 115,000 pounds (145 barrels) are produced each month on the average.

About 50,000 pounds of dry technical grade cerium fluoride are produced from this residue each year. Preparatory processing consists primarily of drying the residue and milling and packaging the resultant product. The MPC for normal cerium fluoride product dust is 187 mg/M^3 due to thorium content and the TLV due to fluoride content is 2.5 mg/M^3. Appropriate dust masks are used to prevent hazards to personnel.

99.9% CERIUM PROCESS

This process converts code 5300 cerium mineral concentrate into a line of high purity (99.9%) cerium products. About 200,00# of product can be produced per year. Again, the cerium concentrate is dissolved in a acid media under oxidizing conditions and the resultant solution of ceric ions extracted with a liquid cation exchanger to separate high purity cerium. Typically 2000# of dry cerium concentrate containing 4.5 pounds of thorium and 0.04 pounds of uranium are used for each feed digest, every third day. The same wet scrubber used in the 95% cerium process is used here to minimize employee and environmental contamination by feed materials. After this feed dissolution step, all further processing employs wet methods.

The cerium concentrate is dissolved in a mixture of sulfuric and nitric acids. Potassium permanganate is added to the mixture to promote oxidation of cerous ions to ceric ions. Some boric acid is also added to complex soluble fluoride ions. These reactions may be represented by the following chemical equations:

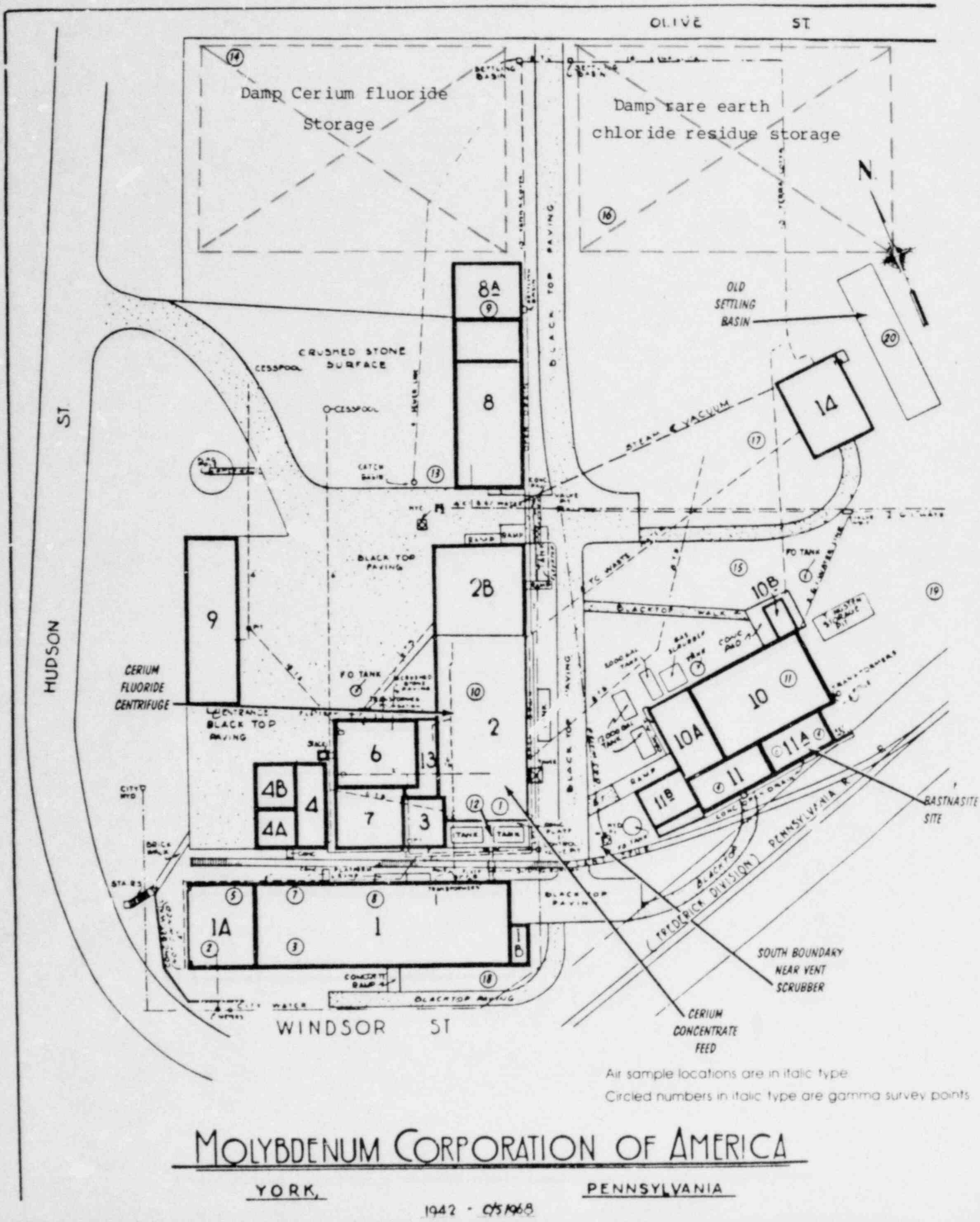
1. $Ce(OH)_2O + 2H_2SO_4 \longrightarrow Ce(SO_4)_2 + H_2O$
2. $2CeF_3 + 3H_2SO_4 \longrightarrow Ce_3(SO_4)_3 + 6HF$
3. $3Ce_2(SO_4)_3 + 2KMnO_3 + 16\ H_2SO_4 \rightarrow 6Ce(HSO_4)_4 + K_2SO_4 + 2MnO_2 + 4H_2O$
4. $4HF + H_3BO_3 \longrightarrow HBF_4 + 3H_2O$

(Note: HNO_3 may be substituted for H_2SO_4 above.)

The oxidized, acidic solution of ceric sulfate and/or ceric nitrate is centrifuged to remove unreacted solids, including the largely undissolved thorium minerals. The clarified liquor is contacted with an organic collector dissolved in kerosine to selectively extract ceric ions into an immiscible organic phase. The loaded organic phase is separated from the acid liquor and subsequently treated for recovery of a high purity line of cerium products which contain no significant amount of thorium. Unwanted rare earth materials are precipitated from the solvent extraction raffinate and are combined with the acidic solution residue to be centrifuged as mentioned above.

The centrifuged solids from the reaction represent a waste residue containing the thorium present in the initial feed material. A several fold enrichment of thorium occurs, producing a residue with a somewhat higher thorium content than the cerium fluoride. Approximately 6200 pounds of 50% moisture residue are produced and dr[illegible] into plastic-bag-lined 55 gallon steel barrels in a typical month.

PLANT PLOT PLAN



PLANT PLOT PLAN LEGEND

Building	1, 1A, 1B	Warehouses: bastnasite, cerium concentrate, 95% cerium, 99.9% cerium, cerium fluoride, Miscellaneous reagents and products.
	2	95% cerium production area
	2B	95% cerium carbonate milling area
	3	99.9% cerium production area
	4	Bathrooms, shower and locker rooms
	4A	Maintenance shop
	4B	Lunch room
	6	Maintenance parts storage; also plant utility installations (vacuum pumps, air compressor, electrical switch gear).
	7	Boiler
	8	Lanthanum rare earth chloride production area
	8A	Cerium fluoride drying and milling area
	9	Administrative offices and laboratories
	10	Rare earth chloride production area
	10A	Lanthanum rare earth chloride area
	10B	Boiler
	11	Bastnasite storage
	11A	Bastnasite storage and feed area
	11B	Lanthanum rare earth chloride production area
	13	Maintenance parts & materials storage
	14	Waste treatment/sludge filtering equipment

ATTACHMENT #2

RADIOLOGICAL MONITORING AND SAFETY PROGRAM

A plant-wide radiological survey of the York facility was performed by Eberline Labs on May 27 and 28, 1981 in order to provide the basis of a comprehensive monitoring and safety program for personnel and environmental protection. Initial results are attached for reference. This Eberline survey and other information known to date generally indicates that the dilute, low activity radioactives handled in the York Plant present a low degree of hazard to employees and the environment. Prudent monitoring and materials management should therefore allow continued safe operation of the plant and should permit satisfactory handling of products, by-products, and residues in the future.

With this background the following radiological monitoring and safety program is proposed.

I. Site Monitoring

A. Gamma Radiation

1. General description and purpose.
A monthly gamma radiation survey will be conducted for the first year of this program (through July 1982) in order to establish base line parameters through a year of normal plant operation and in order to detect any possible hazardous levels of gamma radiation. If levels remain at or below 600 uR/hr. (the threshold level requiring personnel dosimetry) in normal work locations, the survey will be run quarterly after the first year.

2. Frequency
Conduct monthly for first year, quarterly thereafter.

3. Locations
The same locations will be monitored as Eberline had checked on May 27 and 28, 1981. These include the cerium concentrate feed and storage areas, bastnasite feed and storage areas, cerium fluoride product storage and drying areas, cerium carbonate product area, the rare earth chloride product areas, and various outside areas containing several types of residues. If any additional locations of relatively high radiation level are identified, or if any radiologicallly significant process change or substantial increase in storage of radioactive material occurs, the affected areas will be incorporated into future surveys.

4 Monitor
Monitoring will generally be done by William Doyle, General Manager, who will be designated Radiation Safety Officer. In his absence or at Mr. Doyle's request, Robert Brown, Chief Chemist, will perform

the survey as Assistant Radiation Safety Officer.

5. Equipment

a). Victoreen 490 Thyac III Survey Meter with Model 489-110 "pancake" probe with a 1.4 mg/cm^2 mica window. This instrument will detect alpha above 3.5 MeV, beta above 35 KeV, and gamma above 6KeV.

b). Victoreen 491 GM Survey Meter with Model 489-35 end-window probe with a 1.4 mg/cm mica end window. This instrument will detect alpha above 4 MeV, beta above 70 KeV, and gamma above 6 KeV.

c). Calibration: The calibration procedure will be developed in accordance with recommendations from the instrument manufacturer. These procedures will also be reviewed with our radiological consultant, Eberline Labs.

B. Radon 222 and 220

1. General description and purpose
An annual check for accumulation of radon and thoron gases will be performed in order to make sure employees are not inadvertently being exposed to hazardous amounts of radiation from these sources. If all results are low and well within NRC exposure guidelines (4 WL months/year for radon -222 and the corresponding guidelines for radon-220), then the tests will be discontinued after two years.

Testing will include time - integrated radon-222 measurement and "working level" measurements of both radon-222 and 220. Sampling will be done during winter periods to check for radon/thoron accumulation when low ventilation level is most likely to allow gas accumulation.

2. Frequency
Conduct annually for first two years; discontinue if results are well below hazard levels.

3. Locations
The same locations will be monitored as Eberline had checked on May 27 and 28, 1981. These include the cerium concentrate feed area, bastnasite feed area, cerium fluoride processing/centrifuging area, and the South plant boundary near the chlorine vent scrubber. Also, if any radiologically significant process changes or substantial increase in storage of radioactive material occurs, the affected areas will be monitored for three consecutive annual surveys. If gas concentrations are within Federal standards, then testing at these additional locations will be discontinued.

4. Monitor

Radon/Thoron monitoring will be performed by Eberline Labs, Applied Health Physics, or other equivalent reputable radiological health physics consultant.

5. Procedures

a). Modified Kusnetz method for working level measurements.

b). Time-integrated samples collected in sampling bags; counting on-site with scintillation cells.

C. Air particulates

1. General description and purpose

Although the thorium concentration in feed materials and products and residues handled at the York Plant is low and the MPC for the dusts from these materials is much higher than actual dust concentrations encountered in the plant, radionuclide-containing dust is still the primary employee and environmental concern. Therefore, initially a continuous dust monitoring program including weekly gross alpha count and monthly isotopic determination will be set-up in three areas that involve the most significant dust exposure. If the first 6 months of measurements shows dust levels to be well within NRC guidelines (MPC for gross alpha below 6 x 10-13 PCu/ml. or comparable standards for specific radionuclides when isotopic determinations by Eberline are complete), then the dust monitoring will be reduced to one week per half year for each location and will be continued indefinitely.

2. Frequency

Radionuclide-containing dust will be monitored continuously for the six months, decreasing to one week per half year thereafter, if results are within NRC guidelines.

3. Locations

Monitoring will be done in the cerium concentrate feed area, the bastnasite feed area, and the cerium fluoride centrifuge/drying area.

4. Monitor

Sample collecting and monitoring will be conducted by the RSO, William Doyle or his Assistant RSO, Robert Brown. Gross alpha count will be performed by either of these two individuals. Isotopic determination of monthly composite samples will be performed by Eberline Labs or equivalent radiological health physics consultant.

5. Procedures/Equipment

a). Continuous air sampling with low volume pump and filter will be performed in each of the three monitor locations to indicate dust content in the actual work environment encountered by employees. Filters will be changed weekly and checked for gross alpha count using an in-house alpha detector.

b). An isotopic determination of the various radioactive species present, isotopic thorium, radium 226 and 223, will be performed each month during the first half year of this program. For each monitoring area, the weekly filter/dust accumulations will be sent to Eberline Labs (or equivalent consultant) to do a monthly composite isotopic determination. After the first half year of monitoring, for each sample area composites will be made semi-annually using filters/dust accumulations for the one week sampling period during that half year.

C. Equipment

The in-plant gross alpha determination will be done using the existing Victoreen 490 Thyac III Survey Meter with Model 489-110 "pancake" probe with a 1.4 mg/cm mica window. This instrument will detect alpha above 3.5 MeV, beta above 35 KeV, and gamma above 6KeV.

The calibration procedure will be developed in accordance with recommendations from the instrument manufacturer. Both the calibration procedure and the overall gross-alpha measurement procedures will be reviewed with our radiological consultant, Eberline Labs.

D. Effluent water monitoring

The initial Eberline radiological survey included analysis of a one week effluent water composite for uranium isotopic thorium, and Radium - 226 and 228. When available the results of this analysis will be reviewed and interpreted by Eberline and Dr. R. Beck, Union Oil Company's Director of Occupational Health and Toxicology, in light of NRC guidelines and applicable Pennsylvania Department of Health and Springettsbury Township effluent quality regulations.

E. Wipe tests and general industrial hygiene

A comprehensive review of plant industrial hygiene will be made to identify any possible areas of inadvertent personnel contamination by radioactive materials. Wipe tests to pick up tramp radioactives will be done where appropriate. Presently, eating and drinking is permitted in the lunch room only; no food or beverages whatsoever are allowed in the production facilites. Locker, shower, and change facilities are provided.

II. Personnel Monitoring

A. Perscnnel gamma dosimetry

Although gamma dosimetry is not mandatory unless an individual is likely to receive 310 mrem/quarter (approximately 600 µR/m.) and although no plant employees spend a significan. fract.on of their work day near any of the stronger radiation materials, employees normally working with the residues will be provided with film badges to monitor overall gamma exposure. This step is taken as a precaution, since the initial Eberline survey did identify some residue storage areas that showed gamma emiss.ons in the 280 to 580 µR/m. range.

B. Bioassay

As part of the initial Eberline survey, urine samples were collected from plant employees selected on the basis of most probable radionuclide exposure. When the results of this investigation are available, they will reviewed and interpreted by both Eberline Labs and Dr. R. Beck of Union Oil Medical Department. At this point no further need for bioassay investigation is anticipated, unless the urine samples show thorium, uranium or radium - 226 contents to be unexpectedly approaching the threshold level requiring periodic monitoring.

III. Waste Disposal

A comprehensive effort is underway to find a satisfactory long term method of disposing of residues and by-products that contain significant quantities of radionuclides. The following general approaches are under consideration:

A. Sale of rare earth chloride (REC) residues to other manufacturers who normally process thorium materials. These manufacturers could possibly integrate the thorium content of the residues into the thorium by-products or concentrates they normally produce.

B. Disposal of residues with the tailings resulting from Union Oil's Sweetwater, Wyoming uranium mine and mill.

C. Disposal of residues in on-site burial facilities which might be developed at the Mountain Pass, California mine, the original source of the thorium containing minerals.

D. Extraction and concentration of the thorium from the residues and semi-permanent storage of concentrated thorium at the York facility.

E. Removal of the thorium from the minerals and concentrates produced at the Mountain Pass, California mine, before the thorium content is shipped with the concentrates to York to be used as feed stocks for the York Plant.

F. In accordance with suggestions from some health physics consultants, undertake a carefully planned program of disposal relying on solid dilution with non-radioactive wastes. This technique would be analogous to currently used liquid or gaseous dilution and dispersion techniques. This technique could permit our relatively inert wastes to be disposed of in a secure, non-radioactive waste disposal site or possibly in a mine tailings disposal site.

G. Burial in a low level radioactivity disposal site when and if such a site becomes available.

All these alternatives involve complex and often very unattractive features and costs. The ultimate solution to this problem may require years of planning and research. In the meantime, residues will be stored in 55 gallon plastic-bag-lined steel drums on the premises. Even though these residues are exceedingly insoluble and unreactive, the storage yard will be monitored monthly for any signs of drum deterioration. This temporary storage area will be appropriately fenced to avoid inadvertant exposure to unauthorized people.

The area of ground accumulation of REC residue, as noted in Eberline's report, will be thoroughly investigated and defined. A proposal will be presented to NRC to allow either on site burial or removal for transport to a final disposal site, when and if such a site can be found. The residue identified in the Eberline report is presently in an area designated for a planned plant expansion.

IV. Radiation Monitoring and Safety Personnel

A. William E. Doyle will be designated Radiation Safety Officer (RSO) and will be charged with overall administration of the radiation safety and control program in accordance with a NRC Source Materials license. A graduate chemist, Mr. Doyle is currently the York Plant General Manager, and in this capacity has a thorough knowledge and control of all aspects of the plant. He has experience in the rare earth and thorium business with the Lindsay Division of Ken-McGee from 1964 to 1973. He had various positions there, ranging from laboratory technician and chemist through shift supervisor. His experience at the York Plant ranges from Process Chemist in 1973 to Assistant General Manager and his present position of General Manager. His practical and on the job training, including years of work with pure thorium products, will be augmented in the near future with a standard radiation safety and health course such as is offered by Eberline Labs.

B. Mr. Robert Brown will be designated Assistant Radiation Safety Officer and will supplement Mr. Doyle in his duties as RSO. A graduate chemist with some post graduate work, Mr. Brown is technically familiar with the plant operation and chemistry through seventeen years of work at the York Plant. This background will be augmented by a radiation safety courses such as offered by Eberline.

C. Dr. S. Gopalakrishnan Nair is the senior process chemist at the York Plant. He has eight years experience in the processing of thorium containing rare earth ores and chemicals for Indian Rare Earth Limited. He was Research Officer/Chief Chemist for Indian Rare Earth for four years. He also studied rare earth processing and was involved in rare earth research at the Ames Laboratory of the U.S. Atomic Energy Commission from 1964 through 1967 and in this time was well familiarized with U.S. AEC standards and methods related to rare earth and radioactive contaminants. He has been a process chemist at the York Plant since 1973.

D. Noel Kurai is Coordinator of Environmental Affairs for Molycorp, He has seven years experience in diverse areas of environmental concern, including water and air pollution monitoring and control and radioactive material monitoring and control. His background includes work in Union Oil's Research Laboratories and Union Oil's Environmental Sciences Department. His education includes a degree in Zoology and a Master's Degree in Civil and Environmental Engineering. In 1978 he attended the special course "Radiation Protection in Uranium Mining and Milling" conducted by United Nuclear in Richland, Washington, and in 1979 he attended an Eberline special course, "Radiation Protection & Environmental Surveillance for Uranium Resources Organizations".

Mr. Kurai will maintain corporate surveillance of the York Plant program to monitor and control the radioactive materials at the plant,particularly as related to environmental concerns.

E. Corporate Medical Department

The Union Oil Medical Department is charged with the responsibility for maintaining surveillance of the overall radiation health and safety program at the York Plant and other Union Oil facilites.

Among the duties will be the following:

1. Participate in the development and implementation of a radiation monitoring program.
2. Review and approve radiation sampling and surveying procedures and equipment.
3. Review all radiation monitoring results.
4. Review methods,equipment and results of in-house and consulting laboratories relative to radiation
5. Participate in the development and implementation of an overall radiation protection and training program for appropriate employees.
6. Review content of training courses, literature and aids.
7. Participate in the selection of radiation protection instruments.
8. Review radiation protection procedures, equipment and records and approve as necessary.

The primary participants in this effort will be Dr. R. Beck, Union Oil Company's Director of Occupational Health and Toxicology, and James C. Warrick, Industrial Hygienist in Union Oil's Medical Department.

Dr. Beck has eleven years experience in diverse areas of occupational health and safety, including radiation related fields. He has been a Professor of Occupational Health, a consultant in the general field of occupational health and has worked for the County of Los Angeles and the United Nations, as well as Union Oil, in the field of occupational health. He has taken numerous radiation oriented special courses such as given by Eberline Labs, Mine Safety and Health Administration, and other government, university, or consultant organizations. He was also intimately involved in establishing and monitoring the radiation safety program at the Union Oil (Mineral Exploration Company) in-situ uranium leaching and open pit mine and mill operations in Rawlins, Wyoming.

Mr. James Warrick will also be involved in overseeing the radiation and occupational health program at the York Plant. His background includes a masters level graduate degree in occupational health, including studies in health physics. He has four years experience in the general occupational health field. He is currently scheduled to attend a radiation safety course at Eberline Labs in the near future.

eberline

June 11, 1981

EI-917966

Mr. William Doyle
Union Molycorp
350 E. Sherman
York, Pennsylvania 17403

Dear Mr. Doyle:

Attached is the report of results from the radiological survey performed at Molycorp's York facility exclusive of any analytical results being performed by our laboratories. Laboratory results are forthcoming.

Work performed on site included an extensive gamma radiation survey, air sample collection for analysis of Radon (Rn-222) and Thoron (Rn-220) daughter products, and analysis of Radon in air. Additionally, workers selected for bioassay sampling were indoctrinated pertaining to requirements for sample collection.

Generally, the gamma survey revealed radiation exposure levels below those that would pose any health hazard or require any corrective action. However, this was not the case in the area east of the Tungsten Storage Pit where rare earth chloride residue is present. Gamma exposure rates in this area were 200 to 580 micro-Roentgens per hour (μR/hr).Title 10 of the Code of Federal Regulations, Part 20.202 requires personnel dosimetry when an individual is likely to receive 310 mrem/quarter. This is approximately equivalent to 600 μR/hr. It is therefore recommended that personnel dosimetry (e.g. TLD's) be provided for personnel who frequent this area and particularly if construction or excavation were to occur.

Airborne activity as measured by gross alpha counting of air particulate filters was less than the maximum permissible concentrations (MPC's) allowed by 10CFR 20 Appendix B for occupational exposure. For reference, MPC's for occupational and non-occupational exposures to the anticipated isotopes associated with your facility are:

	Occupational MPC pCi/m^3	non-Occupational MPC pCi/m^3
Natural thorium -	60	2
Th-232 -	30	1
Natural Uranium -	100	5
Th-230 -	2	0.08
Ra-226 -	30	3

(Continued on page -2-)

Gross alpha air particulate activity measured on site ranged from 0.12 to 0.26 pCi/m^3. Isotopic analyses by Eberline's laboratory will provide the necessary data to identify the constituents. The areas sampled for air particulate activity were: 1.) Cerium Concentrate Feed, 2.) Bastnasite Feed, and 3.) Cerium Fluoride Centrifuges.

Radon daughter samples collected at the work locations and at the plant's south boundary near the vent scrubber ranged from 2 to 3 thousandths of a Working Level (WL). Presently, the occupational WL limit is 1/3 WL. It should be noted that these measurements were made with optimum ventilation in the plant. The concentrations will increase during winter months when the plant is closed up. Radon daughter samples were also counted for thoron (Rn-220) daughter concentrations. These ranged from 0.26 to 0.42 pico-Curies per liter (pCi/l). The Code of Federal Regulations occupational limit for thoron is 300 pCi/l. As with the radon, similar ventilation effects apply.

The time-integrated radon samples revealed concentrations ranging from less than 3 times the standard deviation of background to 2.68 pCi/l. Again, these concentrations are well below the 10 CFR 20 occupational limit of 30.0 pCi/l. For reference, the non-occupational MPC for radon is 3 pCi/l.

In closing, it is recommended that whatever residue is not contained in weather-tight drums be collected, contained, and stored in one location. It is also suggested that no construction is begun east of the Tungsten Storage Pit until the ground is clear of all residue.

If you have any questions regarding the survey, please feel free to contact me at (505) 345-9931.

Sincerely,

Nels Johnson for

James B. Turner
Health Physicist
Eberline Instrument Corporation

JBT:dap

Radiological Survey of Union Molycorp's York Plant,

York, Pennsylvania

Eberline Instrument Corporation was contracted, under P. O. 18280, to evaluate certain ambient conditions at the York Plant for a comparison to occupational criteria. Field work took place on-site May 27 and 28, 1981.

Radiological services provided on-site included a comprehensive gamma radiation survey of the process plants and surrounding areas; radon-222, radon daughter, working level (WL), thoron (Rn-220) and particulate samples from the air both inside the plant and at the property boundary. Analytical services which could not be accomplished on-site are being provided by Eberline's Laboratories. Consultation on collection methods for bioassay samples and plant effluent composite samples was also provided. Techniques and methods utilized for the work at the site are detailed below. Locations are shown on the attached map.

Gamma Radiation Survey

An extensive gamma radiation survey covered all critical areas within the plant as well as storage locations around the plant. The highest activity encountered during the survey was located east of the Tungsten Storage Pit where some rare earth chloride residue had been dumped in the past. Readings as high as 580 ± 58 micro-Roentgens per hour (μR/hr) were found on the ground in this area. Work areas within the plant that were surveyed revealed exposure rates of 7.0 to 70.0 μR/hr. The table below shows the recorded results of the survey for readings taken on-contact with the material at each work area as well as readings in the work area itself. The instrument used for the gamma survey was a portable ratemeter/scaler (Eberline Model PRS-1) with a 2" diameter by 2" thick NaI(Tl) scintillation probe (Eberline Model SPA-3) which was cross-calibrated on May 22 to a traceable National Bureau of Standards calibrated pressurized ion chamber (Reuter-Stokes Model RSS-111). Uranium ore was used as a reference source. Estimated error for the PRS-1/SPA-3 instrument is 10% of the indicated reading.

Gamma Survey Results

(In-Plant)

LOCATION*	μR/hr On-Contact	μR/hr Work Area
1. Cerium Concentrate Feed	130 ± 13	30 ± 3
2. Cerium Concentrate Storage	160 ± 16	28 ± 3
3. Cerium Concentrate Storage	300 ± 30	70 ± 7
4. Bastnasite Feed	100 ± 10	48 ± 5
5. Bastnasite Storage	140 ± 14	28 ± 3
6. Bastnasite Storage	110 ± 11	50 ± 5
7. Cerium Fluoride Product Storage	260 ± 26	27 ± 3
8. Cerium Fluoride Product Storage	90 ± 9	27 ± 3

LOCATION*	μR/hr On-Contact	μR/hr Work Area
9. Cerium Fluoride Product Drying	45 ± 5	30 ± 3
10. Cerium Carbonate Product	12 ± 1	7 ± 1
11. Rare Earth Chloride Product	40 ± 4	34 ± 3
(Outside of Plant)		
12. By Muriatic Acid Tanks	12 ± 1	
13. By Drums Wet Cerium Fluoride Product	70 ± 7	
14. By Drums Cerium Fluoride Residue	280 ± 28	
15. By Drums Cerium Fluoride Residue	150 ± 15	
16. By Drums Lead Sulfide Residue	105 ± 10	
17. By Drums Various Residues	450 ± 45	
18. By Drums Lead Sulfide Residue	105 ± 10	
19. On ground Rare Earth Chloride Residue	580 ± 58	
20. On ground Old Settling Basin	50 ± 5	

*See attached map for locations

Radon-222 Samples

Four time-integrated 24 hour Radon samples were collected in impermeable bags. At the end of collection the air was transferred through a glass fiber filter to a scintillation cell for counting on-site after a 3 hour in-growth period. Counting was done with a mini-scaler (model MS-2) and scintillation alpha counter (Model SAC-R5). The work requested a sample be collected at the Cerium Fluoride Production Area. However, as no product was being processed in the drying area, a sample was collected at the Cerium Fluoride Centrifuge. The same area was also selected for measurements of radon and thoron daughters. Listed below are the results of the time integrated radon samples.

Time - Integrated Radon-222 Samples

Location	^{222}Rn(pCi/l)
Cerium Concentrate Feed Area	2.68 ± 0.27
Bastnasite Feed Area	0.77 ± 0.19
Cerium Fluoride Centrifuge	2.09 ± 0.69
South Plant Boundary Near Vent Scrubber	< 3 Sigma Bkg.

Measurement of Working Levels

Four air samples were collected at the same location as the time integrated Radon samples. Samples were collected on high efficiency membrane filters for 5 minutes at a pump flowrate of 2 liters per minute. Results were determined by the modified Kusnetz method after alpha counting between 40 and 90 minutes after sample collection. Results are as follows:

Location	WL
Cerium Concentrate Feed (In Progress)*	0.003 ± 0.002
Bastnasite Feed (In-Progress)	0.002 ± 0.001
Cerium Fluoride Centrifuge (In Progress)	0.002 ± 0.002
South Plant Boundary near Vent Scrubber	0.002 ± 0.002

As one WL is equivalent to the concentration of radon daughters in equilibrium with 100 pCi/l of radon,by comparison of WL and radon analytical results we can estimate the impact of building ventillation rates. Assuming the grab sample WL measurements and time-integrated Rn-222 measurements reflect ambient conditions, the percent equilibrium between radon and daughters at the Cerium Concentrate Feed and Cerium Fluoride Centrifuge areas was about 10%. This again reinforces our observation that due to the high building ventillation rates in effect during our survey, airborne concentrations will likely increase during winter months.

Measurement of Thoron Daughters

The same samples collected for working level measurements were also counted for thoron daughter concentrations. The results were calculated in accordance with the method detailed in the International Atomic Energy Association's Manual of Radiological Safety in Uranium and Thorium Mines and Mills. Counting of the samples was done after 300 minutes or more had elapsed after sample collection. Results are listed below.

* In-Progress implied personnel doing the work.

Location	Thorium B (pCi/l)
Cerium Concentrate Feed (In-Progress)	0.42 ± 0.17
Bastnasite Feed (In-Progress)	0.26 ± 0.11
Cerium Fluoride Centrifuge (In-Progress)	0.35 ± 0.14
South Plant Boundary near Vent Scrubber	0.37 ± 0.15

Air Particulate Samples

Six air particulate samples were collected on-site at 3 locations:

Cerium Concentrate Feed
Bastnasite Feed
Cerium Fluoride Centrifuge

At each location a 24 hour ambient sample was collected for gross-counting of long-lived alpha. Similarly, an 8-hour sample was collected at each location for laboratory analysis of Isotopic Uranium, Isotopic Thorium, Radium 226, and Radium-228 after preparation by fusion. Listed below are the gross alpha concentrations for the 24 hour air samples.

			pCi/m^3
1.	Cerium Concentrate	5-27-81/@0832 to 5-28-81/@0836	0.18 ± 0.02
2.	Bastnasite Feed	5-27-81/@0846 to 5-28-81/@0847	0.26 ± 0.02
3.	Cerium Fluoride Centrifuge	5-27-81/@0843 to 5-28-81/@0841	0.12 ± 0.01

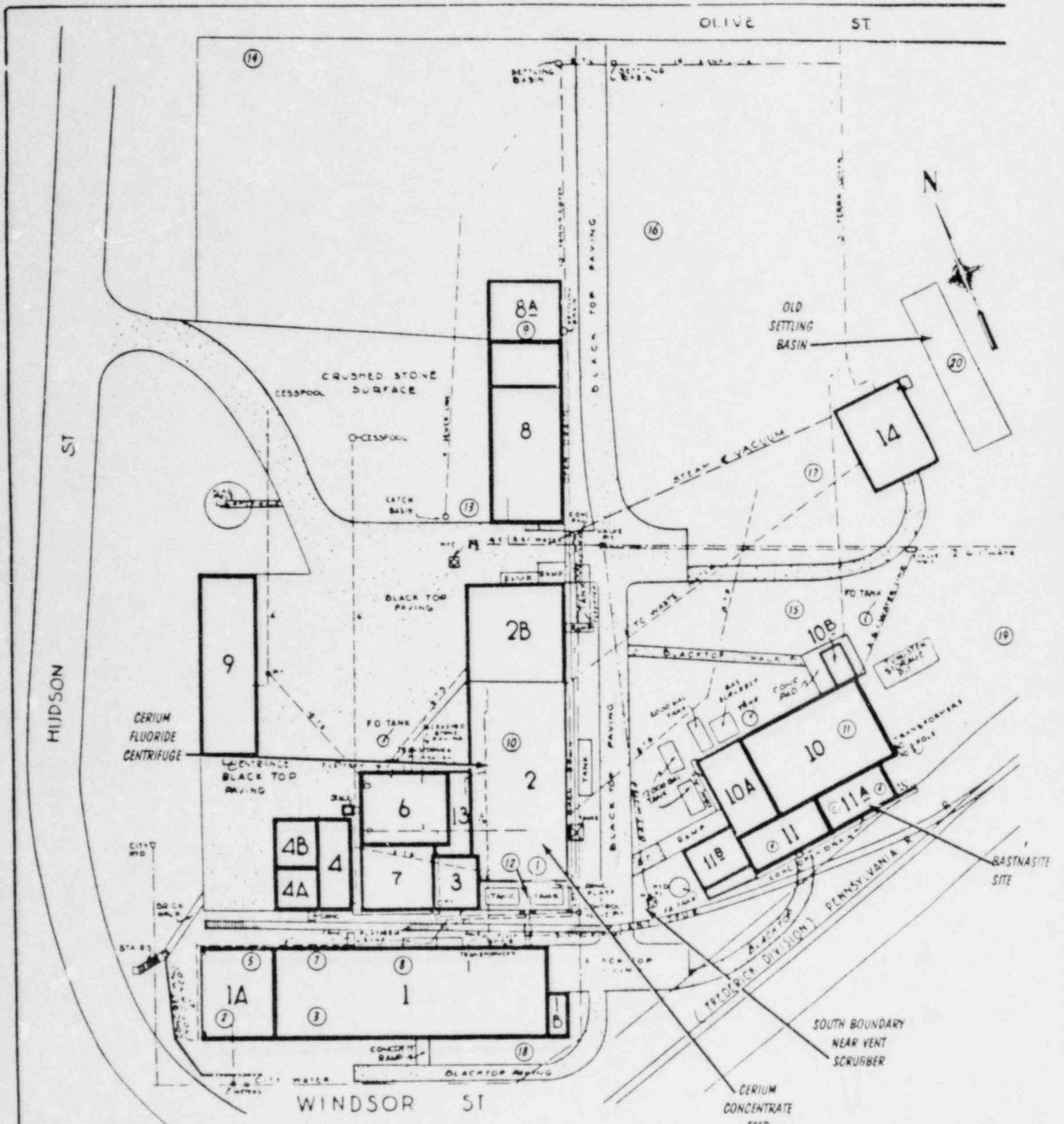
Bioassay

Urine sample collection bottles were provided to plant employees selected for the program. Instructions for collection times were detailed in accordance with U.S. Regulatory Guide 8.22 Bioassay at Uranium Mills. The time criteria is necessary to avoid Uranium that is eliminated without uptake in kidney tissue and also permits detection of an exposure before elimination renders it undetectable. Samples will be analyzed for Total Uranium, Isotopic Thorium, and Radium-226.

Water Samples

As prescribed in the scope of work, it was agreed to collect a plant effluent sample composite over one week's time at the point that the effluent discharges to the sewer plant in Springettsbury Township. The composite will be analyzed at Eberline's laboratory for Total Uranium, Isotopic Thorium, Radium-226 and Radium-228.

GAMMA SURVEY POINTS AND AIR SAMPLE LOCATIONS



Air sample locations are in italic type

Circled numbers in italic type are gamma survey points

MOLYBDENUM CORPORATION OF AMERICA

YORK, PENNSYLVANIA

ATTACHMENT NO. 3

MOLYCORP, INC.
SPRING GARDEN TOWNSHIP, YORK COUNTY
COMMONWEALTH OF PENNSYLVANIA

POLLUTION INCIDENT PREVENTION REPORT

MAY, 1976

REVISED: March 17, 1981

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MOLYCORP, INC.
SPRING GARDEN TOWNSHIP, YORK COUNTY
COMMONWEALTH OF PENNSYLVANIA

POLLUTION INCIDENT PREVENTION REPORT

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INTRODUCTION

This Pollution Incident Prevention Report was prepared to present a comprehensive plan for oil and hazardous substance spill prevention and countermeasures to be taken at the York Plant of Molycorp, Inc.

This report was originally prepared in May, 1976 in compliance with Pennsylvania Department of Environmental Resource requirements.

The report has been updated to include changes in the plant facilities and to incorporate requirements under Section 265 of the Federal Resource Conservation and Recovery Act.

PLANT OPERATIONS

Molycorp, Inc. operates a chemical processing plant at York, Pennsylvania. The plant is located in Spring Garden Township just outside the city limits of the City of York. The property is bounded by North Sherman Street, Olive Street, Hudson Street and the P.C.R.R. tracks.

The facility has been owned and occupied by Molycorp since 1929. Products of the plant are a broad line of inorganic rare earth chemicals. Since the products are so varied, it follows that the processing varies accordingly. Likewise the wastes from these many products change from time to time with the product mix.

Raw materials are received as packaged dry products. They are bastnasite ore concentrate, lanthanum-rare earth hydrate and cerium concentrate. They are mined and concentrated at a company facility in California.

Bulk reagent chemicals and fuels used in processing the raw materials are hydrochloric acid, caustic soda, nitric acid, #2 fuel oil and #4 fuel oil. In addition to these the plant has one liquid product, lanthanum-rare earth chloride which is stored in bulk quantities.

The bulk liquids (hydrochloric acid, caustic soda and aqua ammonia) are delivered by tank trucks operated either by common carrier firms or by the producers themselves. All except the #4 fuel oil are stored in above-ground tanks. The capacities of these tanks are:

PRODUCT	VOLUME	R.Q. (POUNDS)
1. Hydrochloric Acid	4 - 12,000 gal.	5,000
2. Caustic Soda	2 - 10,000 gal.	1,000
3. #2 Fuel Oil	2,000 gal.	
4. #4 Fuel Oil	10,000 gal.	
5. Lanthanum-Rare Earth Chloride	3 - 12,000 gal.	
6. Rare Earth Nitrate	3 - 6,500 gal.	
7. Nitric Acid	1 - 7.000 gal.	

Since all these tanks (except the #4 fuel oil) are above ground, they can, and are easily inspected for leakage. A stop-gate has been installed to prevent their discharge to any nearby surface waters (namely Mill Creek or Standard Concrete Quarry).

The #2 fuel oil tank is diked to prevent run-off of any spillage that could occur.

Process residues are placed in 55 gallon barrels and stored in the plant yard.

The property generally slopes towa the North-East, with the low point being along the north edge of the property along Olive Street, approximately 200 feet west of Sherman Street. At this point an old storm dra'n flows under Olive Street and empties into the Standard Quarry. A flow control sump with a stop-gate has been installed at that point, with a dike along the property fence line to prevent any retained run-off from flowing onto and across the street, and thence to the Quarry.

All the plant processing waste waters drain by gravity through underground pipes leading to the equalization pond (water quality management Permit No. 6773203). These are all new corrosion resistant pipes which were installed at the time of the construction of the permitted impounding basin. The equalization pond levels out discharge flow fluctuations, and allows several of the various process effluents to neutralize each other. The mixed pond effluent flows by gravity into a series of three tanks, where it is automatically neutralized and treated to meet Springettsbury Township sewer plant standards. It is then pumped to a clarifier to remove suspended solids. The clear effluent is discharged to the township sanitary sewer system. A back-up ph meter is installed at the clarifier discharge so as to sound an audible alarm in case of failure of the automatic neutralization controls. No process waters flow to the Standard Concrete Quarry, nor to Mill Creek, nor to any waters of the Commonwealth.

Solids have accumulated in the equalization pond. Some of the solids represent a process yield loss of material equal in value to the original ore used.

Due to the nature of the chemistry involved the solids that have accumulated to date in the equalization pond, the original clarifier and the sludge storage basins are insoluble. At the time of the installation of the equalization basin (and the related treatment process) the expectation and intent was to recover and recycle any settled solids.

However, in actual practice we have found that the recycle idea does not work. Due to the varying product mix mentioned above, the solids have been converted to an insoluble state. We find that they are unaffected by either strong acid or strong alkali. Laboratory leach tests show that these solids will never cause leaching into ground waters no matter where they are disposed of.

Power failures would present no threat of pollution from the water in the equalization pond. All of the chemical processing operations at this plant are batch, -- there are no continuous operations. Therefore if a power failure occurred that would prevent pumping of waste water to the sewer, we would simply stop draining process wastes to the equalization pond. A freeboard of four feet below the pond berm is maintained at all times. This is approximately equal to four days water usage during average plant operations. An alarm will be installed on the power supply to the sewer pumps. Power failure would then sound an audible alarm in the maintenance shop and the room for the night watchman. A notice is posted instructing the night watchmen that should the alarm sound he is to close the manual outlet valve from the pond and call the plant notification list.

With the construction of the sump and stop-gate described above, any major chemical spills would either drain directly to the equalization pond, or to the retaining sump where they could be collected and recovered or treated accordingly.

OPERATING PROCEDURES

1. Breakdown of Treatment Plant Equipment

As described above the existing treatment facilities consist of a plastic lined equalization basin, three treatment tanks and a clarfier. The chemical processing waste water generated at this plant to date has only needed ph neutralization and removal of suspended solids to meet Springettsbury Township sewer specifications. One treatment tank serves as a neutralization tank, one for a pump surge tank and the third one as a spare.

Neutralization is regulated by an automatic ph recorder/controller, and is backed up by a second ph unit on the clarifier discharge. The second ph unit will be equipped to operate an alarm as soon as plant operations warrant continuous discharge. Also the units are further backed up by the manual collection of a discharge sample once on each shift the plant operates. These are checked daily and composited for a monthly analysis.

2. Emergency Manual

In the event of a release of a hazardous substance or of an emergency, emergency procedures will be implimented as described in the "Emergency Procedure Manual".

3. Maintenance and Inspection

Engineering, maintenance and operating personnel inspect these facilities daily and review the operation of the various systems. The pumps are checked daily and routinely maintained. If the clarifier needs repair the equalization pond has ample freeboard to hold four or more days of waste water. Plant operating and maintenance personnel inspect these facilities regularly during day shift operations. The plant has watchmen on duty at all other times, that is 4:00 PM to 8:00 AM, Monday through Friday, and 24 hours per day on Saturdays, Sundays and holidays. Watchman's clock key stations will be installed at the foot of the stairs to the clarifier and in the waste treatment instrument and control room. This assures attention once every hour even when the plant is not operating.

Hazardous waste storage facilities will be inspected weekly. An inspection report will be filled out, signed by the inspector and kept on file.

4. Personnel Training

The plant bulletin board will be posted with a notice describing what should be done in case of an accident that could cause pollution incidents. This notice will also detail the supervisory personnel that must be notified.

Training of operating personnel will be continually upgraded. This training will include discussions and reviews of piping, valving, pumps, etc., that serve the waste handling system. Likewise, training will include discussions of problems that can occur if pollution causing incidents occur.

5. Communications and Chain of Command

Plant personnel are advised concerning the chain of command that has been developed for the handling of emergency situations which could cause pollution incidents. This chain of command, including phone numbers, is posted near telephones so that immediate reporting can be done.

6. Waste Sampling and Analysis

Wastes currently generated or stored at the York Plant will be sampled and tested according to methods described in "Test Methods for Evaluating Solid Waste", EPA, SW-846, 1980 or other appropriate methods. Wastes found to possess hazardous characteristics will be identified and stored in an appropriate manner.

Waste streams will be reviewed as necessary when changes of process, feed stock or other conditions cause a change in the nature of the waste. Results of waste analysis will be maintained at the facility.

7. Manifests

A manifest will accompany each shipment of hazardous wastes.

If a copy of the manifest with the handwritten signature of the owner or operator is not received within 35 days of initial transport or within 7 days of expected arrival (whichever is less):

1. Contact the transporter or hazardous waste disposal facility to determine the status of the shipment, and
2. Notify the DER within 24 hours by telephone of the status of the shipment.

If a copy of the signed manifest is not received within 45 days of shipment or within 14 days of expected arrival:

1. Call the DER and report that the manifest has not been received;
2. Submit a written report (Exception Report) which includes:
   a. A copy of the manifest.
   b. A cover letter explaining the efforts taken to locate the hazardous waste and the results of those efforts.

Copies of all manifests will be retained on the premises for at least three years.

SECURITY AND EXTERNAL FACTORS

The plant was just recently fenced in, the gates are kept closed during evenings, nights and weekends (except for shift changes) and a watchman is on duty at these times. Thus the possibility of vandalism or unauthorized entrance of strikers, outside people, etc., is very remote. The equalization basin is far above the one hundred year flood elevation; therefore, flooding possibilities can be considered non-existant.

The plant chemical manufacturing processes are such that if a power failure occurs, the system is failsafe. The plant processing operations are all batch, and therefore in the event of a power failure no waste waters would be drained from the processing operations. None of the chemical storage would be affected by power failure.

PAST POLLUTION INCIDENTS

There have been no pollution incidents since the completion of the permitted equalization basin in 1974.

Housekeeping, careful operations and well maintained equipment have served well to date.

NOTIFICATION OF INCIDENTS

The General Manager, or his designate, will immediately report any incident to the following:

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Water Quality Management
Room 1002, Health & Welfare Building
Harrisburg, Pennsylvania 17120
Phone: (717) 787-9860 or 787-4343

Springettsbury Township Wastewater Treatment Plant
3501 North Sherman Street
York, Pennsylvania 17402
Phone: (717) 757-3521

In case of releases of reportable quantities of hazardous substances, the General Manager, or his designate, will also immediately inform the following:

National Response Center
Phone: (800) 424-8802

In addition, the following company officials will be notified immediately:

General Manager	William Doyle Office Phone (717) 845-2624 Home Phone (717) 755-1101
Production Supervisor	Myrl Shuemaker Office Phone (717) 845-2624 Home Phone (717) 764-3[illegible]3
Maintenance Supervisor	Armond Cunningham Office Phone (717) 845-2624 Home Phone (717) 755-8218
Chief Chemist	Robert Brown Office Phone (717) 845-2624 Home Phone (717) 252-2049
Stores Manager	Donald Shuemaker Office Phone (717) 845-2624 Home Phone (717) 848-2295

CLEAN-UP SERVICES AND EQUIPMENT

Plant engineering and maintenance has maintained contact with several local contractors who car be called for services in case of an emergency. Additionally, the plant maintenance department is available for such instances. Chemicals are always available on-site for emergency neutralization.

The plant retains the following for off-site disposal of industrial wastes:

American Recovery
1901 Birch Street
Baltimore, Maryland 21226
Phone: (301) 355-0263

American Recovery uses the Johnson & Speake, Inc. Solley Road Landfill located at 7890 Solley Road, Glen Burnie, Maryland 21061, phone number 301-255-6717. Gerber's, Inc. is the licensed hauler used, their EPA I.D. number is MDD9906866370.

SUMMARY

1. Any incidents should be reported immediately and measures taken to halt the incident. Also steps must be taken to insure that incidents do not recur.

2. Plant personnel will be instructed as to the seriousness of accidental discharges. Instructions will be posted in accessible and conspicuous locations. Supervisors are to be notified immediately in case of spills.

3. Good housekeeping is a must, not only from the standpoint of pollution incidents, but also the loss of costly materials must be prevented.

4. The installation of a diked area with a sump and stop-gate will prevent the accidental discharge of major spills of chemicals.