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Molycorp

November 24, 1999

Mr. Larry Camper, Chief
Decommissioning Branch
United States Nuclear Regulatory
Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 28052

**Subject: Response to NRC October 19, 1999
Request for Additional Information on
Draft Environmental Assessment for the
Molycorp, York, PA Site.**

Dear Mr. Camper:

In a letter to Mr. Jack Daniels dated October 19, 1999, the NRC requested that Molycorp provide additional information pertaining to the Decommissioning Plan (Revision 1, June 30, 1999) for the York, Pennsylvania site. Due to illness, Mr. Daniels is unable to respond to the request and, as his Supervisor, I am responding on Molycorp's behalf. You will find enclosed the additional information as requested.

Any written correspondence concerning this subject should be directed to me at the Molycorp address shown on the above letterhead. If you have any questions or need to reach me by telephone, please do not hesitate to contact me at 847-310-6801.

Sincerely,


J.J. Dean

Enclosures: 1. Molycorp Response to Request for Additional Information
Attachments: 1. 9/21/81 Molycorp Letter to NRC Region 1
2. 7/17/86 NRC Inspection Report
3. 10/19/99 NRC Request for Additional Information

Docket No.: 040-8794
License No.: SMB-1408

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FOR ADDL 04008794

Molycorp Response to NRC October 19, 1999, Request for Additional Information
Draft Environmental Assessment for the York, PA, Site

1. NRC Comment A

Molycorp has reviewed the September 21, 1981, letter to NRC Region 1 concerning "Past Residue Disposal from the York, PA, Chemical Plant," (Attachment 1) Our preliminary analysis (described below) indicates that the potential for significant environmental impact from the residue disposal is low.

We believe that the information presented in Attachment 1 is reasonably accurate. However, we agree with NRC that it is important to collect as much information as possible to ensure that the issue is satisfactorily closed. Molycorp is in the process of reviewing records that may provide more specifics as to dates, amounts, and locations of residues disposed during the period 1965-1981. Due to the nature and volume of these records, the review is taking longer than expected. We will provide the final response to NRC's request regarding past disposal practices by December 15, 1999.

Molycorp is committed to providing the most accurate assessment of past offsite disposal practices, including any potential environmental impacts. However, we believe that this issue is separate and distinct from what is required to approve the Decommissioning Plan for the remediation of the material that remains on the York site. We feel that it is in the best interest of the public, NRC, and Molycorp to proceed with the approval of the decommissioning plan and not allow the evaluation of past offsite disposal practices to delay the York site remediation. Therefore, we request that, in the future, the two issues be addressed separately.

As mentioned above, Molycorp has completed a preliminary analysis of potential environmental impacts based on the information in Attachment 1. The highest reported thorium weight percent, i.e., 0.65 w%, was used in the analysis. It is important to note that all of the concentrations listed in Enclosure 1, of which we used the highest, are considered worst case concentration estimates. The 0.65 w% thorium residue was assumed to be placed in the landfill with the lowest averaging volume, i.e., the Standard Concrete landfill. It was reported that only 0.2% of the total Standard Concrete Landfill volume is attributable to residues. The percentage placed in the other landfills is lower, ranging from 0.1% to 0.03%. Using the 0.2% averaging percentage, and assuming uniform mixing in the unlikely event that the landfill is excavated at some time in the future, the thorium concentration would be less than 3 pCi/g. This is well below the unrestricted use level of 10 pCi/g thorium.

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Draft Environmental Assessment for the York, PA, Site
(continued)

2. NRC Comment B.1

During the period 1965-1981, the York site operated without an NRC license because the rare earth feedstock contained unimportant quantities of source material, as defined in 10 CFR 40.13(c)(1)(vi), and was considered exempt from the regulations in 10 CFR Part 40. In 1981, it was determined that the residues in an onsite impoundment contained concentrated levels of source material that exceeded the 0.25 w% unimportant quantity level. Accordingly, Molycorp applied for an NRC license. It is not clear at what point the concentration in the residues exceeded the 0.25 w% threshold. Therefore, the extent to which Molycorp possessed licensable quantities of source material prior to receiving the NRC license is not precisely defined. However, the disposition of the licensable residues generated at York during the period 1965-1981 is well documented, as described below.

In a letter to NRC dated September 21, 1981, Molycorp described in detail the disposition of residues that had been disposed of at offsite locations during the period 1965-1981 (see response to NRC Comment A). With the exception of the documented disposals, and occasional residue spills outside the site fenceline that were subsequently remediated (see response to NRC Comment B.2), the licensable residues generated during the period 1965-1981 appear to have been contained and stored on the York site. This conclusion is supported by an NRC Inspection Report dated July 17, 1986, (Attachment 2) which states that during the 15 to 20 years of York operation a large quantity of residues had accumulated on site. The residue was being stored in about 15,000 drums. This report serves as verification that significant quantities of licensable material were not removed from the site.

The potential environmental impacts from the possession of licensable material during the period 1965-1981 are documented by the results of air and groundwater monitoring conducted since 1981 and recent site characterization efforts. This information is applicable to past operations since the vast majority of the residue was stored onsite, and remained onsite for some time following the issuance of the NRC license. The characterization and environmental assessment developed to support the York decommissioning plan describe the current conditions of the York site and the surrounding environment. This documentation includes the environmental impact from the possession of licensable materials during the period 1965-1981.

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(continued)

3. NRC Comment B.2

The NRC Inspection Report in Attachment 2 provides clear documentation that the contamination identified in the 1985 Oak Ridge Associated Universities report was remediated and deposited in the onsite landfill area. Any environmental impacts associated with this material are included in the site assessment and characterization provided to NRC in support of the York decommissioning plan.

4. NRC Comment B.3

We have reviewed an Eberline report that provides the analytical results of a York Waste Water sample collected 5/29/81. The results do not indicate a disequilibrium between the members of either the U-238 or Th-232 decay chains. The 2-sigma error bars of Th-230 and Ra-226 results clearly overlap, confirming that they are not statistically different. However, if at some time during the York decommissioning project significant disequilibrium is identified, the following technical bases will be used to determine unrestricted use limits for U-238, U-234, Th-230, and Ra-226.

Technical Bases For Determining Unrestricted Use Limits if U-238 Daughter Products are Present at Concentrations that Represent Significant Disequilibrium

Revision 1 of the York Decommissioning Plan provides an unrestricted use limit of 10 pCi/g for natural uranium. This limit is based on the cleanup criteria listed in NRC's SDMP Action Plan and assumes that U-238, U-234, and associated daughter products are in equilibrium at a concentration of 5 pCi/g each. As described in the 1981 BTP on disposal of uranium and thorium, the 10 pCi/g natural uranium limit was selected to ensure that the concentration of Ra-226 is equal to the Environmental Protection Agency limit of 5 pCi/g. Note that the 1981 BTP limits for depleted and enriched uranium, i.e., 35 pCi/g and 30 pCi/g, respectively, are higher than the natural uranium limit because no Ra-226 is present.

If it is determined that there is a statistically significant disequilibrium between U-238, U-234, Th-230, and Ra-226, the limits will be adjusted as described below.

- The limit for U-238 plus U-234 will be set at 30 pCi/g total.

Molycorp Response to NRC October 19, 1999, Request for Additional Information
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(continued)

The limits for Th-230 and Ra-226 will be adjusted to ensure that the Ra-226 concentration will not exceed 5 pCi/g over a 1000 year period. This approach to determining a Th-230 concentration has been recommended by NRC for licensees under 10 CFR 40, Appendix A, which also has a Ra-226 limit and no specific Th-230 limit.

- The calculation to determine the limits for Th-230 and Ra-226 will be made using the following equation:

$$(\text{Th-230 pCi/g}) (0.35) + (\text{Ra-226 pCi/g})(0.65) < 5 \text{ pCi/g}$$

There is no expectation that Th-232 and Th-228 will be in disequilibrium because of the relatively rapid ingrowth of daughters and the fact that they will not be separated by chemical treatment.

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RADIATION PROTECTION

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Molycorp, Inc.

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UNION
MOLYCORP

September 22, 1981

Warren N. Warhol
Vice President, Manufacturing

Mr. James A. Allan
Deputy Director, Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Past Residue Disposal from
York, PA Chemical Plant
Re: NRC Control No. 19288

Dear Mr. Allan:

This is a reconstruction of the past disposal of residues from the York plant. The description is complete from the standpoint of the disposal sites used, but the quantities and qualities of residue and the volumes of the receiving sites are only roughly accurate. It is believed, however, that the vast dilutions that may have occurred require only roughly accurate estimation in order to form the opinion that no radioactivity would be detectable at the surface of any of the sites.

The exact thorium and uranium content of the past residues is unknown. The average Th and U contents shown below represent current material, which is believed to contain more Th and U than in past years. These current values therefore should be considered as a highest-case content for the older materials.

Residues	Dry Wt. %		% H ₂ O	Wet Wt. %	
	Th	U		Th	U
Rare Earth Chloride (REC)	0.65	0.002	50	0.33	0.001
Cerium Fluoride (CeF)	0.45	0.002	50	0.23	0.001

The bulk density of both REC and CeF wet residue is approximately 18 cubic feet (0.67 cubic yards) per ton.

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Mr. J. A. Allan

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Sept. 22, 1981

Residues were disposed of at the following sites:

Name of Site	Time Period of Disposal	Wet Tons of Disposal	
		REC	CAF
1. Standard Concrete	1965-1968	670	670
2. Bahn Landfill	1974	750	750
3. Modern Landfill	1975-1979	1,000	500
4. Solley Road Landfill	1981	190	190

A brief description of the disposal situation at each landfill is as follows:

- Standard Concrete
Location: 700 North Sherman Street, York, PA 17403.
Operator: Standard Concrete Co.
Current Status: Closed, no leachate collection.
Standard Concrete Co. accepted general and industrial wastes in order to fill in a quarry over 10 acres in size, ranging in depth from 10 ft to 50 ft, or approximately 500,000 cubic yards in volume. On this basis the 900 cubic yards of York residues placed there occupy less than 0.2% of the volume of the backfilled quarry. A preliminary but extensive radiometric reconnaissance by NRC inspectors disclosed no anomalous radiation on the present ground surface.
- Bahn Landfill
Location: On Route 124 in East Prospect, PA 17317
Operator: Out of business.
Current Status: Closed, no known leachate collection.
From observation of the 30-acre site and assuming that prevailing disposal practices were in use during 1974, a fill depth of 30 ft and a site volume of over 1,000,000 cubic yards may be deduced. On this basis, the 1,000 cubic yards of York plant residues placed there occupy 0.1% of the volume of the backfilled site.
- Modern Landfill
Location: East Prospect Road at Yorkanna Road, R.D. No 9, York, PA 17
Operator: SCA Services, Zieglers, Inc., P.O. Box 1743, York, PA 17405
Current Status: Active, with leachate collection and treatment.
During the disposal of York plant residues a burial cell of over 30 acres in excess of 150 ft depth or over 7,000,000 cubic yards was being formed. On this basis, the 1,000 cubic yards of York plant residues placed there occupy less than 0.02% of the volume of the burial cell.
- Solley Road Landfill
Location: 7890 Solley Road, Glen Burnie, MD 21061.
Operator: Browning Ferris Industries.
Current Status: Active, with leachate collection and treatment.

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RADIATION PROTECTION

Mr. J. A. Allan

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Sept. 22, 1981

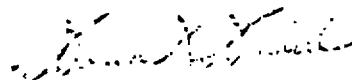
Browning Ferris is currently filling a disposal cell of approximately 10 acres to a depth of 60 feet, a cell volume of over 900,000 cubic yards. On this basis the 255 cubic yards of York plant residues placed there occupy less than 0.03% of the volume of the disposal cell.

The inclusion above of whether or not leachate collection is a feature of the disposal sites is descriptive only and is not meant to imply that the thorium in REE and CeF residues might be expected to leach into groundwaters. To the contrary, the thorium present in these materials has survived strong chemical attack and by this means has proven itself to be highly insoluble.

The actual dilution of these residues in very localized areas within the landfills is impossible to determine. However, the site descriptions above show that the potential for dilution of the residues with other solid materials was in each case very great. Perhaps more significantly, the burial depths that were used make the probability of the existence of the residues at the surface very slight. For these reasons, the detection of anomalous radioactivity at these disposal sites should not be expected.

If you should require further information on this situation, please let me know.

Sincerely,



WNW:jb

cc: W. E. Doyle
E. N. Thede
Noel Rurai

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