



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-4628

July 12, 2010

Via U.S. Mail

Mr. Mark A. Smith
President and Chief Executive Officer
Molycorp, Inc.
5619 Denver Tech Center Parkway, Suite 1000
Greenwood Village, Colorado 80111

**Re: Molycorp, Inc.
Amendment No. 2 to Registration Statement on Form S-1
Filed June 21, 2010
Supplemental Response Dated July 7, 2010
File No. 333-166129**

Dear Mr. Smith:

We have reviewed your supplemental response, and we have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

General

1. Please file the underwriting agreement, lock-up agreement, and a signed legal opinion as soon as practicable, allowing sufficient time for staff review.

Off-Balance Sheet Arrangements, page 53

2. We note that you have made revisions to your disclosure in this section in response to comment 5 from our letter dated July 2, 2010, and that you have chosen not to file any of the related agreements. Please supply a written analysis of how you concluded that you are not required to file the collateral agreements between your initial investors and the regulatory agencies, and any agreements between the company and its initial investors with respect to such collateral, under Item 601(b)(10) of Regulation S-K.

Certain Relationships and Related-Party Transactions, page 101

Inventory Financing and Resale Agreements, page 101

3. Please revise the number of shares of Molycorp, LLC issued to Traxys in exchange for all outstanding advances and finance charges totaling \$6.8 million on November 15, 2009 to reflect the effect of your common stock split took place to July 8, 2010.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

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You may contact Suying Li at (202) 551-3335 or Chris White, Branch Chief, at (202) 551-3461 if you have questions regarding comments on the financial statements and related matters. You may contact Ken Schuler, Mining Engineer, at (202) 551-3718 with questions about engineering comments. Please contact John Lucas at (202) 551-5798 or, in his absence, Laura Nicholson at (202) 551-3584 with any other questions.

Sincerely,

H. Roger Schwall
Assistant Director

cc: Via Facsimile
Michael J. Solecki, Esq.
Jones Day
(216) 579-0212