

May 28, 2008

Mail Stop 6010

Robert P. Hebert
Chief Financial Officer
CPEX Pharmaceuticals, Inc.
2 Holland Way
Exeter, NH 03833

**Re: CPEX Pharmaceuticals, Inc.
Registration Statement on Form 10-12B/A, filed May 23, 2008
File No. 1-33895**

Dear Mr. Hebert:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your documents in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

FORM 10

Exhibit Index

1. We note that you have indicated by footnote that various agreements will be filed by amendment. Please file as promptly as possible all exhibits. In addition, please file a copy of the Opinion of Duff & Phelps which is attached as Annex A to Exhibit 99.1. We will need time to review these documents once they are filed.

EXHIBIT 99.1 INFORMATION STATEMENT

Summary Historical and Unaudited Pro Forma Condensed Combined Financial Data, page 13

2. It appears from your disclosure on page 46 that the incremental costs were estimated to be \$0.2 million for the three months ended March 31, 2008 and \$1.4 million for the year ended December 31, 2007. Please revise your disclosure in the note following the table accordingly.

Management, page 77

Compensation Elements, page 82

3. We note that you have approved your 2008 Equity and Incentive Plan. Please file a copy of this plan as an exhibit to your Form 10.

* * * * *

As appropriate, please amend your filings in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested supplemental information. Detailed cover letters greatly facilitate our review. Please file your cover letter on EDGAR under the form type label CORRESP. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings reviewed by the staff to be certain that they have provided all information investors 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.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that,

- the company is responsible for the adequacy and accuracy of the disclosure in the filings;
- staff comments or changes to disclosure in response to staff comments in the filings reviewed by the staff do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

You may contact Sasha Parikh at (202) 551-3627 if you have questions regarding comments on the financial statements and related matters. Please contact Jennifer Riegel at (202) 551-3575 or me at (202) 551-3715 with any other questions.

Sincerely,

Jeffrey P. Riedler
Assistant Director

cc: Eileen T. Nugent
Paul Donnelly
Skadden, Arps, Slate Meagher & Flom LLP
Four Times Square
New York, NY 10036