May 15, 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 8, 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.

EXHIBIT 99.1 INFORMATION STATEMENT

Risk Factors, page 15

"If we are unable to meet our responsibilities under any of our agreements…" page 19

1. We note your response to prior comment 4 and that you filed a confidential treatment application with regard to the specific royalty rate. Please revise your disclosure to quantify either the approximate percent by which the rate will be reduced or disclose the range of the royalty rate prior to the reduction and the range after the reduction (ie. high single-digits or low double-digits).

2. Please revise the first sentence of this risk factor as Testim is Auxilium's product and not the company's product. It is unclear why the company would be obligated to maintain patent protection for Testim.

3. It appears that the last sentence of this risk factor is not consistent with the disclosure in the second risk factor on page 21. Please reconcile the apparent discrepancy in the disclosure between these risk factors as well as explain how both of these sets of patents interact and affect the royalty rate that Auxilium pays to the company.

"Our basic patent disclosing and claiming CPE-215 technology expired in various markets in 2006 and is soon to expire in all other markets." page 21

4. Please revise this risk factor to discuss the potential adverse effects on the company upon the expiration of these patents. In this disclosure, please include a discussion of the impact of the patent expiration on the company's plan of operation and future business plans.

Business, page 57

License Agreement with Auxilium A2, Inc., page 64

5. We note your response to prior comment 7 and we note that you filed a confidential treatment application with regard to the individual payment provisions identified in Section 3.1 and Section 3.2 of this agreement. Please revise your disclosure to quantify the approximate royalty rates and the aggregate milestone payments under this agreement. Please also disclose here that if you do not maintain adequate patent protection for Testim, the product royalty rate will be reduced by the quantified approximate percentage or range which you disclose under the comment above.

Development and License Agreement with Serenity Pharmaceuticals Corporation, page 65

6. Please file a copy of this Development and License Agreement with Serenity Pharmaceuticals. Alternatively, if you believe that this is not a material contract, please provide us with an analysis which supports your apparent conclusions.

Development and Commercialization of Nasulin, page 66

7. We note your response to prior comment 9. Please revise to disclose the results of the company's BA/BE: 025/05; BNT-INS-0100-PK002 and BNT-INS-0100-PK003 studies as it appears from your disclosures that the studies may be material to the development of Nasulin and the company. Please revise your disclosure accordingly. Alternatively, if you do not believe these studies are material to the development of Nasulin, please provide us with a detailed analysis which supports your apparent conclusions.

8. In addition, please disclose more efficacy information about your completed Phase IIA and B trials, as we note those trials focus on efficacy as well as safety. Please include in this revised disclosure the nature of the control groups and number of subjects in each such group, the primary and secondary endpoints you measured and the measurements obtained for each group in the study as well as the p-values obtained disclosing whether these p-values were statistically significant.

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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