

Via Facsimile and U.S. Mail
Mail Stop 6010

March 30, 2007

Mr. Steve Dubin
Chief Executive Officer and Director
Martek Biosciences Corporation
6480 Dobbin Road
Columbia, MD 21045

**Re: Martek Biosciences Corporation
Form 10-K for Fiscal Year Ended October 31, 2006
File No. 0-22354**

Dear Mr. Dubin:

We have limited our review of your filing to the issues we have addressed in our comments. In our comments, we ask you to provide us with more information so we may better understand your disclosure. After reviewing this information, we may 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 filings. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the year ended October 31, 2006

Notes to Consolidated Financial Statements

Note 6: Inventories, page 58

1. Your table indicates that you classified \$12 million of inventory as long-term for the first time in fiscal 2006, yet your inventory reserve remained approximately the same as the amount recorded in fiscal 2005. We are unable to locate any disclosure indicating how you determined the long-term portion of your inventory or why you acquired inventory that you apparently do not expect to utilize in the next 12 months. We were also unable to locate any disclosure regarding the shelf-lives of your materials and the impact of holding long-term inventory on your obsolescence reserves. Please provide us information in a disclosure-type format for here and/or for MD&A, as appropriate, that indicates:

- the product or products associated with your long-term inventory;
- the classification of this inventory, in terms of raw materials, work-in-process or finished goods;
- the amounts of inventory for these products that you have classified as current assets;
- how you determined the split between current and long-term portions;
- the business purpose for acquiring inventory that you apparently do not expect to utilize within the next 12 months;
- the shelf-lives of the products involved;
- the impact on your liquidity of carrying this inventory;
- the expected time period you will carry this inventory; and
- the impact of carrying this inventory on your obsolescence reserves and why your reserve remained approximately the same as at October 31, 2005.

Note 7: Property, Plant and Equipment, page 59

2. You disclose that you have \$90.7 million of assets held for future use at October 31, 2006 and \$37.5 million at October 31, 2005. In your policy disclosure on page 54 you indicate that you depreciate your fixed assets when they are placed into service. In your Production disclosure of MD&A on page 35 you disclose that you completed your Kingstree facility expansion in 2005 and restructured your production capacity in October 2006 by transferring a substantial portion of production formerly taking place in your Winchester facility to Kingstree. It appears that you do not depreciate your “assets held for future use” even though they appear to be available for use. Please clarify for us specifically what the term “placed in service” encompasses and whether you depreciate “assets held for future use.” If you do not depreciate these assets, please tell us why and reference for us the authoritative literature you rely upon to support your accounting.

Please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a letter that keys your responses to our comments and provides the requested information. Detailed letters greatly facilitate our review. Please submit your letter on EDGAR under the form type label CORRESP.

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 all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. 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.

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

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments 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.

If you have any questions, please contact Mark Brunhofer, Senior Staff Accountant, at (202) 551-3638. In this regard, do not hesitate to contact me, at (202) 551-3679.

Sincerely,

Jim B. Rosenberg
Senior Assistant Chief
Accountant