



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

October 29, 2010

Mr. James E. Levine
Chief Financial Officer
Verenium Corporation
55 Cambridge Parkway
Cambridge, Massachusetts 02142

**Re: Form 10-K for the Fiscal Year Ended December 31, 2009
Form 10-Q for the Fiscal Quarter Ended June 30, 2010
Definitive 14A filed April 30, 2010
Form 8-K Filed September 9, 2010
File No. 0-29173**

Dear Mr. Levine:

We have reviewed your filing and 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 within ten business days by amending your filing, by providing the requested information, or by advising us when you will provide the requested response. 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 filing and the information you provide in response to these comments, we may have additional comments.

General

1. With the exception of the comments below that specifically request an amendment, all other revisions may be included in your future filings.

Form 10-K for the Fiscal Year Ended December 31, 2009

Forward-Looking Statements, page 1

2. Please delete the last sentence in this section regarding the accuracy of surveys and market research you have included in your report. You are responsible for the information that you choose to include in the Form 10-K and cannot disclaim responsibility for such information.

Legal Proceedings, page 63

Class Action Shareholder Lawsuit, page 63

3. Please describe the factual basis alleged to underlie this lawsuit and the relief sought, as well as the name of the court in which these proceedings are pending. Similarly, please expand your disclosure regarding the royalty dispute with Asahi to describe the facts underlying the Company's arbitration proceeding against Asahi and to disclose the amount of additional royalties and other relief sought by Asahi in its claim.

MD&A

Consolidated Results of Operations, page 75

4. Please quantify the impact of each factor when multiple factors contribute to material fluctuations. For example, in your discussion of product revenue, you should disclose the quantitative impact of discontinuing two of your product lines as well as the increase in sales of your Fuelzyme, Xylanthin and Veretase enzymes. You should also quantify the impact of having a larger percentage of Phyzame phytase product sales manufactured by Genencor. Refer to Items 303(a)(3)(i) and (iii) of Regulation S-K and Financial Reporting Codification 501.04. Please show us in your supplemental response what the revisions will look like.

Contractual Obligations, page 94

5. Please present only one table of contractual obligations which includes all of your obligations, including your convertible debt obligations which are currently presented separately on page 92. Please show us in your supplemental response what the revisions will look like.

Financial Statements

Notes to the Financial Statements

Note 1. Organization and Summary of Significant Accounting Policies

Product Revenue, page 112

6. Please tell us the differences in the terms of your arrangements with Fermic S.A. and Genencor which result in you reporting revenue associated with Fermic S.A. on a gross basis and revenue associated with Genencor on a net basis. Please specifically address in your explanation each of the indicators which may support reporting gross revenue as well as each of indicators which may support reporting net revenue described in ASC 605-45-45-3 through 18.

Effect of New Accounting Standards

Accounting for Convertible Debt Instruments, page 117

7. Based on the terms of the 2007 and 2009 Notes, please tell us why the new accounting standards would not have also impacted your accounting for these notes in a similar manner to your accounting for the 2008 notes.

Conversion of 2008 Notes, page 124

8. During the year ended December 31, 2009, you recorded a gain on conversion of \$8.9 million, which was calculated as the difference between the carrying value of the converted 2008 Notes and the fair value of the shares of common stock delivered to the noteholders upon conversion. Please help us understand what consideration you gave to ASC 470-20-40-20 in accounting for this conversion, including the requirement to allocate the fair value of the consideration transferred between liability and equity components.

Note 2. Convertible Debt and Note 6. Bank and Commercial Debt, page 119 and 135

9. Your disclosures indicate that your debt agreements contain various covenants. Please disclose the specific terms of any material debt covenants with any required ratios. Please disclose the actual ratios as of each reporting date for any material debt covenants for which it is reasonably likely that you will not be able to meet such covenants. Please also consider showing the specific computations used to arrive at the actual ratios. See Sections I.D and IV.C of the SEC Interpretive Release No. 33-8350 and Compliance and Disclosures Interpretation 102.09 which is available on our

website at <http://www.sec.gov/divisions/corpfin/guidance/nongaapinterp.htm>. Please show us in your supplemental response what the revisions will look like.

Form 10-Q for the Fiscal Quarter Ended June 30, 2010

General

10. Please address the above comments in your interim filings as well.

Form 8-K Filed September 9, 2010

11. Please amend your Form 8-K to address the following:

- Please provide a pro forma statement of operations for the year ended December 31, 2009. Refer to Rule 11-02(c)(2)(i) of Regulation S-X;
- You state that the pro forma statements of operations for the three and six months ended June 30, 2010 and June 30, 2009 give effect to the disposition as if it has been consummated at the beginning of the periods presented. We remind you that Rule 11-02(b)(6) of Regulation S-X states that the pro forma statements of operations shall assume that the transaction was consummated at the beginning of the fiscal year presented, which will be January 1, 2009. Please revise as necessary;
- Please disclose whether you plan to present the business sold to BP Biofuels North America LLC as discontinued operations pursuant to ASC 205-20; and
- Please disclose how you arrived at the amount of each adjustment. This should include a discussion of any significant assumptions and estimates used to arrive at the adjustment amounts. You should clearly show how you arrived at the adjustment amount based on these assumptions and estimates. For example, note (b) indicates that you may have allocated certain expenses to the business sold for purposes of the pro forma financial information. You should clearly disclose how you arrived at any allocated amounts. You should also disclose how you determined which assets and liabilities should be allocated to this business.

12. It appears that BP Biofuels North America LLC purchased your entire cellulosic biofuels business. In this regard, please help us understand why the pro forma adjustment amounts related to the sale of the business would not be the same as the amounts reported in the segment information note on page 21 of your Form 10-Q for the period ended June 30, 2010. For example, the total revenue amount eliminated in your pro forma statement of operations for the 6 months ended June 30, 2010 was \$7,176,000 whereas your segment note indicates that the biofuels segment reported total revenues of \$6,964,000 for this same period. Please address each of the amounts presented in your segment note.

Definitive 14A filed April 30, 2010

Election of Directors, page 5

13. We note your statement that the biographies include information regarding the specific experience, qualifications, attributes or skills that led you to the conclusion that each of your directors and nominees should serve as director. However, some of the biographies only recite the prior business experience of the directors without clearly explaining how the experience led to the conclusion that the member should continue to serve. For example, it is not clear what specific attributes or skills you believe the directors have as a result of this experience that causes you to believe the person should serve as a director at this time, in light of the company's business and structure. Note as well that this information should be provided for all directors, including those who are not currently up for reelection under the classified board structure. See Regulation S-K C&DI paragraph 116.06. Please show us in your supplemental response what the revisions will look like.

Compensation Discussion and Analysis, page 34

Peer Group, page 36

14. We note your disclosure that the compensation committee used a group of twelve peer companies in its analysis and that you have identified ten of those companies by name. Please ensure that you identify all members of any peer group used to benchmark compensation.

Equity Compensation, page 39

15. We note disclosure on page 37 that you target equity compensation at a level such that, when combined with target cash compensation, target total cash and equity compensation is at or near the 50th percentile for your peer group. Please disclose where the actual total equity compensation fell for each named executive officer. To the extent actual compensation was outside the targeted percentile range, please explain why. Please show us in your supplemental response what the revisions will look like.

Summary Compensation Table, page 45

16. We note that your "total" column does not accurately represent the sum of the various forms of compensation for several of your officers in certain years. For example, Mr. Haines' total compensation for 2008 is reflected in the "total" column as \$628,632, while the sum of \$1,141,646 is attained by adding together his various compensation components. In addition, we note inconsistencies among the tables. For example,

your disclosure of the amount of options awards for Mr. Riva in 2009 (\$1,453,071) appears to omit the \$114,400 of options granted on July 31, 2009 that appears in the Grants of Plan-Based Awards table. Only the sum of the awards granted on November 12 (\$1,341,242) and December 11 (\$111,829) appear to be accounted for in the Summary Compensation Table. Please carefully review your compensation tables and revise to ensure the numerical accuracy of your entries.

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 Exchange Act of 1934 and all applicable Exchange 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.

In responding to our comments, please provide a written 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.

You may contact Sherry Haywood, Staff Attorney, at (202) 551-3345 or Pamela Long, Assistant Director, at (202) 551-3760 if you have any questions regarding legal matters. Please contact Nudrat Salik, Staff Accountant, at (202) 551-3692 or me at (202) 551-3769 if you have questions regarding comments on the financial statements and related matters.

Sincerely,

Rufus Decker
Accounting Branch Chief