

Mail Stop 6010

June 22, 2006

By U.S. Mail and Facsimile to (978) 715-1385

Ms. Kathleen B. Allen
Vice President and Chief Financial Officer
Millipore Corporation
290 Concord Road
Billerica, MA 01821

**RE: Millipore Corporation
Form 10-K for the fiscal year ended December 31, 2005
Forms 8-K filed April 21, 2005, July 19, 2005, October 25, 2005
and January 26, 2006
File No. 1-09781**

Dear Ms. Allen:

We have reviewed your letter filed on June 8, 2006 and have the following comments. Where indicated, we think you should revise your future 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 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 filing. 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 December 31, 2005

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, page 27

1. Please refer to prior comment 1 and Supplement A of your June 8, 2006 response letter. Please respond to the following comments:
 - The disclosures in Supplement A and in your Form 10-K do not include a discussion and quantification of the actual foreign exchange effect on your statements of operations. Your current disclosure focuses solely on a non-GAAP foreign exchange effect using budgeted and not actual foreign exchange rates. As such, please revise future filings to disclose the actual foreign exchange effect as determined using foreign exchange rates under U.S. GAAP and reconcile those effects to your non-GAAP foreign exchange effect. Additionally, please include all of the disclosures required by Item 10(e) of Regulation S-K and the FAQ Regarding the Use of Non-GAAP Financial Measures dated June 13, 2003.
 - We note that you refer to translation of your financial statements using budgeted or pre-determined foreign exchange rates as "foreign exchange effect." Please do not use titles or descriptions of non-GAAP financial measures that are the same as, or confusingly similar to, titles or descriptions used for GAAP financial measures.
 - Please provide us with a sample of your proposed disclosure.

Financial Statements, page 46

Note 17 – Business Segment and Geographic Information

2. Please refer to prior comment 3. Your response discusses why you believe that your two operating segments are highly similar in the criteria outlined in paragraphs a – e of paragraph 17 of SFAS 131. While your response concludes that the segments are highly similar, the disclosure in your Exchange Act filings appears to highlight the dissimilarities of the two operating divisions as previously noted in our prior comment. Please reconcile your response with your disclosures.

3. Please refer to prior comment 3. You responded that your Bioprocess and Bioscience segments had three year average revenue growth rates of 8 percent and 6 percent, respectively, and three year average gross profit margins of 52 percent and 57 percent, respectively. Please respond to the following comments:
- We note that you refer to revenue growth rates and gross margins. Please tell us whether these measures are the only ones you identified as the most appropriate measures of economic performance for the specific operating segments being evaluated to determine whether they have similar economic characteristics. For example, please tell us whether there are industry measures or other financial ratios and measures that are more relevant for assessing performance.
 - Paragraphs 73 and 74 in the Basis for Conclusions for SFAS 131 place an emphasis on the similarity of results and performance and explain that an historical convergence of these performance indicators must have already happened and there must be an expectation that the financial statistics will remain similar in the future. While your response included a discussion of historical average revenue growth rates and gross profit margins, your response did not discuss your expectations of the economic measures in the future. For example, in our prior comment we noted that revenues for the Bioprocess division in 2005 grew at 15% while those in the Bioscience division grew at 7%. We also noted your disclosure that the Bioprocess division is the fastest growing segment of your business. This divergence appears to be continuing since the growth rate for revenues in the Bioprocess division in the first quarter of 2006 grew at 9% while those in the Bioscience division grew at 5%. Based upon this disclosure, it does not appear that there is an expectation that the financial measures will be highly similar in the future. To determine whether you qualify for aggregation even though your current results are different, you must determine whether the differences in the prior year and current interim period should be attributed to temporary factors and whether you expect the two segments to have essentially the same future prospects. Please refer to Question 8 of the FASB Staff Implementation Guidance for SFAS 131.
 - We note that the gross margin percentages provided in your response vary by 5 percent. Please discuss your conclusions as to why you consider this difference to be highly similar for purposes of meeting the criteria in paragraph 17 of SFAS 131. Please note paragraph 73 in the Basis for Conclusions states that the segments should be “*so similar that they can be expected to have essentially the same future prospects.*”

4. Please refer to prior comment 3. Please revise your response to address all of the criteria for aggregation included in paragraph 17 of SFAS 131. Please note that aggregation must also be “*consistent with the objective and principles*” of the standard. As such, it would appear that this should be a high hurdle to aggregation. In paragraph 73 of SFAS 131, the Board makes clear in the basis for conclusions that aggregation is acceptable in certain situations because “*separate reporting of segment information will not add significantly to an investor's understanding of an enterprise if its operating segments have characteristics so similar that they can be expected to have essentially the same future prospects.*” That is, you may aggregate operating segments if presenting the information separately won't provide much useful information to users of financial statements.

Form 10-Q for the quarterly period ended April 1, 2006

Note 2. Stock-Based Compensation, page 6

5. On page 7 you present the net stock-based compensation expense and net stock-based compensation expense per share – basic and diluted. These measures appear to be non-GAAP measures. You should not present non-GAAP financial measures on the face of your financial statements or in the accompanying notes. Refer to Item 10(e)(1)(ii)(C) of Regulation S-K. Please revise future filings to comply, or explain why the current presentation does comply with this rule.

Note 12 – Subsequent Events, page 12

6. We see that you entered a definitive agreement to acquire all of the outstanding shares of Serologicals Corporation common stock. Additionally we note from your Form 8-K filed June 6, 2006 that you intend to finance the acquisition through a debt issuance including \$550 million of 3.75% convertible senior notes due 2026. Please respond to the following comments.
 - Please tell us all the material terms of the convertible senior notes, including settlement methods and terms and who controls the settlement method. Tell us about the terms of conversion, puts, calls, and interest rates. Discuss conditions under which the conversion or interest rate may be adjusted.
 - Tell us how you have applied the guidance in SFAS 133 and EITF Issue 00-19 in evaluating whether the note includes any embedded derivatives that

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should be bifurcated and accounted for separately. For example, please discuss the conversion feature, the make-whole fundamental change provision and contingent interest provision and how you evaluated these features under SFAS 133 and EITF 00-19.

- Please describe the material terms of the registration rights agreement, including any conditions under which you would be required to pay liquidated damages. Please tell how you will account for the registration rights agreement and why. Refer to EITF 05-4, *The Effect of a Liquidated Damages Clause on a Freestanding Financial Instrument Subject to Issue No. 00-1*.

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your responses to our comments.

You may contact Eric Atallah, Staff Accountant at (202) 551-3663 or me at (202) 551-3604 regarding comments on the financial statements and related matters. In this regard, do not hesitate to contact Angela Crane, Branch Chief, at (202) 551-3554 with any other questions.

Sincerely,

Kate Tillan
Assistant Chief Accountant