

Mail Stop 6010

May 8, 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
Filed March 15, 2006
Forms 8-K filed April 21, 2005, July 19, 2005, October 25,
2005, January 26, 2006, and April 25, 2006
File No. 1-09781**

Dear Ms. Allen:

We have reviewed your filings and have the following comments. We have limited our review of your filing to those issues we have addressed in our 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 fiscal year ended December 31, 2005

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

Results of Operations, 33

1. We note your presentation and discussion of constant currency sales amounts and percentages in the tables on pages 33, 34, and 35 and within the text of your MD&A discussion. These amounts appear to be non-GAAP measures for which you should present all of the disclosures required by Item 10(e)(1)(i) of Regulation S-K for each non GAAP measure. That is, for each non-GAAP amount or percentage you must include the following:
 - A presentation, with equal or greater prominence, of the most directly comparable financial measure or measures calculated and presented in accordance with GAAP;
 - A reconciliation of the differences between the non-GAAP financial measure with the most directly comparable GAAP financial measure;
 - A statement disclosing the reasons why management believes that presentation of the non-GAAP financial measure provides useful information to investors regarding the registrant's financial condition and results of operations; and
 - To the extent material, a statement disclosing the additional purposes, if any, for which management uses the non-GAAP financial measure.

Please revise future filings accordingly and provide us with a sample of your proposed disclosure. Also refer to Questions 8 and 17 of the FAQ Regarding the Use of Non-GAAP Financial Measures dated June 13, 2003.

2. We note that your revenue increased 12% between 2005 and 2004 and 10% between 2004 and 2003. You attribute the increase to acquisitions and strong or higher demand. Per Item 303(A)(3)(iii) of Regulation S-K, you should provide a narrative discussion of "the extent to which such increases are attributable to increases in prices or to increases in the volume or amount of goods or services being sold or to the introduction of new products or services." Under SAB Topic 13.B, "[c]hanges in revenue should not be evaluated solely in terms of volume and price changes, but should also include an analysis of the reasons and factors contributing to the increase or decrease." Per Release 33-8350, "[a] thorough analysis often will involve discussing both the intermediate effects of those

matters and the reasons underlying those intermediate effects.” And under FRC 501.04, you should include a discussion and quantification of the contribution of two or more factors identified as the causes for material changes “where identification and quantification of the extent of contribution of each of two or more factors is necessary to an understanding of a material change, or where there are material increases or decreases in net sales or revenue.” As such, your MD&A should not only identify and quantify to the extent practicable the increase in sales prices and volume, but also should analyze those and any other significant reasons underlying the increases (including underlying offsetting decreases) when the reasons are also material and determinable. Please revise future filings accordingly.

Financial Statements, page 46

Note 17 – Business Segment and Geographic Information, page 75

3. We note your disclosure that you aggregate your two operating segments into one reporting segment. We also note the following disclosures:
 - It appears from your disclosure on pages 4 - 8 that the nature of the products and services and the type or class of customer for your Bioprocess and Bioscience divisions may not be similar.
 - Additionally we note from your earnings releases that the Bioprocess division’s 2005 revenues grew at 15% while the Bioscience division’s 2005 revenues grew at 7%. We also note your disclosure that the Bioprocess division is the fastest growing segment of your business. Based upon this disclosure it appears that the segments may not have similar economic characteristics.

Please tell us about your analysis of the factors under paragraph 17 of SFAS 131 in determining that your operating segments met the aggregation criteria outlined in that paragraph, including similar economic characteristics. Please refer to paragraphs 17 and 73 – 74 of SFAS 131.

Item 9A. Controls and Procedures, page 79

4. We note your disclosure that your "CEO and CFO have concluded that [y]our disclosure controls and procedures are effective to ensure that information required to be disclosed by [you] in reports that [you] file or submit under the Exchange Act is recorded, processed, summarized and reported in accordance with and within the time periods specified in Securities and Exchange Commission rules and forms." The language that is currently included after the word "effective" in your disclosure appears to be superfluous, since the meaning of "disclosure controls and procedures" is established by Rule 13a-15(e) of the Exchange Act. However, if you do not wish to eliminate this language, please revise future filings so that the language that appears after the word "effective" is substantially similar in all material respects to the language that appears in the entire two-sentence definition of "disclosure controls and procedures" set forth in Rule 13a-15(e).

Forms 8-K filed April 21, 2005, July 19, 2005, October 25, 2005, January 26, 2006 and April 25, 2006

5. With respect to the non-GAAP disclosures in your Forms 8-K that are "furnished" and not filed with the Commission, please respond to the following:
 - We note that you provide a reconciliation of the non-GAAP information in the form of a statement of operations. We do not believe that the presentation of a non-GAAP statement of operations is appropriate unless all disclosures required by Item 10(e)(1)(i) of Regulation S-K are included for each separate non-GAAP measure. Please delete this presentation from all future Forms 8-K furnished with the Commission. If you continue to present non-GAAP information, Item 2.02 of Form 8-K requires that disclosures "furnished" include information that complies with the disclosure requirements of Item 10(e)(1)(i) of Regulation S-K. Accordingly, in addition to the reconciliation for each non-GAAP measure, you must also provide statements disclosing the reasons why management believes presentation of each of the individual non-GAAP measures provide useful information to investors regarding your financial condition and results of operations. Those disclosures should be specific and substantive to each individual measure. Refer to SEC Release 33-8176 and also Question 8 of the FAQ Regarding the Use of Non-GAAP Financial Measures, dated June 13, 2003. Please confirm that you will

revise your Forms 8-K in future periods to provide all of the disclosures required by Item 10(e)(1)(i) for each non-GAAP measure presented and provide us with a full sample of your proposed disclosure.

- Please note that the requirements of paragraph (e)(1)(i) of Item 10 of Regulation S-K apply to disclosures under Item 2.02. Accordingly, please revise your presentation in future Forms 8-K to present the most comparable GAAP measure with equal or greater prominence to your non-GAAP measure. Please provide us with a full sample of your proposed disclosures.
- The disclosure requirements apply to every non-GAAP measure you present, including percentages, shares and per share amounts. For example, we note that you present constant currency revenue growth percentages, constant currency revenue growth percentages excluding the impact of acquisitions, and the percentage of growth in constant currency for revenues by geographic area and by division. While you identify constant currency as a non-GAAP measure, you do not provide all of the required disclosures for these measures. Please confirm that you will revise your Forms 8-K in future periods to provide all of the disclosures required by Item 10(e)(1)(i) for each non-GAAP measure presented and provide us with a full sample of your proposed disclosure.
- The reconciliation should both identify and quantify each reconciling adjustment included in the non-GAAP measure. The statement of reasons should address each of the adjusting items included in the non-GAAP measure to the extent necessary to explain the reasons why management believes the measure is useful. The discussion of your reasons for providing the measure should be specific and not broad or overly vague.

We may have further comments after reviewing your response.

6. While there is no *per se* prohibition against removing a recurring item, you must meet the burden of demonstrating the usefulness of any measure that excludes recurring items, especially if the non-GAAP financial measure is used to evaluate performance. Whether a non-GAAP financial measure that eliminates a recurring item or items from the most directly comparable GAAP financial measure is acceptable depends on all of the facts and circumstances. However, if there is a past pattern of the charges, no articulated demonstration that such charges will not continue and no other unusual reason that a company can substantiate to identify the special nature of the charge, it would be difficult for a company to meet the burden of disclosing why such a non-GAAP financial measure is useful to

investors. In such circumstances, Item 10(e) of Regulation S-K would not permit the use of the non-GAAP financial measure and similar considerations may apply under Item 12 of Form 8-K. In addition, inclusion of such a measure may be misleading absent the following disclosure, which should be specific to each measure and not a broad overall, vague disclosure:

- the manner in which management uses the non-GAAP measure to conduct or evaluate its business;
- the economic substance behind management's decision to use such a measure;
- the material limitations associated with use of the non-GAAP financial measure as compared to the use of the most directly comparable GAAP financial measure;
- the manner in which management compensates for these limitations when using the non-GAAP financial measure; and
- the substantive reasons why management believes the non-GAAP financial measure provides useful information to investors.

Refer to Question 8 of the FAQ Regarding the Use of Non-GAAP Financial Measures dated June 13, 2003 and SAB Topic 14.G.

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.

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 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.

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 filing;

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- 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.

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