



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

DIVISION OF  
CORPORATION FINANCE

June 16, 2014

Via E-mail

Ms. Jan A. Bertsch  
Chief Financial Officer  
Sigma-Aldrich Corporation  
3050 Spruce Street  
St. Louis, MO 63103

**Re: Sigma-Aldrich Corporation  
Form 10-K for the Fiscal Year Ended December 31, 2013  
Filed February 6, 2014  
Definitive Proxy Statement on Schedule 14A  
Filed March 21, 2014  
File No. 0-8135**

Dear Ms. Bertsch:

We have reviewed your response letter dated June 6, 2014 and have the following comment.

Definitive Proxy Statement on Schedule 14A filed March 21, 2014

Compensation Discussion and Analysis, page 34

Annual Cash Bonus, page 40

1. We note your supplemental response to comment one of our letter dated April 28, 2014. Please note that you must disclose targets if they were material to the company's decisions regarding the compensation paid to any named executive officer, as indicated in the interpretation you cite. Whether disclosure is required does not turn on the amount of the compensation that is attributable to achieving a target. Further, although we understand that the company adjusted EPS target may reflect strategic plans and initiatives, and that it is calculated differently from adjusted EPS you disclose in your quarterly earnings releases, it is not at all clear from your response how confidential information about specific strategic transactions would be evident from the disclosure of the quantitative measure of the company adjusted EPS that you use for compensation target. Please provide more detailed information about your basis for your position that disclosure would cause competitive harm. Note that in doing so, you must use the same standard that would apply if you were requesting confidential treatment under Securities Act Rule 406 or Exchange Act Rule 24b-2. Finally, if you are to omit targets as confidential, you must discuss in the filing how difficult it will be for the executive or how likely it will be for the registrant to achieve the undisclosed target. This information

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is not clear from your response. We understand that you expect superior performance, but also that you expect officers to achieve the targets set. It is not clear whether you mean that reaching the targets will be difficult for executives, or if you also mean that you think it is likely that the targets will be met. Please enhance your response as requested in this comment, or confirm that in future filings, you will disclose the company target for adjusted EPS and discuss the extent to which this target was met.

Please respond to this letter within ten business days by providing the requested information or by advising us when you will provide the requested response. If you do not believe our comment applies to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to this comment, we may have additional comments.

You may contact Dale Welcome at (202) 551-3865 or Kevin Stertzell at (202) 551-3723 if you have questions regarding comments on the financial statements and related matters. Please contact Leland Benton at (202) 551-3791 or Pamela Long at (202) 551-3765 with any other questions.

Sincerely,

/s/ John Cash

John Cash  
Accounting Branch Chief