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Paul E. Huck
Sr. Vice President and
Chief Financial Officer

13 February 2009

Mr. Rufus Decker
Accounting Branch Chief
Securities and Exchange Commission
Division of Corporate Finance
Mail Stop 7010
100 F Street, N.E.
Washington, D.C. 20549

RE: Air Products and Chemicals, Inc.
Form 10-K: For the Year Ended 30 September 2008
Form 10-Q: For the Quarterly Period Ended 31 December 2008

Dear Mr. Decker:

In response to your letter of 9 February 2009, we provide the information below. Our responses have been numbered to correspond with the comments in your letter. The original comments, contained in your letter of 9 February 2009, have been included in italics for reference during your review.

Comment 1 — General

Where a comment below requests additional disclosures or other revisions to be made, please show us in your response what the revisions will look like. These revisions should be included in your future filings, including your interim filings where appropriate.

Response:

In future filings, we will make the revisions described in our responses to your comments 2 and 3 as detailed below.

Comment 2 — Critical Accounting Policies and Estimates, page 28, Impairment of Long-Lived Assets, page 29

We note that you have recognized significant impairment charges during the year ended September 30, 2008 and the three month period ended December 31, 2008 related to your U.S. Healthcare business. In the interest of providing readers with a better insight into management's judgments in accounting for impairments of long-lived assets including plant and equipment, goodwill and intangible assets, please consider disclosing the following in future filings, beginning with your next interim filing:

- Please clarify how you determine which property, plant and equipment held for use should be tested for impairment as well as at what point in time they should be tested for impairment. Please state the types of events and circumstances that you believe indicate impairment;*
- The reporting unit level at which you test goodwill for impairment and your basis for that determination;*

- *Sufficient information to enable a reader to understand how you apply the present value of future cash flows in estimating the fair value of your reporting units and why management selected this method as being the most meaningful in preparing your goodwill impairment analysis;*
- *How you determine the appropriate growth period and exit trading multiple to apply in your goodwill impairment analysis;*
- *How you determine the appropriate discount rates and attrition rates to apply in your intangible asset impairment analysis;*
- *A qualitative and quantitative description of the material assumptions used in determining impairments for all long-lived assets and a sensitivity analysis of those assumptions based upon reasonably likely changes; and*
- *If applicable, how the assumptions and methodologies used for valuing property, plant and equipment, goodwill and intangible assets in the current year have changed since the prior year, highlighting the impact of any changes.*

Response:

Methodologies used by the Company for valuing property, plant and equipment, intangible assets, and goodwill did not change during the periods covered by the referenced filings. In the event the Company does change methodologies, we will disclose the changes in future filings.

In response to the remaining questions detailed above, in quarterly and/or annual future filings, we will expand the disclosure within the Impairment of Long-Lived Assets section of the Critical Accounting Policies and Estimates of the Management's Discussion and Analysis to include the additional disclosure underlined below.

The Company has not provided quantitative information on material assumptions or a sensitivity analysis of those assumptions used in its impairment testing because of competitive reasons. For example, the discount rate used to determine fair value is also used in determining pricing of our products. This information could be used by our competitors to our disadvantage.

Impairment of Long-Lived Assets

Plant and Equipment

Net plant and equipment at 30 September 2009 totaled \$_____. Plant and equipment held for use is grouped for impairment testing at the lowest level for which there is identifiable cash flows. Impairment testing of the asset group occurs whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Such circumstances would include a significant decrease in the market value of a long-lived asset grouping, a significant adverse change in the manner in which the asset grouping is being used or in its physical condition, a history of operating or cash flow losses associated with the use of the asset grouping, or changes in the expected useful life of the long-lived assets.

If such circumstances are determined to exist, an estimate of undiscounted future cash flows produced by that asset group is compared to the carrying value to determine whether impairment exists. If an asset group is determined to be impaired, the loss is measured based on the difference between the asset group's fair value and its carrying value. An estimate of the asset group's fair value is based on the discounted value of its estimated cash flows. Assets to be disposed of by sale are reported at the lower of carrying amount or fair value less cost to sell.

The assumptions underlying cash flow projections represent management's best estimates at the time of the impairment review. Factors that management must estimate include: industry and market conditions, sales volume and prices, costs to produce, inflation, etc. Changes in key assumptions or actual conditions that differ from estimates could result in an impairment charge. The Company uses reasonable and

supportable assumptions when performing impairment reviews and cannot predict the occurrence of future events and circumstances that could result in impairment charges.

Goodwill

The purchase method of accounting for business combinations currently requires the Company to make use of estimates and judgments to allocate the purchase price paid for acquisitions to the fair value of the net tangible and identifiable intangible assets. Goodwill represents the excess of the aggregate purchase price over the fair value of net assets of an acquired entity. Goodwill, including goodwill associated with equity affiliates, was \$___ as of 30 September 2009. The majority of the Company's goodwill is assigned to reporting units within the Merchant Gases and Electronics and Performance Materials segments. Disclosures related to goodwill are included in Note 10 to the Consolidated Financial Statements.

The Company performs an impairment test annually in the fourth quarter of the fiscal year. In addition, goodwill would be tested more frequently if changes in circumstances or the occurrence of events indicated that potential impairment exists. The impairment test requires the Company to compare the fair value of business reporting units to carrying value, including assigned goodwill. The Company has designated its reporting units for goodwill impairment testing as one level below the operating segment for which discrete financial information is available and whose operating results are reviewed by segment managers regularly. Currently, the Company has four business segments and fourteen reporting units. Reporting units are primarily based on products and geographic locations within each business segment.

In the fourth quarter of 2009, the Company conducted the required annual test of goodwill for impairment. There were no indications of impairment.

The Company primarily uses an income approach valuation model, representing the present value of future cash flows, to determine fair value of a reporting unit. The Company's valuation model uses a five-year growth period for the business and an estimated exit trading multiple. Management has determined the income approach valuation model represents the most appropriate valuation methodology due to the capital intensive nature of the business, long-term contractual nature, relatively consistent cash flows generated by the Company's reporting units, and limited comparables within the industry. The principal assumptions utilized in the Company's income approach valuation model include revenue growth rate, operating profit margins, discount rate and exit multiple. Revenue growth rate and operating profit assumptions are consistent with those utilized in the Company's operating plan and long-term financial planning process. The discount rate assumption is calculated based upon an estimated weighted average cost of capital which includes factors such as the risk free rate of return, cost of debt and expected equity premiums. The exit multiple is determined from comparable industry transactions. Also, the expected cash flows consider the customer attrition rate assumption which is based on historical experience and current and future expected market conditions. Management judgment is required in the determination of each assumption utilized in the valuation model and actual results could differ from the estimates.

Intangible Assets

Intangible assets at 30 September 2009 totaled \$_____ and consisted primarily of customer relationships that were acquired as part of business combinations. The Company has no acquired intangibles assets with indefinite lives. Intangible assets are tested for impairment as part of the long-lived asset grouping impairment tests required by SFAS No. 144. Impairment testing of the asset group occurs whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. See impairment discussion above under Plant and Equipment for a description of how impairment losses are determined.

Comment 3 — Note 10 Commitments and Contingencies, page 15, Customer Bankruptcy, page 15.

You indicate that a major customer began operating under Chapter 11 bankruptcy protection and you had outstanding net receivables from this customer of \$35.7 million. Please provide the following:

- Please disclose and tell us the significance of this customer to the Tonnage Gases' segment revenues and segment operating income;
- Please disclose and tell us whether the bankruptcy of this customer triggered any interim impairment evaluations or whether this development will have an impact on the projected cash flows for the Tonnage Gases segment; and
- You have disclosed that no single customer accounts for a significant portion of annual sales. Please clarify whether any of your segments have a single customer that accounts for a significant portion of segment annual sales.

Response:

Sales and operating income associated with this customer accounted for approximately 3% of Tonnage Gases' sales and operating income. The vast majority of sales to this customer are associated with the customer's oil refining facilities which the Company believes to be one of the customer's most profitable operations. The Company expects these sales and the resulting operating income to continue, whether from this customer or a subsequent buyer. The Company currently believes there will be no material impact to the reporting unit's expected future cash flows or asset group impairments related to this customer bankruptcy.

For the fiscal year ended 30 September 2008, one of the Company's customers represented approximately 10% of a segment's sales; however, this customer did not represent more than 10% of the Company's consolidated sales as discussed in paragraph 39 of Statement of Financial Accounting Standards No. 131 *Disclosures about Segments of an Enterprise and Related Information*. As such, the Company believes our historical disclosures have met the requirements of both U.S. GAAP and Regulation S-X.

In connection with this response, management acknowledges that:

- the Company is responsible for the adequacy and accuracy of the disclosure in their filings;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Securities and Exchange Commission from taking any action with respect to the filing; and
- the Company may not assert staff comments as a defense in any proceedings initiated by the Securities and Exchange Commission or any person under the federal securities laws of the United States

Should the staff require any additional information, please contact myself at 610-481-7932.

Sincerely,



Paul E. Huck
Senior Vice President and Chief Financial Officer