

26 February 2007

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 2006
Form 10-Q: For the Quarterly Period Ended 31 December 2006

Dear Mr. Decker,

In response to your letter of 15 February 2007, we provide the information below, which should not be deemed "filed" with the Commission. Our responses have been numbered to correspond with the comments in your letter. The original comments, contained in your letter of 15 February 2007, 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 supplemental response what the revisions will look like. These revisions should be included in your future filings.

Response:

In future filings, we will make the revisions described in our responses to your comments 2 through 16 as detailed below.

Comment 2 — Available Information, page 6

Please disclose our new address, which is 100 F Street, N.E., Washington D.C. 20549.

Response:

In future filings, we shall disclose the new address as detailed above.

Comment 3 — Item 9A. Controls and Procedures, page 15

Please disclose whether there have been any changes in your internal controls over financial reporting that occurred during the most recent quarter rather than subsequent to the date of the most recent evaluation. Refer to Item 308(c) of Regulation S-K.

Response:

In future filings, provided there has been no change in internal controls over financial reporting, we shall include the following disclosure:

There has been no change in the Company's internal controls over financial reporting (as that term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) which have occurred during the quarter ended [] that has materially affected, or is reasonably likely to materially affect, the Company's internal controls over financial reporting.

Comment 4 — Effective Tax Rate, page 24

On pages 24 and 25, you discuss the effective tax rate excluding certain items. These amounts constitute non-GAAP measures. Please revise your MD&A for each period presented to remove these non-GAAP measures and instead discuss the changes between periods in your GAAP amounts. Amounts that are a business reason for the change between periods, such as the specified items you refer to, should be discussed as one of the business reasons for the change in the applicable GAAP amount between periods. Please make the appropriate revisions.

Response:

In future filings, we shall revise the MD&A discussion of the effective tax rates similar to the following related to the change between 2005 and 2006:

The effective tax rate was 26.6%, down slightly from 26.9% in 2005. The sale of the Geismar, Louisiana, DNT production facility, the global cost reduction plan charge, and the impairment of loans receivable resulted in a 0.5% reduction of the fiscal 2006 effective tax rate.

Comment 5 — Statements of Cash Flows, page 48

You present a subtotal of cash provided by operating activities prior to working capital changes. This amount constitutes a non-GAAP measure. Please remove this subtotal from your statements. Refer to Item 10(e) (1) (ii) (C) of Regulation S-K.

Response:

In future filings, we shall remove the subtotal of cash provided by operating activities prior to working capital changes from our Statements of Cash Flows.

Comment 6 — Statements of Cash Flows, page 48

Please separately present changes in inventories in your determination of cash provided by operating activities. Refer to paragraph 29 of SFAS 95.

Response:

In future filings, we shall separately disclose both the change in inventories and the change in contracts in progress in the Statements of Cash Flows.

Comment 7 — Statements of Shareholders' Equity, page 49

Please disclose the components of accumulated other comprehensive income (loss) as of each balance sheet date as required by paragraph 26 of SFAS 140. Please also disclose for all periods presented the amounts of the reclassification adjustments for each classification of other comprehensive income. See paragraph 20 of SFAS 130.

Response:

In future filings, provided that the reclassification adjustments are not material, we will specifically disclose that the reclassification adjustments were not material in the Footnote for Other Comprehensive Income.

The components of accumulated other comprehensive income have been disclosed in Footnote 20 to the 30 September 2006 Consolidated Financial Statements in accordance with paragraph 26 of SFAS 130. The reclassification adjustments were not material for the periods presented. Footnote 6 to the 30 September 2006 Consolidated Financial Statements disclosed that amounts reclassified from other comprehensive income due to the discontinuance of a hedge were not material.

Comment 8 — General, Note 1. Major Accounting Policies

Please disclose the types of expenses that you include in the cost of sales line item and the types of expenses that you include in the selling and administrative expenses line item.

Response:

In future filings, we will disclose the types of expenses included in cost of sales and selling and administrative expenses, as described below.

Cost of sales predominately represents the cost of tangible products sold. These costs include labor, raw materials, plant engineering and purchasing department overhead, power, depreciation, production supplies and materials packaging costs, and maintenance costs. As disclosed in Footnote 1 to the 30 September 2006 Consolidated Financial Statements, costs incurred for shipping and handling are also included in cost of sales. The principal components of selling and administrative expenses are salaries, advertising, and promotional costs.

We believe that our historical disclosures have met the requirements of both U.S. GAAP and Regulation S-X. However, we will add the above disclosures in future filings.

Comment 9 — Note 1. Major Accounting Policies, Inventories, page 53

You should use one inventory method for similar types of inventories. A mixture of methods should only be used for different types of inventories, particularly when there are valid business reasons for doing so. Please disclose which types of inventory you use each method for. Please also disclose the dollar amounts of inventory accounted for under each method. Please disclose whether you use more than one method for any similar types of inventory. If so, please also disclose your basis for doing this. In a portion of these instances, this may be due to a specific method not being allowed in certain countries.

Response:

In future filings, we will disclose the inventory method used for the various types of inventory, as described below. A disclosure of the percentage of inventory valued on the last-in first-out (LIFO) method at each balance sheet date has been included in Footnote 7 to the 30 September 2006 Consolidated Financial Statements. The Company does utilize one inventory method for each type of inventory.

The Company utilizes the LIFO method for inventories in the Merchant Gases, Tonnage Gases, Electronics and Performance Materials, and Chemicals segments in the United States. Inventories for these segments outside of the United States are accounted for on the first-in first-out (FIFO) method, as the LIFO method is not generally permitted in the foreign jurisdictions where these segments operate. The Healthcare and Equipment and Energy

segments inventories on a worldwide basis, as well as all other inventories, are accounted for on the FIFO basis.

We believe that our historical disclosures have met the requirements of both U.S. GAAP and Regulation S-X. However, we will provide these additional disclosures described above in future filings.

Comment 10 — Note 1. Major Accounting Policies, Adjustments, page 54

For each adjustment related to prior periods which was recorded during the fourth quarter of 2006, please provide us with additional background information so we may better understand the nature of each adjustment. Please tell us how you determined that both individually and in the aggregate these adjustments were not material to any prior annual and quarterly period. SAB 99 notes that a materiality evaluation must be based on all relevant quantitative and qualitative factors. Please provide your SAB 99 materiality analysis explaining how you determined that the errors related to each prior period were immaterial on both a quantitative and qualitative basis. Please ensure your response addresses all of the qualitative factors outlined in SAB 99 and any other relevant qualitative factors.

Response:

A paper copy of the Company's SAB 99 analysis, dated 22 October 2006, has been separately submitted. The Company requests confidential treatment of this document under Rule 12b-4 and, also, requests that the staff return this document when its review is complete. The adjustments discussed in this analysis were reviewed with the Company's senior management, the Audit Committee of the Board of Directors, and external auditors prior to filing the Company's 30 September 2006 Form 10-K.

As requested, below is supplemental information related to the adjustments recorded during the fourth quarter of 2006.

Inventory

The Company's Healthcare segment recorded an adjustment to reduce its inventories to actual based on physical counts, of which \$7 million related to prior years. In fiscal year 2006, the Company discovered that physical inventory counts had resulted in the double counting of certain inventories.

Environmental Liabilities

The Company acquired a facility in Pensacola, Florida (Pace) in 1969. In 1986, the Company implemented a groundwater monitoring program, as required by the Florida Department of Environmental Protection (FDEP). In 1986, the Company notified the FDEP that the Company's monitoring program had identified groundwater contamination. Subsequently, the Company entered into an agreement with the FDEP to implement a groundwater remediation program.

During fiscal 2006, the Company sold its Amines business to a third party. The Company's Amines business included operations at Pace. With the sale of the Amines business, the Company had no substantive operations remaining at Pace. In connection with the disposition of the Amines business, the buyer would only agree to purchase the operating assets (consisting of machinery, buildings, and equipment) at Pace and entered into an arrangement with the Company to lease the land underlying the operating assets at Pace. The Company is required by the FDEP to continue its remediation efforts in order for the buyer to continue to operate the Amines facility at Pace. In connection with the sale of the Amines business, the Company reexamined its accounting for the remediation activities at Pace.

Based on a review of SOP 96-1 during the reexamination as described above, the Company concluded that a liability should have been accrued for the estimated remediation expenditures at Pace in 1993 or earlier. The Company has concluded that during 1993 or earlier, a liability for remediation at Pace had been incurred, was estimable, and was related to past events. As indicated above, the Company is required to continue the remediation efforts for the Amines business buyer to continue operations at Pace.

At 30 September 2006, it was the opinion of the Company's environmental specialists that it would take an additional 20 years to complete the groundwater remediation. The Company's environmental specialists have estimated costs through completion to range from \$42 to \$50 million. As no amount within the range was a better estimate than another, the Company recognized a pretax expense in the fourth quarter of 2006 of \$42 million as a component of income from discontinued operations, of which \$35 million pertained to prior years.

Income Taxes

The Company performed its book to tax reconciliation at 30 September 2006. In connection with that review the Company identified several items that related to prior periods representing a tax benefit of approximately \$20 million. The identified prior period adjustments related to both domestic and foreign operations and impacted fiscal years 2005, 2004 and years prior to 2004. The adjustments related to a true-up of the recognized tax provision to the actual federal and state income tax returns, and an over-accrual of taxes related to certain of the Company's foreign operations.

Accounts Payable

There was an over-accrual of accounts payable of \$4.2 million that was related to prior years.

Comment 11 — Note 5. Discontinued Operations, page 59

Throughout the filing, including on page 21, you state that you are currently marketing your Polymer Emulsions business and actively engaging its partner and potential buyers. Please disclose whether or not you have reported the operations of this business as discontinued. Please also tell us how you determined you did or did not meet the criteria of paragraph 30 of SFAS 144 to report these operations as discontinued.

Response:

The Polymer Emulsions business was not reported as a discontinued operation in the 30 September 2006 Consolidated Financial Statements. The Polymer Emulsions business will be reported as a discontinued operation if and when the Board of Directors, representing the requisite level of authority, commits to sell the business (as disclosed in our Quarterly Report on Form 10-Q for the period ended 30 June 2006). At 30 September 2006, and through the date of this letter, the Company is exploring the sale of this business and the Board of Directors has not committed to such an action. As a result, the Polymer Emulsions business did not meet the criteria of a discontinued operation under paragraph 30 of SFAS 144 at 30 September 2006.

Comment 12 — Note 9. Plant and Equipment, page 62

Please break out the gas generating and chemical facilities, machinery and equipment line item into smaller and more meaningful components. In addition, we see from page 51 that the range of useful lives for this line item is also very broad. Please separately disclose the range of useful lives for each new category presented. For categories that still have very broad useful lives, you should separately discuss the types of assets that fall in each part of the range.

Response:

Gas generating and chemical facilities (production facilities) comprise the majority of the Company's gas generating and chemical facilities, machinery and equipment. The next largest component of gas generating and chemical facilities, machinery and equipment, after production facilities, is distribution equipment. The cost of distribution equipment represents less than 10% of the Company's total plant and equipment at 30 September 2006. Other components of plant and equipment are immaterial relative to the Company's total plant and equipment at 30 September 2006. We believe the disclosure presented in the Company's 30 September 2006 Consolidated Financial Statements meets the disclosure requirements of both U.S. GAAP and Regulation S-X.

On pages 39 and 40 of the Annual Report, the Company has disclosed the critical accounting policy for depreciable lives of plant and equipment, including sensitivity analysis for depreciation expense. In that discussion, the Company discloses the range of useful lives for production facilities in the different segments.

In future filings, we shall provide the following additional disclosures in our depreciation discussion in Footnote 1 to the Consolidated Financial Statements:

Depreciation is recorded using the straight-line method, which deducts equal amounts of the cost of each asset from earnings every year over its expected useful life. The estimated useful life for buildings is principally 30 years. For gas generating and chemical facilities, machinery and equipment, the estimated useful life ranges between 10 to 25 years. The depreciable lives of production facilities within the Merchant Gases segment are principally 15 years. The depreciable lives of production facilities within the Electronics and Performance Materials segment, where there is not an associated long-term supply agreement, range from 10 to 15 years. Depreciable lives of production facilities related to long-term customer supply contracts associated with the gases on-site business are matched to the related contract lives, primarily 15 to 20 years within the Tonnage Gases segment and primarily 10 to 15 years within the Electronics and Performance Materials segment.

Comment 13 — Note 12. Long-Term Debt, page 64

Please tell us how you determined you met the criteria of paragraphs 10 and 11 of SFAS 6 to classify the 6.5% Eurobond maturing in 2007 as long-term debt as of September 30, 2006. In doing so, please specifically address when you intend to refinance this debt.

Response:

The Company has a five-year \$1.2 billion revolving credit facility that matures in May 2011. The Company intends to refinance the 6.5% Eurobond debt maturing in 2007 on a long-term basis during fiscal year 2007. At 30 September 2006 and through the date of this response, the Company has sufficient capacity on the five-year \$1.2 billion revolving credit facility to absorb the 6.5% Eurobond maturing during 2007; therefore, management has the intent and ability to refinance the debt on a long-term basis.

Comment 14 — Note 19. Commitments and Contingencies, Environmental, page 73

You provide further information regarding your environmental matters in MD&A on page 33 and in your Critical Accounting Policies on page 41. These disclosures include that there are approximately 32 sites on which a final settlement has not been reached where you, along with others, have been designated a potentially responsible party by the Environmental Protection Agency or are otherwise engaged in investigation or remediation. In the notes to your financial statements, please provide the disclosures required by SAB Topic 5:Y. These disclosures should include the following:

- *The extent to which unasserted claims are reflected in your accrual or may affect the magnitude of the contingency;*
- *Uncertainties with respect to joint and several liability that may affect the magnitude of the contingency, including disclosure of the aggregate expected cost to remediate particular sites that are individually material if the likelihood of contribution by the other significant parties has not been established;*
- *Disclosure of the nature and terms of cost-sharing arrangements with other potentially responsible parties;*
- *The time frame over which the accrued or presently unrecognized amounts may be paid out;*
- *Material components of the accruals and significant assumptions underlying estimates; and*
- *Disaggregated disclosure that describes accrued and reasonably likely losses with respect to particular environmental sites that are individually material. Also, if management's investigation of potential liability and remediation cost is at different stages with respect to individual sites, the consequences of this with respect to amounts accrued and disclosed.*

Refer to Questions 2 and 3 of SAB Topic 5:Y.

Response:

As disclosed, the Company has a well-established process in place to identify and monitor environmental exposures. An environmental exposure analysis is regularly prepared and maintained that lists all environmental loss contingencies, even where an accrual has not been established. This analysis assists in monitoring the Company's overall environmental exposure and serves as a tool to facilitate ongoing communication amongst the Company's technical specialists, environmental managers, environmental lawyers, and financial management to ensure the environmental exposures are monitored and appropriately recorded and disclosed. Accruals for environmental loss contingencies are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. At 30 September 2006, the Company estimated the exposure for environmental contingencies to range from \$52 million to a reasonably possible upper exposure of \$70 million. The balance sheet at 30 September 2006 included an accrual of \$52.4 million.

We believe that our disclosures have met the requirements of SAB Topic 5:Y, where material. Your specific comments concerning environmental liabilities are addressed below:

- There were no material unasserted claims reflected in the 30 September 2006 accrual or that we believe could affect the magnitude of the contingency.
- As disclosed in both our critical accounting policies environmental liabilities discussion and Footnote 1 to the 30 September 2006 Consolidated Financial Statements, the environmental accrual reflects costs related to other potentially responsible parties to the extent that the Company has reason to believe such parties will not fully pay their proportionate share.
- There were no material cost-sharing arrangements with other potentially responsible parties.

- In future filings, we shall provide the following additional disclosure in our Commitments and Contingencies footnote:

The environmental liabilities will be paid over a period of up to 30 years.

- In our critical accounting policies environmental liabilities discussion, we have disclosed examples of the types of costs included in the accrual: site investigation and testing costs, cleanup costs, costs related to soil and water contamination resulting from tank ruptures, post remediation monitoring costs, and outside legal fees. The largest component of the accrual was monitoring and cleanup costs, which was not material to the balance sheet at 30 September 2006.

In our critical accounting policies environmental liabilities discussion, we also have disclosed that the measurement of environmental accruals is based on evaluation of currently available information with respect to each individual site and considers factors such as existing technology, presently enacted laws and regulations, and prior experience in remediation of contaminated sites.

- Approximately \$35 million of the \$52 million accrual is related to one site, as described in Note 5 to the Consolidated Financial Statements. No other sites were deemed material. The Company disclosed the range for environmental contingencies and also, indicated that a significant increase to the reasonably possible upper exposure level could occur if a new site is designated, the scope of remediation increased, or a significant increase in the Company's proportionate share occurred.

Comment 15 — Note 19. Other Commitments and Contingencies, page 74

Please disclose how you account for the put options which give the other shareholders of INOXAP and San Fu Gas Company, Ltd. the right to require you to purchase their shares.

Response:

In future filings, we will address the likelihood of the exercise of these options by the other shareholders.

The Company has accounted for the put options issued to the other shareholders of INOXAP and San Fu Gas Company as contingent liabilities to purchase an asset. At 30 September 2006 the Company determined that it was not probable that these options would be exercised by the other shareholders. The accounting for these options is in accordance with paragraph 10 of SFAS 150.

Comment 16 — Note 20. Supplemental Information, Payables and Accrued Liabilities, page 74

Given that the trade creditors, payables, and accrued expenses line item represents approximately 36% of total current liabilities at September 30, 2006, please separately disclose any component of this line item that is in excess of 5 percent of total current liabilities. Refer to Rule 5-02.20 of Regulation S-X.

Response:

In future filings, we shall revise the description of the line item "Trade creditors, payables, and accrued expenses" referred to in your letter to "Trade Creditors" to ensure that it is clear that this liability is due to trade creditors only.

The \$843.8 million liability is due to trade creditors only. Our footnote provides a breakdown of accrued liabilities in sufficient detail to meet the requirements of Rule 5-02.20 of Regulation S-X.

Comment 17 — General, Form 10-Q for the Period Ended 31 December 2006

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

Response:


We will consider all of the above comments in our future interim filings.

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,

 (-s- PAUL E. HUCK)
Paul E. Huck
Vice President and Chief Financial Officer