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Paul E. Huck
Sr. Vice President and
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3 February 2010

Mr. John Hartz
Senior Assistant Chief Accountant
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 2009
Form 10-Q: For the Quarterly Period Ended 31 December 2009

Dear Mr. Hartz:

In response to your letter of 27 January 2010, 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 27 January 2010, have been included in italics for reference during your review.

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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:

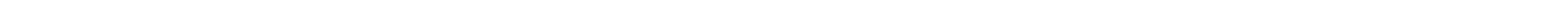
In future filings, we will make the revisions described in our responses to your comments 2 through 10 as detailed below.

Comment 2 — Pasadena, Texas Facility, page 14

Tell us whether it is reasonably possible that losses related to the violations alleged at this site could be material to your results of operations. If so, please explain the nature of the allegations and whether aside from any fines, you may be required to undertake material remediation, and/or capital expenditures related to this issue.

Response:

Discussion of this matter was disclosed in Item 3, Legal Proceedings, as a result of the requirements of Item 103 of Regulation S-K which requires disclosure of environmental administrative proceedings involving a governmental authority unless the registrant believes that such proceeding will result in no



monetary sanction, or in monetary sanctions, exclusive of interest and costs, of less than $100,000. The losses related to the alleged violation are not material to the Company's results of operations.

Comment 3 — Selected Financial Data, page 16

You presented your cash provided by operating activities in the Other Data section. While presentation of cash flows from operating activities is useful, this data should be considered in the framework of a statement of cash flows, which reflects management's decision as to the use of these cash flows and the external sources of capital used. The implication of a presentation which shows only the cash flows generated from operations portion of a cash flows statement is that the use of such cash flows is entirely at the discretion of management. Please also present your cash flows from investing and financing activities. See Section 202.03 of the SEC's Codification of Financial Reporting Policies for guidance.

Response:

In annual future filings, we will expand Item 6- Selected Financial Data to include cash used for investing activities and cash provided by (used for) financing activities within the Other Data section as underlined below.

Revised Disclosure:

(Millions of dollars, except per share)	**2010**	2009	2008	2007	2006
Other Data					
Depreciation and Amortization		$ 840	$ 869	$ 790	$ 705
Capital expenditures on a GAAP basis [C]		1,236	1,159	1,553	1,358
Capital expenditures on a non-GAAP basis [C]		1,475	1,355	1,635	1,487
Cash provided by operating activities		1,323	1,680	1,500	1,348
Cash used for investing activities		(1,040)	(920)	(1,483)	(947)
Cash provided by (used for) financing activities		102	(699)	(15)	(423)
Dividends declared per common share		1.79	1.70	1.48	1.34
Market price range per common share		81—41	106—65	99—66	70—53
Weighted average common shares outstanding (in millions)		210	212	216	222
Weighted average common shares outstanding assuming dilution (in millions)		214	219	223	228
Book value per common share at year-end		$ 22.68	$ 24.03	$ 25.52	$ 22.67
Shareholders at year-end		8,600	8,900	9,300	9,900
Employees at year-end [D]		18,900	21,100	22,100	20,700

Comment 4 — Liquidity and Capital Resources, page 30

We note your disclosure on page 68 that various debt agreements to which you are a party include certain financial covenants and other restrictions. As such, please disclose here or elsewhere in the filing the specific terms of any material debt covenants in your debt agreements. In addition, if it is reasonably likely that you will not be in compliance with any of your material debt covenants, please disclose the required ratios/amounts as well as the actual ratios/amounts as of each reporting date. This will allow readers to understand how much cushion there is between the required ratios/amounts and the actual ratios/amounts. Please also consider showing the specific computations used to arrive at the actual ratios/amounts with corresponding reconciliations to US GAAP amounts, if necessary. See Sections I.D and IV.C of the SEC Interpretive Release No. 33-8350.

Response:

For all periods presented, the Company was in compliance with all debt covenants. As required by Sections I.D and IV.C of the SEC Interpretive Release No. 33-8350, if it becomes reasonably likely that the Company will not be in compliance with a material debt covenant, disclosures about the requirements, including ratios, will be included in the applicable future filings.

The Company has one material financial covenant associated with its $1.45 billion multicurrency revolving facility. The covenant indicates that the Company shall not exceed a maximum leverage ratio of 60%. The leverage ratio is defined in the agreement as consolidated total long-term debt as a percentage of consolidated total long-term debt plus consolidated shareholders' equity. For purposes of the ratio calculation, consolidated shareholders' equity is adjusted by subtracting consolidated goodwill. The Company's ratio was significantly below the specified level for all periods presented. In future filings, we will expand the disclosures within the Debt footnote to include the additional disclosures underlined below.

Revised Disclosure:
14. Debt
(Excerpt)

Various debt agreements to which the Company is a party include certain financial covenants and other restrictions, including restrictions pertaining to the ability to create property liens and enter into certain sale and leaseback transactions. <u>The Company has one material financial covenant associated with its $1.45 billion multicurrency revolving facility. The covenant indicates that the Company shall not exceed a maximum leverage ratio of 60%. The leverage ratio is defined in the agreement as consolidated total long-term debt as a percentage of consolidated total long-term debt plus consolidated shareholders' equity. For purposes of the ratio calculation, consolidated shareholders' equity is adjusted by subtracting consolidated goodwill. The Company is in compliance with this and all other financial debt covenants.</u>

<u>Comment 5 — Impairment of Long-Lived Assets, page 36</u>

To the extent that any of your reporting units have estimated fair values that are not substantially in excess of the carrying value and to the extent that goodwill for these reporting units, in the aggregate or individually, if impaired, could materially impact your operating results or total shareholders' equity, please provide the following disclosures for each of these reporting units in future filings:

- *Identify the reporting unit;*
- *The percentage by which fair value exceeds the carrying value as of the most-recent step-one test;*
- *The amount of goodwill;*
- *A description of the assumptions that drive the estimated fair value;*
- *A discussion of the uncertainty associated with the key assumptions. For example, to the extent that you have included assumptions in your discounted cash flow model that materially deviates from your historical results, please include a discussion of these assumptions;*
- *A discussion of any potential events and/or circumstances that could have a negative effect to the estimated fair value.*

If you have determined that the estimated fair value substantially exceeds the carrying value for all of your reporting units, please disclose this determination in future filings. Please also provide the above disclosures, as applicable, for any long-lived assets or asset groups for which you have determined that fair value is not substantially in excess of the carrying value and to the extent that the asset amounts, in the aggregate or individually, could materially impact your operating results or total shareholders' equity. Please refer to Item 303 of Regulation S-K and Sections 216 and 501.14 of the SEC's Codification of Financial Reporting Policies for guidance.

Response:

In the fourth quarter of 2009, the Company conducted the required annual test of goodwill for impairment. As a result, the Company compared the estimated fair value of each of its business reporting units to their carrying value and determined that the fair value substantially exceeded the carrying value for each of the reporting units. This fact will be disclosed in future filings, as illustrated below. If the fair value of

a reporting unit does not substantially exceed its carrying value, the Company will provide the disclosure outlined above for such reporting unit.

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 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. There were no such events or changes in circumstances that occurred during the reporting periods. The Company has not had an impairment of long-lived assets held for use. Any impairment charges have been necessitated by the decision to sell or abandon an asset.

In future filings, we will expand the disclosures within the Impairment of Long-Lived Assets section of the Critical Accounting Policies and Estimates to include the additional disclosures underlined below.

Revised Disclosure:
Impairment of Long-Lived Assets
Plant and Equipment

Net plant and equipment at 30 September 2010 totaled $x,xxx.x. 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. <u>There were no such events or changes in circumstances that occurred during the reporting periods.</u>

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 of $xx.x, was $xxx.x as of 30 September 2010. 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 9 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 fifteen reporting units. Reporting units are primarily based on products and geographic locations within each business segment.

In the fourth quarter of 2010, the Company conducted the required annual test of goodwill for impairment. The Company determined the fair value of each of the reporting units substantially exceeded its carrying value and therefore, 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 of the business, 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.

Comment 6 — Loss Contingencies, page 39

We note that accounting for loss contingencies is a critical aspect of your accounting policies and estimates.

On pages 7 and 29 you state that "..the Company does not expect that any sum it may have to pay in connection with environmental matters in excess of the amounts recorded or disclosed above would have a materially adverse effect on its financial condition or results of operations in any one year." On page 74 you state "While the Company does not expect that any sums it may have to pay in connection with environmental exposures would have a materially adverse effect on its consolidated financial position or net cash flows, a future charge for any damage award could have a significant impact on the Company's net income in the period in which it is recorded." Tell us whether that period could be a year, and if so, please reconcile these two disclosures.

Response:

We agree these disclosures should be consistent and the environmental disclosures in the Commitments and Contingencies footnote in future filings will be revised as underlined below.

Revised Disclosure:
16. Commitments and Contingencies
Environmental

In the normal course of business, the Company is involved in legal proceedings under the federal Superfund law, similar state environmental laws, and RCRA relating to the designation of certain sites for investigation or remediation. Presently, there are approximately 28 sites on which a final settlement has not been reached where the Company, along with others, has been designated a potentially responsible party by the Environmental Protection Agency or is otherwise engaged in investigation or remediation. In addition, the Company is also involved in cleanup activities at certain of its manufacturing sites. The Company continually monitors these sites for which it has environmental exposure.

Accruals for environmental loss contingencies are recorded when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated consistent with the policy set forth in Note 1. The Consolidated Balance Sheets at 30 September 2010 and 2009 included an accrual of $xx.x and $95.0, respectively, primarily as part of other noncurrent liabilities. The environmental liabilities will be paid over a period of up to 30 years. The Company estimates the exposure for environmental loss contingencies to range from $xx to a reasonably possible upper exposure of $xxx as of 30 September 2010.

Actual costs to be incurred at identified sites in future periods may vary from the estimates, given inherent uncertainties in evaluating environmental exposures. Using reasonably possible alternative assumptions of the exposure level could result in an increase to the environmental accrual. Due to the inherent uncertainties related to environmental exposures, a significant increase to the reasonably possible upper exposure level could occur if a new site is designated, the scope of remediation is increased, a different remediation alternative is identified, or a significant increase in the Company's proportionate share occurs. The Company does not expect that any sum it may have to pay in connection with environmental matters in excess of the amounts recorded or disclosed above would have a material adverse impact on its financial position or results of operations in any one year.

Comment 7 — Loss Contingencies, page 39

We note that the amounts charged to income from continuing operations on an after-tax basis related to environmental matters totaled $33 million in fiscal 2009, $31 million in 2008, and $25 million in 2007. These amounts include an estimate of expenses for compliance with environmental laws, and activities undertaken to meet internal Company standards. It appears that some of these expenses may not have been charged as part of an ongoing remediation liability. Please clarify for us. Tell us why you believe that disclosing these costs on an after-tax basis is meaningful, relative to other cost discussions.

Response:

In the Environmental Matters section of Management's Discussion and Analysis (MD&A), we disclosed that the amounts charged to income from continuing operations on an after-tax basis related to environmental matters totaled $32.6 million, $31.0 million and $25.1 million for the fiscal years ended 2009, 2008 and 2007, respectively. These amounts represent both recurring operating costs that are expensed as incurred and accruals for remediation activities. The operating costs are primarily for routine compliance with various environmental laws and regulations and voluntary actions to meet internal Company standards. They include costs primarily related to nonhazardous waste disposal, depreciation, and compensation and benefits for employees not directly associated with remediation activities. The Company accrues environmental investigation and remediation costs for identified sites when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. The Company will revise future disclosures to present these amounts on a pre-tax basis similar to other cost disclosures throughout the MD&A. The pre-tax amounts are $52.5 million, $49.9 million and $40.5 million for the fiscal years ended 2009, 2008 and 2007, respectively.

Comment 8 — Loss Contingencies, page 39

Please provide us with a detailed pre-tax roll-forward of your environmental accrual for each year presented and the interim period just prior to your response. Please separately show the beginning balance, expenses, (or reductions of gains on sale) and expenditures for each period. Please provide a narrative analysis of the expenses and expenditures for the year explaining how much of the amount is due to changes in cost estimates, newly discovered sites, or new areas in old sites, or any other relevant information.

Please provide the above type roll-forward and analysis for each of the individual sites you identify as Pace, Piedmont and Paulsboro.

Response:

The table below is a pre-tax roll-forward of the Company's environmental investigation and remediation accruals for 2008, 2009 and the first quarter of fiscal 2010, separately showing the beginning balance, additional expense and expenditures for each period. A narrative analysis of the expenses and expenditures recorded to the accruals for each year presented is provided below the table.

(in millions of pre-tax dollars)

Environmental Reserve Rollforward

	FY 2008				FY 2009			Q1 FY 2010		
Locations	**Reserve Bal 10/1/2007**	**Expense**	**Expenditures**	**Reserve Bal 9/30/2008**	**Expense**	**Expenditures**	**Reserve Bal 9/30/2009**	**Expense**	**Expenditures**	**Reserve Bal 12/31/2009**
Pace	41.3	—	(2.0)	39.3	—	(1.0)	38.3	—	(0.6)	37.7
Piedmont	—	24.0	(0.3)	23.7	—	(1.3)	22.4	—	(0.3)	22.1
Paulsboro	—	—	—	—	16.0	—	16.0	—	(0.3)	15.7
All other locations	10.9	15.3	(6.3)	19.9	2.7	(4.3)	18.3	0.1	(0.6)	17.8
Total Reserves	**52.2**	**39.3**	**(8.6)**	**82.9**	**18.7**	**(6.6)**	**95.0**	**0.1**	**(1.8)**	**93.3**

In 2008, $24 million of the total $39 million expense was for a production facility site in Piedmont, South Carolina. This expense was triggered by the sale of the facility in June 2008, and was recognized as a component of income from discontinued operations. In connection with the sale, the Company recognized the liability in continuing operations for retained environmental obligations associated with remediation activities of the site. Prior to the sale, remediation costs had been capitalized since they improved the property as compared to the condition when originally acquired. The remaining 2008 expense of $15 million was primarily for changes in cost estimates for existing sites.

In 2009, $16 million of the total $19 million expense was for a production facility site in Paulsboro, New Jersey. In 2009, the Company committed to a plan to sell this facility. The $16 million environmental liability was recorded as a result of New Jersey state law requirements to investigate and, if contaminated, remediate a site upon its sale. The remainder of the 2009 expense of $3 million was for revised cost estimates for existing sites.

In the first fiscal quarter of 2010, both the expense and expenditures were related to existing sites.

Refer to Note 16 in the Company's Form 10-K for the year ended 30 September 2009 for additional information on the Pace, Piedmont and Paulsboro sites.

Comment 9 — Global Cost Reduction Plan, page 55

Please enhance your disclosure to disclose the total amount of restructuring charges expected to be incurred as well as the cumulative amount of restructuring charges incurred to date for each major type of cost as well as for each reportable segment as required by FASB ASC 420-10-50-1.

Response:

A total charge of $298.2 million was recorded in 2009 for the global cost reduction plan as disclosed in Note 3 of the Company's Form 10-K for the year ended 30 September 2009. The disclosure in Note 3 displays how this charge related to the businesses at the segment level.

Additional restructuring charges recorded in 2009, primarily accelerated depreciation associated with manufacturing facilities to be closed, were not material to the results from continuing operations or to any

individual segment. These charges were recorded in cost of sales. Additionally, the Company does not currently expect any additional material restructuring charges accounted for under FASB ASC 420-10-50-1, Accounting for Costs Associated with Exit or Disposal Activities. If in the future the Company does expect such additional material restructuring charges, we will provide the appropriate disclosures.

Comment 10 — Litigation, page 74

You disclose that the ultimate outcome of the proceedings or sanctions related to the investigation of your Brazilian subsidiary is not predictable with assurance and that a future charge for regulatory fines or damage awards could have a significant impact on your net income in the period in which it is recorded. We note that this issue could have a material impact on your net income in the period in which it is recorded. Please provide more detail concerning the background of the investigation and the allegations. Discuss your understanding of the nature and amounts of sanctions involved with these allegations in Brazil. Tell us whether the sanctions in the report were quantified and if so tell us the amounts. It appears there is a reasonable possibility that a loss exceeding amounts already recognized may have been incurred and the amount of that additional loss is material. If there is a reasonable possibility, please disclose the estimated range of loss, or state that such an estimate cannot be made as required by FASB ASC 450-20-50-4.

Response:

The investigation alleges violations of the competition laws of Brazil by industrial gas competitors, including allegations of market allocation and price fixing. The Company disputes the allegations and is actively defending the action. The report of the Brazilian Ministry of Justice recommended a finding of liability and imposition of sanctions by Brazil's Council for Economic Defense (CADE). To date, no finding of liability has been made. If there is such a finding, it would be subject to appeal to the Brazilian courts. The report of the Brazilian Ministry of Justice did not quantify its recommendation for sanctions and there is limited precedent with respect to this developing area of Brazilian law. As a result, although there is a reasonable possibility that a loss has been incurred, an estimate of a range of that loss cannot reasonably be made at the current time. In future filings, we will expand the disclosures within the Commitments and Contingencies footnote to include the additional disclosures underlined below.

Revised Disclosure:
16. Commitments and Contingencies
Litigation

The Company is involved in various legal proceedings, including competition, environmental, health, safety, product liability, and insurance matters. During the third quarter of 2008, a unit of the Brazilian Ministry of Justice issued a report (previously issued in January 2007, and then withdrawn) on its investigation of the Company's Brazilian subsidiary, Air Products Brazil Ltda., and several other Brazilian industrial gas companies. The report recommended that the Brazilian Administrative Council for Economic Defense impose sanctions on Air Products Brazil Ltda. and the other industrial gas companies for alleged anticompetitive activities. The Company is actively defending this action and cannot, at this time, reasonably predict the ultimate outcome of the proceedings or sanctions, if any, that will be imposed. Additionally, it is not possible to make a reasonable estimate of the range of loss at this time. While the Company does not expect that any sums it may have to pay in connection with this or any other legal proceeding would have a materially adverse effect on its consolidated financial position or net cash flows, a future charge for regulatory fines or damage awards could have a significant impact on the Company's net income in the period in which it is recorded.

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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