

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

AIR PRODUCTS AND CHEMICALS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

(State or Other Jurisdiction of Incorporation or Organization)

23-1274455

(I.R.S. Employer Identification No.)

7201 Hamilton Boulevard, Allentown, Pennsylvania 18195-1501

(Address of Principal Executive Offices) (Zip Code)

Air Products and Chemicals, Inc. Deferred Compensation Plan

(Full Title of the Plan)

Mary T. Afflerbach, Corporate Secretary and Chief Governance Officer

Air Products and Chemicals, Inc., 7201 Hamilton Boulevard, Allentown, PA 18195-1501

(Name and Address of Agent for Service)

610-481-4911

(Telephone Number, Including Area Code, of Agent for Service)

CALCULATION OF REGISTRATION FEE

Titles of securities to be registered	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Deferred Compensation Obligations	\$36,000,000 ⁽¹⁾	N/A	\$36,000,000 ⁽¹⁾	\$4,125.60

(1) Estimated solely for purposes of determining the registration fee.

EXPLANATORY NOTE

Air Products and Chemicals, Inc. (the "Registrant"), has prepared this Registration Statement in accordance with the requirements of Form S-8 under the Securities Act of 1933, as amended, to register an additional \$36,000,000 of deferred compensation obligations relating to the Air Products and Chemicals, Inc. Deferred Compensation Plan (the "Plan")

These are securities of the same class as the securities registered on Form S-8, Registration Statement No. 333-141337 filed with the Securities and Exchange Commission (the "SEC") on 16 March 2007, (the "Initial Registration") relating to the Plan.

Pursuant to General Instruction E to Form S-8, the contents of the Initial Registration are incorporated herein by reference.

PART II INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed by the Registrant with the SEC are incorporated herein by reference:

- (a) The Registrant's Annual Report on Form 10-K for the fiscal year ended 30 September 2011, filed on 22 November 2011;
- (b) The Registrant's Quarterly Report on Form 10-Q for the quarter ended 31 December 2011, filed on 27 January 2012; and
- (c) The Registrant's Current Reports on Form 8-K filed on 21 October 2011, 27 October 2011, 22 November 2011, 24 January 2012, and 27 January 2012.

All documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, prior to the filing of a post-effective date amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this registration statement and to be part hereof from the date of filing of such documents.

Item 8. Exhibits

- 5. Opinion of legality
- 23. Consent of Independent Registered Public Accounting Firm
- 24. Power of Attorney.

SIGNATURES

The Registrant. Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Town of Trexlertown, Commonwealth of Pennsylvania, on this 15th day of March 2012.

AIR PRODUCTS AND CHEMICALS, INC.
(Registrant)

By: /s/ Mary T. Afflerbach
 Mary T. Afflerbach*
 Corporate Secretary and Chief Governance
 Officer

* Mary T. Afflerbach, Corporate Secretary and Chief Governance Officer, by signing her name hereto, signs this registration statement on behalf of the registrant and, for each of the persons indicated by asterisk on pages 3 and 4 hereof, pursuant to a power of attorney duly executed by such persons which is filed with the Securities and Exchange Commission herewith.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the date indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ John E. McGlade</u> John E. McGlade	Director, Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	15 March 2012
<u>/s/ Paul E. Huck</u> Paul E. Huck	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	15 March 2012
<u>/s/ M. Scott Crocco</u> M. Scott Crocco	Vice President and Corporate Controller (Principal Accounting Officer)	15 March 2012
<u>*</u> Mario L. Baeza	Director	15 March 2012
<u>*</u> Susan K. Carter	Director	15 March 2012
<u>*</u> William L. Davis, III	Director	15 March 2012
<u>*</u> Chadwick C. Deaton	Director	15 March 2012
<u>*</u> Michael J. Donahue	Director	15 March 2012
<u>*</u> Ursula O. Fairbairn	Director	15 March 2012
<u>*</u> W. Douglas Ford	Director	15 March 2012
<u>*</u> Evert Henkes	Director	15 March 2012

Signature

Title

Date

*

Director

15 March 2012

Margaret G. McGlynn

*

Director

15 March 2012

Lawrence S. Smith

EXHIBIT INDEX

<u>Exhibit</u>		<u>Page</u>
5.	Opinion of legality	6
23.	Consent of Independent Registered Public Accounting Firm	7
24.	Power of Attorney	8

No opinion of counsel is being filed because the Common Stock to be distributed in connection with the Plan will consist exclusively of previously issued shares that are presently held by the registrant as treasury shares and will not constitute original issuance shares; further, no opinion is being furnished with respect to ERISA compliance because the Plan covered by the registration statement is not subject to the requirements of ERISA.

15 March 2012

Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195

Re: Air Products and Chemicals, Inc. Deferred Compensation Plan

Ladies and Gentlemen:

This opinion is being submitted in connection with a Registration Statement on Form S-8 ("Registration Statement") of Air Products and Chemicals, Inc. (the "Corporation") being filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended, related to the registration of: \$36,000,000 of deferred compensation obligations ("Deferred Compensation Obligations") offered pursuant to the Air Products and Chemicals, Inc. Deferred Compensation Plan, as amended (the "Plan").

I am the Corporate Secretary and Chief Governance Officer of the Corporation. I am familiar with the Registration Statement on Form S-8 filed by the Company on 15 March 2012. In conjunction with the furnishing of this opinion, I have examined the Plan, the Registration Statement, and such other documents of the Company as I deemed necessary or appropriate for purposes of the opinion expressed herein.

Based upon the foregoing I advise you that, in my opinion, when issued in accordance with the provisions of the Plan, the Deferred Compensation Obligations will be valid and binding obligations of the Company, enforceable in accordance with their terms, except as enforcement thereof may be limited by bankruptcy, insolvency, or other laws of general applicability relating to or affecting enforcement of creditors' rights or by general equity principles.

This opinion speaks as of today's date and is limited to present statutes, regulations, and judicial interpretations. In rendering such opinion, I assume no obligation to revise or supplement this opinion should the present laws be changed by legislative or regulatory action, judicial decision, or otherwise or should the Plan be amended, modified, or terminated in accordance with its terms.

I consent to the filing of this opinion as an exhibit to the Registration Statement and to the use of my name wherever appearing in the Registration Statement and any amendment thereto.

Very truly yours,

/s/ Mary T. Afflerbach

Mary T. Afflerbach
Corporate Secretary and Chief Governance
Officer

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Air Products and Chemicals, Inc.:

We consent to the use of our report dated 22 November 2011, with respect to the consolidated balance sheets of Air Products and Chemicals, Inc. and Subsidiaries as of 30 September 2011 and 2010, the related consolidated income statements and consolidated statements of equity and cash flows for each of the years in the three-year period ended 30 September 2011, the related financial statement schedule, and the effectiveness of internal control over financial reporting as of 30 September 2011 which reports appear in the 30 September 2011 Annual Report on Form 10-K of Air Products and Chemicals, Inc. incorporated herein by reference.

/s/ KPMG LLP

Philadelphia, Pennsylvania
15 March 2012

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints JOHN E. McGLADE or MARY T. AFFLERBACH or PAUL E. HUCK or JOHN D. STANLEY, acting severally, his/her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him/her and in his/her name, place and stead, in any and all capacities, to sign one or more Registration Statements, and any amendments thereto, which may be required in connection with (i) the registration of Common Stock, Preferred Stock, Depositary Shares, Debt Securities, and Warrants, including the registration of Common Stock for issuance under any employee benefit or compensation plan, (ii) the registration of interests under any employee benefit or compensation plan maintained by the Company or (iii) any fundamental change in the information contained in such Registration Statements, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he/she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1933, this Power of Attorney has been signed below by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ John E. McGlade</u> John E. McGlade	Director and Chairman of the Board (Principal Executive Officer)	17 November 2011
<u>/s/ Mario L. Baeza</u> Mario L. Baeza	Director	17 November 2011
<u>/s/ Susan K. Carter</u> Susan K. Carter	Director	17 November 2011
<u>/s/ William L. Davis, III</u> William L. Davis, III	Director	17 November 2011
<u>/s/ Chadwick C. Deaton</u> Chadwick C. Deaton	Director	17 November 2011
<u>/s/ Michael J. Donahue</u> Michael J. Donahue	Director	17 November 2011

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<hr/> <i>/s/ Ursula O. Fairbairn</i> Ursula O. Fairbairn	Director	17 November 2011
<hr/> <i>/s/ W. Douglas Ford</i> W. Douglas Ford	Director	17 November 2011
<hr/> <i>/s/ Edward E. Hagenlocker</i> Edward E. Hagenlocker	Director	17 November 2011
<hr/> <i>/s/ Evert Henkes</i> Evert Henkes	Director	17 November 2011
<hr/> <i>/s/ Margaret G. McGlynn</i> Margaret G. McGlynn	Director	17 November 2011
<hr/> <i>/s/ Lawrence S. Smith</i> Lawrence S. Smith	Director	17 November 2011