

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

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

USEC INC.

(Exact name of registrant as specified in its charter)

**Delaware**  
(State of incorporation)

**52-2107911**  
(I.R.S. Employer Identification No.)

**2 Democracy Center  
6903 Rockledge Drive  
Bethesda, MD 20817**  
(Address of Principal Executive Offices)(Zip Code)

**USEC Savings Program**  
(Full title of the plan)

**John C. Barpoulis**  
**Senior Vice President and Chief Financial Officer**  
**USEC Inc.**

**2 Democracy Center  
6903 Rockledge Drive  
Bethesda, MD 20817**  
(Name and address of agent for service)

**(301) 564-3200**  
(Telephone number, including area code, of agent for service)

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer   
Non-accelerated filer   
(Do not check if a smaller reporting company)

Accelerated filer   
Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered(1)(2)(3)	Proposed maximum offering price per share(4)	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, par value \$ .10 per share	10,000,000 shares	\$0.71	\$7,100,000	\$813.66

(1) In addition, pursuant to Rule 416(c) under the Securities Act of 1933, this registration statement also covers an indeterminate amount of interests to be offered or sold pursuant to the employee benefit plan described herein.

(2) Includes preferred stock purchase rights (the "Rights") which, prior to the occurrence of certain events, will not be exercisable or evidenced separately from our common stock. Value attributable to such Rights, if any, is reflected in the market price of our common stock. The terms of the Rights are described in the Tax Benefit Preservation Agreement filed as Exhibit 4.1 to the current report on Form 8-K filed with the Securities and Exchange Commission on September 30, 2011.

(3) If, as a result of stock splits, stock dividends or similar transactions, the number of securities purported to be registered by this registration statement changes, the provisions of Rule 416 under the Securities Act of 1933 shall apply to this registration statement, and this registration statement shall be deemed to cover the additional securities resulting from the split of, or the dividend on, the securities covered by this registration statement.

(4) Pursuant to Rule 457(h) of the Securities Act of 1933, and solely for the purpose of calculating the registration fee, the proposed maximum offering price per share is based on the average of the high and low sales prices of our common stock on the New York Stock Exchange on June 4, 2012.

## EXPLANATORY NOTE

This registration statement on Form S-8 is filed by USEC Inc. to register an additional 10,000,000 shares of its common stock which may be offered and sold to participants under the USEC Savings Program.

### PART I

#### INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS

The documents containing the information specified in Item 1 and Item 2 of Part I of the registration statement on Form S-8 are omitted from this filing in accordance with the provisions of Rule 424 under the Securities Act of 1933, as amended (the "Securities Act"), and the introductory note to Part I of Form S-8. The documents containing the information specified in Part I will be sent or given to employees as specified by Rule 428(b)(1) of the Securities Act. These documents and the documents incorporated by reference in this registration statement pursuant to Item 3 of Part II of this registration statement, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act.

### PART II

#### INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

##### Item 3. Incorporation of Documents by Reference.

The following documents filed by us with the Securities and Exchange Commission pursuant to the Securities Exchange Act of 1934, as amended (the "Exchange Act") are incorporated by reference in this registration statement:

- (a) Our Annual Report on Form 10-K for the year ended December 31, 2011, filed with the Securities and Exchange Commission, or SEC, on March 14, 2012, and the portions of our Proxy Statement, filed with the SEC on March 26, 2012, for our 2012 Annual Meeting of Shareholders incorporated by reference into our Annual Report;
- (b) The Annual Report on Form 11-K of the USEC Savings Program for the year ended December 31, 2010, filed with the SEC on June 23, 2011;
- (c) Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2012, filed with the SEC on May 2, 2012;
- (d) Our Current Reports on Form 8-K filed with the SEC on January 13, 2012, February 16, 2012, March 13, 2012, April 19, 2012, April 26, 2012, May 14, 2012, May 15, 2012 and June 1, 2012; and
- (e) A description of our common stock included under "Item 1. Description of Registrant's Securities to be Registered" in the Amendment No. 1 to the Registration Statement on Form 8-A (File No. 001-14287), as filed with the Securities and Exchange Commission on April 30, 2008, including any amendment or report filed for the purpose of updating such description;
- (f) A description of our preferred stock purchase rights included under "Item 1. Description of Registrant's Securities to be Registered" in the Registration Statement on Form 8-A (File No. 001-14287), as filed with the Securities and Exchange Commission on September 30, 2011, including any amendment or report filed for the purposes of updating such description;

In addition to the foregoing, all documents subsequently filed by us with the Securities and Exchange Commission pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment which indicates that all securities offered under this registration statement have been sold or which deregisters all securities remaining unsold, shall be deemed to be incorporated by reference into this registration statement and to be a part of this registration statement from the date of filing of such documents, except for information that is deemed "furnished" and not "filed" for purposes of the Exchange Act. Any statement contained in a document incorporated by reference in this registration statement shall be deemed to be modified or superseded for purposes of this registration statement to the extent that a statement contained herein or in any subsequently filed document that is also incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this registration statement.

##### Item 4. Description of Securities.

Not applicable.

##### Item 5. Interest of Named Experts and Counsel.

Not applicable.

##### Item 6. Indemnification of Directors and Officers.

Section 145 of the General Corporation Law of the State of Delaware (the "DGCL") empowers a Delaware corporation to indemnify any person who was or is a party to or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise. The indemnity may include expenses (including attorney's fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided that such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe such person's conduct was unlawful.

A Delaware corporation may indemnify directors, officers, employees and other agents of such corporation in an action by or in the right of the corporation under the same conditions, except that no indemnification shall be made if such person is adjudged to be liable to the corporation unless, and

only to the extent that, a court determines that such person fairly and reasonably is entitled to indemnity for expenses the court deems proper in light of liability adjudication. Where a director, officer, employee or agent of the corporation is successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in this Item 6 or in defense of any claim, issue or matter herein, the corporation must indemnify such person against the expenses (including attorney's fees) which he or she actually and reasonably incurred in connection therewith.

Both our Bylaws and Certificate of Incorporation require us to indemnify each of our directors and officers to the fullest extent permitted by law, subject to certain exceptions, in connection with any actual or threatened action or proceeding arising out of his or her service to us or to other organizations at our request.

As permitted by Section 102(b)(7) of the DGCL, our Certificate of Incorporation also contains a provision eliminating the personal liability of a director to USEC Inc. or our shareholders for monetary damages for breach of fiduciary duty as a director, subject to certain exceptions.

In addition to indemnification provided for in our Certificate of Incorporation and Bylaws, we have entered into indemnification agreements with our directors and executive officers. We intend to enter into indemnification agreements with any new directors and executive officers in the future. In addition, we maintain directors' and officers' liability insurance.

#### **Item 7. Exemption from Registration Claimed.**

Not applicable.

#### **Item 8. Exhibits.**

The following is a list of exhibits filed as part of this registration statement.

<u>Exhibit No.</u>	<u>Description</u>
4.1	Certificate of Incorporation of USEC Inc., as amended, incorporated by reference to Exhibit 3.1 of the Quarterly Report on Form 10-Q for the quarter ended September 30, 2011 (Commission file number 1-14287).
4.2	Amended and Restated Bylaws of USEC Inc., dated March 9, 2012, incorporated by reference to Exhibit 3.1 of the Current Report on Form 8-K filed on March 13, 2012.
4.3	Tax Benefit Preservation Plan, dated as of September 29, 2011, between USEC Inc. and Mellon Investor Services LLC, which includes the Form of Certificate of Designations of Series A Junior Participating Preferred Stock as Exhibit A, the Form of Right Certificate as Exhibit B and the Summary of Rights to Purchase Preferred Shares as Exhibit C., incorporated by reference to Exhibit 4.1 of the Current Report on Form 8-K filed on September 30, 2011 (Commission file number 1-14287).
5.1	Internal Revenue Service Determination Letter as to the Plan dated May 4, 2012.
23.1	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.
23.2	Consent of Clark, Schaefer, Hackett & Co., independent registered public accounting firm.
24.1	Power of Attorney (included on the signature page of this registration statement).

#### **Item 9. Undertakings.**

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement;

*Provided, however,* that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Securities and Exchange Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the

securities:

That in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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## SIGNATURES

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 City of Bethesda, State of Maryland, on this 8th day of June, 2012.

USEC INC.

By: /s/ John K. Welch  
John K. Welch  
President and Chief Executive Officer

## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints John K. Welch, John C. Barpoulis and Peter B. Saba, and each of them, the undersigned's true and lawful attorneys-in-fact and agents, with full power of substitution and revocation, for and in the undersigned's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement on Form S-8 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully to all intents and purposes as the undersigned might or could do in person, hereby ratify and confirming all that said attorneys-in-fact and agents or any of them, or their or his substitutes, may lawfully do or cause to be done by virtue thereof.

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Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities indicated on this 8th day of June, 2012.

SIGNATURE

TITLE

/s/ John K. Welch  
John K. Welch

President, Chief Executive Officer and Director  
(Principal Executive Officer)

/s/ John C. Barpoulis  
John C. Barpoulis

Senior Vice President and Chief Financial Officer  
(Principal Financial Officer)

/s/ J. Tracy Mey  
J. Tracy Mey

Vice President and Chief Accounting Officer  
(Principal Accounting Officer)

/s/ James R. Mellor  
James R. Mellor

Chairman of the Board and Director

/s/ Joyce F. Brown  
Joyce F. Brown

Director

/s/ Sigmund L. Cornelius  
Sigmund L. Cornelius

Director

/s/ Joseph T. Doyle  
Joseph T. Doyle

Director

/s/ H. William Habermeyer  
H. William Habermeyer

Director

/s/ William J. Madia  
William J. Madia

Director

/s/ W. Henson Moore  
W. Henson Moore

Director

/s/ Hiroshi Sakamoto  
Hiroshi Sakamoto

Director

/s/ Mary Pat Salomone  
Mary Pat Salomone

Director

/s/ Walter E. Skowronski  
Walter E. Skowronski

Director

/s/ M. Richard Smith  
M. Richard Smith

Director

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Pursuant to the requirements of the Securities Act of 1933, the persons who administer the USEC Savings Program have duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Bethesda, State of Maryland, on this 8th day of June, 2012.

USEC SAVINGS PROGRAM

By: /s/ Richard V. Rowland  
Richard V. Rowland  
Vice President, Human Resources  
Chair, Benefits Administration Committee

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## **Exhibit Index**

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INTERNAL REVENUE SERVICE  
P. O. BOX 2508  
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: MAY 04 2012

Employer Identification Number:  
52-2107911

DLN:  
17007038124012

USEC INC  
C/O MORGAN LEWIS & BOCKIUS LLP  
ALTHEA R DAY  
1111 PENNSYLVANIA AVE NW  
WASHINGTON, DC 20004

Person to Contact:  
ROBIN M JOECKEN ID# 31328  
Contact Telephone Number:  
(513) 263-4159  
Plan Name:  
USEC SAVINGS PROGRAM  
Plan Number: 001

Dear Applicant:

We have made a favorable determination on the plan identified above based on the information you have supplied. Please keep this letter, the application forms submitted to request this letter and all correspondence with the Internal Revenue Service regarding your application for a determination letter in your permanent records. You must retain this information to preserve your reliance on this letter.

Continued qualification of the plan under its present form will depend on its effect in operation. See section 1.401-1(b) (3) of the Income Tax Regulations. We will review the status of the plan in operation periodically.

The enclosed Publication 794 explains the significance and the scope of this favorable determination letter based on the determination requests selected on your application forms. Publication 794 describes the information that must be retained to have reliance on this favorable determination letter. The publication also provides examples of the effect of a plan's operation on its qualified status and discusses the reporting requirements for qualified plans. Please read Publication 794.

This letter relates only to the status of your plan under the Internal Revenue Code. It is not a determination regarding the effect of other federal or local statutes.

This determination letter gives no reliance for any qualification change that becomes effective, any guidance published, or any statutes enacted, after the issuance of the Cumulative List (unless the item has been identified in the Cumulative List) for the cycle under which this application was submitted.

This determination letter is applicable for the amendment(s) executed on 12/1/11 & 4/13/11.

This determination is subject to your adoption of the proposed amendments submitted in your letter dated 4/26/12. The proposed amendments should be adopted on or before the date prescribed by the regulations under Code section 401(b).

This letter may not be relied on after the end of the plan's second five-year remedial amendment cycle that ends more than 12 months after the application was received. This letter expires on January 31, 2017. This letter considered the 2010 Cumulative List of Changes in Plan Qualification Requirements.

The information on the enclosed addendum is an integral part of this determination. Please be sure to read and keep it with this letter.

We have sent a copy of this letter to your representative as indicated in the Form 2848 Power of Attorney or appointee as indicated by the For 8821 Tax Information Authorization.

If you have questions concerning this matter, please contact the person whose name and telephone number are shown above.

Sincerely,

/s/ Andrew E. Zuckerman

Andrew E. Zuckerman  
Director, EP Rulings & Agreements

Enclosures:  
Publication 794  
Addendum

This determination letter is also applicable for the amendment(s) executed on 2/24/11, 10/22/10, 10/5/10, 4/6/10, 12/30/09, 12/23/09, 6/9/09, 9/24/08, 7/15/08, 5/22/08, & 4/15/08.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated March 14, 2012 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in USEC Inc.'s Annual Report on Form 10-K for the year ended December 31, 2011.

/s/ PricewaterhouseCoopers LLP

McLean, Virginia  
June 8, 2012

Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated June 23, 2011 relating to the financial statements which appear in the Annual Report of the USEC Savings Program on Form 11-K for the years ended December 31, 2010 and 2009.

/s/ Clark, Schaefer, Hackett & Co.

Cincinnati, Ohio  
June 8, 2012