

INTERNATIONAL ISOTOPES INC
Form S-3
June 16, 2010

As filed with the Securities and Exchange Commission on June 16, 2010.

Registration No. 333-

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

FORM S-3

REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933

INTERNATIONAL ISOTOPES INC.

(Exact name of registrant as specified in its charter)

Texas

(State or other jurisdiction of incorporation or organization)

74-2763837

(I.R.S. Employer Identification Number)

**4137 Commerce Circle
Idaho Falls, Idaho 83401
(208) 524-5300**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Steve T. Laflin
President and Chief Executive Officer
International Isotopes Inc.
4137 Commerce Circle
Idaho Falls, Idaho 83401
(208) 524-5300**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Sonny Allison
Perkins Coie LLP
1899 Wynkoop Street, Suite 700
Denver, CO 80202
(303) 291-2300**

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective as determined by market conditions and other factors.

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If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. []

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act of 1933, check the following box. []

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act of 1933, check the following box. []

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.

Large accelerated filer [] Accelerated filer [] Non-accelerated filer [] Smaller reporting company []
(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

| Title of Each Class of Securities to Be Registered (3) | Amount to Be Registered (2) | Proposed Maximum Offering Price Per Unit (2) | Proposed Maximum Aggregate Offering Price (2) | Amount of Registration Fee (1) |
|---|------------------------------------|---|--|---------------------------------------|
| Common stock, par value \$0.01 | | | | |
| Preferred stock, par value \$0.01 | | | | |
| Debt securities | | | | |
| Convertible debt securities | | | | |
| Warrants | | | | |
| Total | | | \$100,000,000 | \$7,130 |

- (1) Calculated pursuant to Rule 457(o) under the Securities Act.
- (2) There are being registered under this registration statement such indeterminate number of shares of common stock, preferred stock, debt securities, convertible debt securities and/or warrants of the Registrant as shall have an aggregate initial offering price not to exceed \$100,000,000. Any securities registered under this registration statement may be sold separately or as units with other securities registered under this registration statement. The proposed maximum initial offering prices per unit or security will be determined, from time to time, by the Registrant in connection with the issuance by the Registrant of the securities registered under this registration statement. The securities registered also include such indeterminate amounts and numbers of common stock as may be issued upon conversion of or exchange for preferred stock or debt securities that provide for such conversion or exchange. No separate consideration for the preferred share purchase rights will be received. The amount of each class of securities being registered under this registration statement is not specified pursuant to General Instruction II.D. of Form S-3 under the Securities Act of 1933.
- (3) Pursuant to Rule 416 under the Securities Act, an indeterminate number of additional securities are registered hereunder that may be issued to prevent dilution in connection with a stock split, stock dividend, recapitalization, or similar event or adjustment. In addition, an indeterminate number of shares of common stock are registered hereunder that may be issued upon conversion of or exchange for any convertible preferred stock or debt securities.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED JUNE 16, 2010

PROSPECTUS

\$100,000,000

**Common Stock
Preferred Stock
Debt Securities
Convertible Debt Securities
Warrants**

We may, from time to time in one or more offerings, offer and sell up to \$100,000,000 in the aggregate of common stock, preferred stock, debt securities, convertible debt security, warrants to purchase common stock, preferred stock, debt securities or convertible debt securities, or any combination of the foregoing, either individually or as units comprised of one or more of the other securities.

This prospectus provides a general description of the securities we may offer. We will provide the specific terms of the securities offered in one or more supplements to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. You should read carefully this prospectus, the applicable prospectus supplement and any related free writing prospectus, as well as any documents incorporated by reference before you invest in any of our securities. **This prospectus may not be used to offer or sell any securities unless accompanied by the applicable prospectus supplement.**

Our common stock is quoted on the OTC Bulletin Board® under the ticker symbol "INIS.OB." On June 14, 2010, the last sale price of the common stock, as reported on the OTC Bulletin Board®, was \$0.39 per share. The applicable prospectus supplement will contain information, where applicable, as to any other listing on any securities market or exchange of the securities, if any, covered by the prospectus supplement.

Investing in our securities involves risk. You should carefully review the risks and uncertainties described under the heading "Risk Factors" beginning on page 4 and in the documents which are incorporated by reference herein, and contained in the applicable prospectus supplement and any related free writing prospectus.

We will sell these securities directly to investors, through agents designated from time to time or to or through underwriters or dealers. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any underwriters are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such underwriters and any applicable commissions or discounts will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to

the contrary is a criminal offense.

The date of this prospectus is ____, 2010.

TABLE OF CONTENTS

| | <u>Page</u> |
|---|-------------|
| ABOUT THIS PROSPECTUS | 1 |
| SUMMARY | 1 |
| FINANCIAL RATIOS | 4 |
| RISK FACTORS | 4 |
| SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS | 5 |
| USE OF PROCEEDS | 5 |
| DILUTION | 6 |
| DESCRIPTION OF SECURITIES | 6 |
| PLAN OF DISTRIBUTION | 8 |
| LEGAL MATTERS | 10 |
| EXPERTS | 10 |
| WHERE YOU CAN FIND MORE INFORMATION | 10 |
| INCORPORATION OF CERTAIN INFORMATION BY REFERENCE | 10 |

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, using a "shelf" registration process. Under this shelf registration process, we may from time to time sell common stock, preferred stock, debt securities, convertible debt securities or warrants to purchase common stock, preferred stock, debt securities or convertible debt securities, or any combination of the foregoing, either individually or as units comprised of one or more of the other securities, in one or more offerings up to a total dollar amount of \$100,000,000. We have provided to you in this prospectus a general description of the securities we may offer. Each time we sell securities under this shelf registration, we will, to the extent required by law, provide a prospectus supplement that will contain specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in any documents that we have incorporated by reference into this prospectus. To the extent there is a conflict between the information contained in this prospectus and the prospectus supplement or any related free writing prospectus, you should rely on the information in the prospectus supplement or the related free writing prospectus; provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus or any prospectus supplement or any related free writing prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

We have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or an accompanying prospectus supplement. This prospectus and the accompanying prospectus supplement, if any, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying prospectus supplement constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference (as our business, financial condition, results of operations and prospects may have changed since that date), even though this prospectus, any applicable prospectus supplement or any related free writing prospectus is delivered or securities are sold on a later date.

As permitted by the rules and regulations of the SEC, the registration statement, of which this prospectus forms a part, includes additional information not contained in this prospectus. You may read the registration statement and the other reports we file with the SEC at the SEC's web site or at the SEC's offices described below under the heading "Where You Can Find Additional Information."

SUMMARY

This summary highlights selected information from this prospectus and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, including the risks of investing discussed under "Risk Factors" and in the documents which are incorporated by reference herein, and contained in the applicable prospectus supplement and any related free writing prospectus, the information incorporated by reference, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part. When used in this prospectus, the terms "International Isotopes," "INIS," "we," "our," "us" or the "Company" refer to International Isotopes Inc. and its consolidated subsidiaries, unless

otherwise indicated or as the context otherwise requires.

1

About International Isotopes Inc.

We manufacture a full range of nuclear medicine calibration and reference standards, a wide range of products including cobalt teletherapy sources, and a varied selection of radioisotopes and radiochemicals for medical research, and clinical devices. We also provide a host of transportation, recycling, and processing services on a contract basis for clients. Additionally, we hold several patents for a fluorine extraction process that we are planning to use in conjunction with a new commercial depleted uranium de-conversion facility. Our core business consists of six reportable segments which include: Nuclear Medicine Standards, Cobalt Products, Radiochemical Products, Fluorine Products, Radiological Services, and Transportation.

International Isotopes Inc. was formed as a Texas corporation in 1995. Our principal executive offices are located at 4137 Commerce Circle, Idaho Falls, Idaho 83401, and our phone number is (208) 524-5300. Our wholly owned subsidiaries are International Isotopes Idaho Inc.; International Isotopes Fluorine Products, Inc.; and International Isotopes Transportation Services, Inc., all of which are Idaho corporations. Our headquarters and all current operations are located within two facilities in Idaho Falls, Idaho.

We maintain a website at www.internationalisotopes.com where our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and all amendments to those reports are available without charge, as soon as reasonably practicable following the time they are filed with or furnished to the SEC. Information contained on our website does not constitute, and shall not be deemed to constitute, part of this prospectus and shall not be deemed to be incorporated by reference into the registration statement as a result of this prospectus. You may read and copy any materials we file with the SEC at the SEC's public reference room at 100 F Street, NE, Washington, DC 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0300. The SEC also maintains an electronic Internet site that contains our reports, proxy and information statements, and other information at <http://www.sec.gov>.

The Securities We May Offer

We may offer shares of our common stock and preferred stock, various series of debt securities and warrants to purchase any of such securities, either individually or in units, with a total value of up to \$100,000,000 from time to time under this prospectus, together with any applicable prospectus supplement and related free writing prospectus, at prices and on terms to be determined by market conditions at the time of offering. If we issue any debt securities at a discount from their original stated principal amount, then, for purposes of calculating the total dollar amount of all securities issued under this prospectus, we will treat the initial offering price of the debt securities as the total original principal amount of the debt securities. Each time we offer securities under this prospectus, we will provide offerees with a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities being offered, including, to the extent applicable:

- designation or classification;
- aggregate principal amount or aggregate offering price;
- maturity, if applicable;
- original issue discount, if any;
- rates and times of payment of interest or dividends, if any;
- redemption, conversion, exchange or sinking fund terms, if any;
- conversion or exchange prices or rates, if any, and, if applicable, any provisions for changes to or adjustments in the conversion or exchange prices or rates and in the securities or other property receivable upon conversion or exchange;
- ranking;

- restrictive covenants, if any;
- voting or other rights, if any; and
- important United States federal income tax considerations.

A prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in documents we have incorporated by reference. However, no prospectus supplement or free writing prospectus will offer a security that is not registered and described in this prospectus at the time of the effectiveness of the registration statement of which this prospectus is a part.

We may sell the securities to or through underwriters, dealers or agents or directly to purchasers. We, as well as any agents acting on our behalf, reserve the sole right to accept and to reject in whole or in part any proposed purchase of securities. Each prospectus supplement will set forth the names of any underwriters, dealers or agents involved in the sale of securities described in that prospectus supplement and any applicable fee, commission or discount arrangements with them, details regarding any over-allotment option granted to them, and net proceeds to us. The following is a summary of the securities we may offer with this prospectus.

Common Stock

We currently have authorized 500,000,000 shares of common stock, par value \$0.01 per share, and we have asked our shareholders to approve an amendment to our Restated Certificate of Formation that would increase our authorized shares of common stock to 750,000,000. Our shareholders will vote on such proposal at our annual meeting of shareholders to be held on July 20, 2010. We may offer shares of our common stock either alone or underlying other registered securities convertible into or exercisable for our common stock. Holders of our common stock are entitled to such dividends as our board of directors may declare from time to time out of legally available funds, subject to the preferential rights of the holders of any shares of our preferred stock that are outstanding or that we may issue in the future. Currently, we do not pay any dividends. Each holder of our common stock is entitled to one vote per share. In this prospectus, we provide a general description of, among other things, the rights and restrictions that apply to holders of our common stock.

Preferred Stock

We currently have authorized 5,000,000 shares of preferred stock, par value \$0.01 per share. Under our Restated Certificate of Formation, our board of directors has the authority to issue shares of our preferred stock in one or more series and to fix or alter the rights, preferences, privileges and restrictions granted to or imposed upon any series of preferred stock. The particular terms of each class or series of preferred stock, including redemption privileges, liquidation preferences, voting rights, dividend rights and/or conversion rights, will be more fully described in the applicable prospectus supplement relating to the preferred stock offered thereby.

The rights, preferences, privileges and restrictions granted to or imposed upon any series of preferred stock that we offer and sell under this prospectus and applicable prospectus supplements will be set forth in a certificate of designation relating to the series. We will incorporate by reference into the registration statement of which this prospectus is a part the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of shares of that series of preferred stock. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of preferred stock being offered, as well as the complete certificate of designation that contains the terms of the applicable series of preferred stock.

Debt Securities

We may offer general debt obligations, which may be secured or unsecured, senior or subordinated and convertible into shares of our common stock. In this prospectus, we refer to the senior debt securities and the subordinated debt securities together as the "debt securities." We may issue debt securities under a note purchase agreement or under an indenture to be entered into between us and a trustee; a form of the indenture is included

3

as an exhibit to the registration statement of which this prospectus is a part. The indenture does not limit the amount of securities that may be issued under it and provides that debt securities may be issued in one or more series. The senior debt securities will have the same rank as all of our other indebtedness that is not subordinated. The subordinated debt securities will be subordinated to our senior debt on terms set forth in the applicable prospectus supplement. In addition, the subordinated debt securities will be effectively subordinated to creditors and preferred shareholders of our subsidiaries. Our board of directors will determine the terms of each series of debt securities being offered. This prospectus contains only general terms and provisions of the debt securities. The applicable prospectus supplement will describe the particular terms of the debt securities offered thereby. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of debt securities being offered, as well as the complete note agreements and/or indentures that contain the terms of the debt securities. Forms of indentures have been filed as exhibits to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of debt securities being offered will be incorporated by reference into the registration statement of which this prospectus is a part from reports we file with the SEC.

Warrants

We may offer warrants for the purchase of shares of our common stock or preferred stock or of debt securities. We may issue the warrants by themselves or together with preferred stock, common stock or debt securities, and the warrants may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and the investors or a warrant agent. Our board of directors will determine the terms of the warrants. This prospectus contains only general terms and provisions of the warrants. The applicable prospectus supplement will describe the particular terms of the warrants being offered thereby. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of warrants being offered, as well as the complete warrant agreements that contain the terms of the warrants. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference into the registration statement of which this prospectus is a part from reports we file with the SEC.

THIS PROSPECTUS MAY NOT BE USED BY US TO OFFER OR SELL ANY SECURITIES UNLESS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

FINANCIAL RATIOS

If required, if we offer (i) debt securities, we will set forth in the applicable prospectus supplement our historical consolidated ratio of our earnings to fixed charges, or (ii) preferred stock, we will set forth in the applicable prospectus supplement our historical consolidated ratio of our earnings to combined fixed charges and preferred stock dividends.

RISK FACTORS

Except for the historical information contained in this prospectus or incorporated by reference, this prospectus (and the information incorporated by reference in this prospectus) contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed here or incorporated by reference. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section entitled "Risk Factors" contained in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the SEC, as well as any amendments thereto reflected in subsequent filings with the SEC, which are incorporated herein by reference in their entirety (the "INIS Risk Factors").

Investment in our securities involves risks. Prior to making a decision about investing in our securities, you should consider carefully the INIS Risk Factors, together with all of the other information contained or incorporated by reference in this prospectus and any prospectus supplement, including any additional specific risks described in any prospectus supplement. Each of these risk factors could adversely affect our business, operating results and financial condition, which may result in the loss of all or part of your investment.

Keep these risk factors in mind when you read forward-looking statements contained elsewhere or incorporated by reference in this prospectus and any accompanying prospectus supplement. These statements relate to our expectations about future events. Discussions containing forward-looking statements may be found, among other places, in "Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" incorporated by reference from our most recent Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC. These forward-looking statements are based largely on our expectations and projections about future events and future trends affecting our business, and so are subject to risks and uncertainties, including the risks and uncertainties described below under "Forward-Looking Information," that could cause actual results to differ materially from those anticipated in the forward-looking statements.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Our disclosure and analysis in this prospectus, in any prospectus supplement, in the documents incorporated by reference and in some of our other public statements contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. This Act provides a "safe harbor" for forward-looking statements to encourage companies to provide prospective information about themselves so long as they identify these statements as forward-looking and provide meaningful cautionary statements identifying important factors that could cause actual results to differ from the projected results. In some cases, you can identify forward-looking statements by terminology such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "plan," "potential," "predict," "should," or "will," or the negative of those terms, or comparable terminology.

Any or all of our forward-looking statements in this prospectus, in any prospectus supplement, in the documents incorporated by reference and in any other public statements we make may turn out to be inaccurate. Forward-looking statements reflect our current expectations or forecasts of future events or results and are inherently uncertain. Inaccurate assumptions we might make and known or unknown risks and uncertainties can affect the accuracy of our forward-looking statements. Accordingly, no forward-looking statement can be guaranteed and future events and actual or suggested results may differ materially.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. You are advised, however, to consult any further disclosures we make in our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, as well as in any prospectus supplement relating to this prospectus and other public filings with the SEC.

USE OF PROCEEDS

Except as described in any prospectus supplement and any free writing prospectus in connection with a specific offering, we currently intend to use the net proceeds from the sale of the securities offered under this prospectus for general corporate purposes, including working capital. We may also use the net proceeds to repay any debts and/or invest in or acquire complementary businesses, products or technologies, although we have no current commitments or agreements with respect to any such investments or acquisitions as of the date of this prospectus. We have not determined the amount of net proceeds to be used specifically for the foregoing purposes. As a result, our management will have broad discretion in the allocation of the net proceeds and investors will be relying on the judgment of our management regarding the application of the proceeds of any sale of the securities. Pending use of the net proceeds, we intend to invest the proceeds in short-term, investment-grade, interest-bearing instruments.

When we offer a particular series of securities, we will describe the intended use of the net proceeds from that offering in a prospectus supplement. The actual amount of net proceeds we spend on a particular use will depend on many factors, including, our future capital expenditures, the amount of cash required by our operations, and our future

revenue growth, if any. Therefore, we will retain broad discretion in the use of the net proceeds.

5

DILUTION

If you invest in an offering of common stock by us, your interest will be diluted to the extent of the difference between the public offering price per share in an offering under this prospectus and the net tangible book value per share after the offering, except to the extent proceeds are applied to the repayment of debt. We will set forth in the applicable prospectus supplement or free writing prospectus the following information regarding any material dilution of the equity interests of investors purchasing shares in an offering by us under this prospectus:

- the net tangible book value per share of our equity securities before and after the offering;
- the amount of the increase in such net tangible book value per share attributable to the cash payments made by investors purchasing shares in the offering; and
- the amount of the immediate dilution from the public offering price to such investors.

DESCRIPTION OF SECURITIES

We may offer shares of common stock, preferred stock, debt securities, convertible debt securities and warrants. We will set forth in the applicable prospectus supplement a description of the preferred stock, debt securities, convertible debt securities or warrants that may be offered under this prospectus. The terms of the offering of securities, the initial offering price, and the net proceeds to us will be contained in the prospectus supplement and other offering material, relating to such offering. A general description of our currently authorized securities is set forth below.

General

Our authorized capital stock consists of 500,000,000 shares of common stock, \$0.01 par value per share, and 5,000,000 shares of preferred stock, \$0.01 par value per share. We have asked our shareholders to approve an amendment to our Restated Certificate of Formation that would increase our authorized shares of common stock to 750,000,000. Our shareholders will vote on such proposal at our annual meeting of shareholders to be held on July 20, 2010. The following summary of some of the terms relating to our common stock, preferred stock, Restated Certificate of Formation and bylaws is not complete and may not contain all the information you should consider before investing in our common stock. You should read carefully our Certificate of Formation and bylaws.

Common Stock

The holders of common stock are entitled to one vote per share on all matters to be voted on by the common shareholders. The holders of our common stock are not entitled to cumulative voting in the election of our directors, which means that the holders of a majority of the outstanding shares of our common stock will be entitled to elect all of the directors standing for election. Subject to preferences of any outstanding shares of preferred stock, the holders of common stock are entitled to receive ratably any dividends our board of directors may declare out of funds legally available for the payment of dividends. If we are liquidated, dissolved or wound up, the holders of common stock are entitled to share pro rata all assets remaining after payment of or provision for our liabilities and liquidation preferences of any outstanding shares of preferred stock. Holders of common stock have no preemptive rights or rights to convert their common stock into any other securities. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and nonassessable, and the shares of common stock to be issued in this offering will be fully paid and nonassessable.

Preferred Stock

Our board of directors has the authority, without further action by the shareholders, to issue up to 5,000,000 shares of preferred stock from time to time in one or more series. The board of directors also has the authority to fix the

designations, voting powers, preferences, privileges and relative rights and the limitations of any series of preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. The board of directors, without shareholder approval, can issue preferred stock with voting, conversion or other rights that could adversely affect the

voting power and other rights of the holders of common stock. Preferred stock could thus be issued quickly with terms that could delay or prevent a change of control of us or make removal of management more difficult. Additionally, the issuance of preferred stock may decrease the market price of the common stock and may adversely affect the voting, economic and other rights of the holders of common stock.

Anti-Takeover Effects of Certain Provisions of our Restated Certificate of Formation, Bylaws and Texas Law

Provisions of our Restated Certificate of Formation, our bylaws and Texas law could have the effect of delaying or preventing a third party from acquiring us, even if the acquisition would benefit our shareholders. These provisions may delay, defer or prevent a tender offer or takeover attempt of our company that a shareholder might consider in his or her best interest, including those attempts that might result in a premium over the market price for the shares held by our shareholders. These provisions are intended to enhance the likelihood of continuity and stability in the composition of our board of directors and in the policies formulated by the board of directors and to discourage types of transactions that may involve our actual or threatened change of control. These provisions are designed to reduce our vulnerability to an unsolicited proposal for a takeover that does not contemplate the acquisition of all of our outstanding shares, or an unsolicited proposal for the restructuring or sale of all or part of us.

Authorized but Unissued Shares of Common Stock and Preferred Stock. Our authorized but unissued shares of common stock and preferred stock are available for our board of directors to issue without shareholder approval. As noted above, our board of directors, without shareholder approval, has the authority under our Restated Certificate of Formation to issue preferred stock with rights superior to the rights of the holders of common stock. As a result, preferred stock could be issued quickly and easily, could adversely affect the rights of holders of common stock and could be issued with terms calculated to delay or prevent a change of control or make removal of management more difficult. We may use the additional authorized shares of common or preferred stock for a variety of corporate purposes, including future public offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of our authorized but unissued shares of common stock and preferred stock could render more difficult or discourage an attempt to obtain control of our company by means of a proxy contest, tender offer, merger or other transaction.

Special Meetings of Shareholders. Our bylaws provide that special meetings of our shareholders may be called only by the Chairman of the board of directors, by a majority of our board of directors or by the holders of not less than 10% of the shares entitled to vote at such meeting.

Amendment of Bylaws. Our directors are expressly authorized to amend our bylaws.

Business Combinations Under Texas Law. Section 21.606 of the Texas Business Organizations Code (the "TBOC") imposes a special voting requirement for the approval of certain business combinations and related party transactions between public corporations and affiliated shareholders unless the transaction or the acquisition of shares by the affiliated shareholder is approved by the board of directors of the corporation prior to the affiliated shareholder becoming an affiliated shareholder. Section 21.606 prohibits certain mergers, sales of assets, reclassifications and other transactions (defined as business combinations) between a shareholder beneficially owning 20% or more of the outstanding stock of a Texas public corporation (such shareholder being defined as an affiliated shareholder) for a period of three years following the date the shareholder acquired the shares representing 20% or more of the corporation's voting power unless two-thirds of the unaffiliated shareholders approve the transaction at a meeting held no earlier than six months after the shareholder acquires that ownership. The provisions requiring such a vote of shareholders do not apply to a transaction with an affiliated shareholder if such transaction or the purchase of shares by the affiliated shareholder is approved by the board of directors before the affiliated shareholder acquires beneficial ownership of 20% of the shares or if the affiliated shareholder was an affiliated shareholder prior to December 31, 1996 and continued as such through the date of the transaction. Section 21.607 contains a provision that allows a

corporation to elect out of the statute by an amendment to its articles of incorporation or bylaws prior to December 31, 1997. Section 21.606 could have the effect of delaying, deferring or preventing a change in control of the Company.

The above discussion of the Texas Business Organizations Code, our Restated Certificate of Formation, and bylaws is not intended to be exhaustive and is qualified in its entirety by such statute, the Restated Certificate of Formation and bylaws, respectively.

7

Registration Rights

Pursuant to certain securities purchase agreements between us and purchasers of our securities, certain shareholders are entitled to registration rights if they are unable, at any time following the six-month holding period provided in Rule 144, to sell their common stock pursuant to Rule 144. Upon the demand by such shareholders, we are required to register all of the common stock held by such shareholders within 45 days from such demand. The registration must be effective 120 days after the date of such demand. Such shareholders are also entitled to "piggyback" registration rights, which are subject to conditions and limitations, including the right of the underwriters of a public offering to limit the number of shares included in the registration statement and the ineligibility of such shareholders to "piggyback" if the shares are eligible for sale pursuant to Rule 144. The registration rights provisions contain customary indemnification and contribution provisions.

A majority of the holders of such securities that are entitled to "piggyback" registration rights have waived their rights to participate in this offering or have their shares included in the registration statement of which this prospectus forms a part.

Pre-emptive Rights

Our shareholders are not entitled to pre-emptive rights.

Transfer Agent and Registrar

The transfer agent and registrar for the common stock is Computershare Shareholder Services, Inc. Its address is 250 Royall Street, Canton, Massachusetts 02021.

OTC Bulletin Board® Quotation

Our common stock is quoted on the OTC Bulletin Board® under the ticker symbol "INIS.OB."

PLAN OF DISTRIBUTION

We may sell the securities to or through underwriters or dealers, through agents, or directly to one or more purchasers. A prospectus supplement or supplements (and any related free writing prospectus that we may authorize to be provided to you) will describe the terms of the offering of the securities, including, to the extent applicable

- the name or names of any agents or underwriters;
- the purchase price of the securities being offered and the proceeds we will receive from the sale;
- any over-allotment options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;
- any public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchanges or markets on which such securities may be listed.

We may distribute the securities from time to time in one or more transactions at:

- fixed price or prices, which may be changed from time to time;

- market prices prevailing at the time of sale;
- prices related to such prevailing market prices; or
- negotiated prices.

Agents

We may designate agents who agree to use their reasonable efforts to solicit purchases of our securities for the period of their appointment or to sell our securities on a continuing basis. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the applicable prospectus supplement.

Underwriters

If we use underwriters for a sale of securities, the underwriters will acquire the securities for their own account. The underwriters may resell the securities in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. Subject to certain conditions, the underwriters will be obligated to purchase all the securities of the series offered if they purchase any of the securities of that series. We may change from time to time any public offering price and any discounts or concessions the underwriters allow or reallow or pay to dealers. We may use underwriters with whom we have a material relationship. We will describe the nature of any such relationship in any applicable prospectus supplement naming any such underwriter. Only underwriters we name in the prospectus supplement are underwriters of the securities offered by the prospectus supplement.

We may provide agents and underwriters with indemnification against civil liabilities related to offerings under this prospectus, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities.

Direct Sales

We may also sell securities directly to one or more purchasers without using underwriters or agents. Underwriters, dealers and agents that participate in the distribution of the securities may be underwriters as defined in the Securities Act, and any discounts or commissions they receive from us and any profit on their resale of the securities may be treated as underwriting discounts and commissions under the Securities Act. We will identify in the applicable prospectus supplement any underwriters, dealers or agents and will describe their compensation. We may have agreements with the underwriters, dealers and agents to indemnify them against specified civil liabilities, including liabilities under the Securities Act. Underwriters, dealers and agents may engage in transactions with or perform services for us in the ordinary course of their businesses.

Trading Markets and Listing of Securities

Unless otherwise specified in the applicable prospectus supplement, each class or series of securities will be a new issue with no established trading market, including our common stock, which is quoted on the OTC Bulletin Board® but for which there is currently no established trading market. We may elect to list any other class or series of securities on any exchange or market, but we are not obligated to do so. It is possible that one or more underwriters may make a market in a class or series of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the securities.

Stabilization Activities

Any underwriter may engage in overallotment, stabilizing transactions, short covering transactions and

9

penalty bids in accordance with Regulation M under the Exchange Act. Overallotment involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of these activities at any time.

LEGAL MATTERS

The validity of the securities being offered by this prospectus will be passed upon for us by Perkins Coie LLP, Denver, Colorado. If the validity of any securities is also passed upon by counsel any underwriters, dealers or agents, that counsel will be named in the prospectus supplement relating to that specific offering.

EXPERTS

The financial statements incorporated in this prospectus by reference to our Annual Report on Form 10-K for the year ended December 31, 2009 have been so incorporated in reliance on the report of Hansen, Barnett & Maxwell, P.C., independent accountants, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information electronically with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference room. You can request copies of these documents by writing to the SEC and paying a fee for the copying costs. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us. The SEC's Internet site can be found at <http://www.sec.gov>. In addition, we make available on or through our Internet site copies of these reports as soon as reasonably practicable after we electronically file or furnish them to the SEC. Our Internet site can be found at <http://www.internationalisotopes.com>. Information contained on our website does not constitute, and shall not be deemed to constitute, part of this prospectus and shall not be deemed to be incorporated by reference into the registration statement of which this prospectus is part.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are allowed to incorporate by reference information contained in documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents and that the information in this prospectus is not complete. You should read the information incorporated by reference for more detail. We incorporate by reference in two ways. First, we list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus. Second, the information in documents that we file in the future will update and supersede the current information in, and be incorporated by reference in, this prospectus.

We incorporate by reference into this prospectus the documents listed below, any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, and any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act from the date of this prospectus until

the termination of this offering (in each case, except for the information furnished under Item 2.02 or Item 7.01 in any current report on Form 8-K and Form 8-K/A):

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2009, filed on March 31, 2010;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed on May 17, 2010;

- the description of the Common Stock that is contained in the Company's Registration Statement on Form 8-A dated August 1, 1997, filed pursuant to Section 12 of the Exchange Act, and all amendments thereto and reports which have been filed for the purpose of updating such description;
- our Current Reports on Form 8-K, filed with the Commission on April 20, 2010 and May 27, 2010; and
- the portions of our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2010 and subsequently amended on June 7, 2010 in connection with the 2009 annual meeting of shareholders that are incorporated by reference in the Annual Report on Form 10-K for the year ended December 31, 2009.

We will provide each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with this prospectus upon written or oral request at no cost to the requester. Requests should be directed to Steve Laffin, President and Chief Executive Officer, at our principal offices, which are located at 4137 Commerce Circle, Idaho Falls, Idaho 83401; telephone number (208) 524-5300.

This prospectus is part of a registration statement on Form S-3 that we filed with the SEC. That registration statement contains more information than this prospectus regarding us and our common stock, including certain exhibits and schedules. You can obtain a copy of the registration statement from the SEC at the address listed above or from the SEC's Internet website.

You should rely only on the information provided in and incorporated by reference into this prospectus or any prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus or any prospectus supplement is accurate as of any date other than the date on the front cover of these documents.

INTERNATIONAL ISOTOPES INC.

\$100,000,000

Common Stock

Preferred Stock

Debt Securities

Convertible Debt Securities

Warrants

PROSPECTUS

____, 2010

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Item 14. Other Expenses of Issuance and Distribution**

The following table sets forth the fees and expenses incurred or expected to be incurred by International Isotopes Inc. in connection with the issuance and distribution of the securities being registered hereby, other than underwriting discounts and commissions. All of the amounts shown are estimated except the SEC registration fee. Estimated fees and expenses can only reflect information that is known at the time of filing this registration statement and are subject to future contingencies, including additional expenses in connection with any subsequent underwritten offering and any prospectus supplements.

| | |
|---|---------------|
| Securities and Exchange Commission registration fee | \$ 7,130 |
| Printing and engraving expenses | \$ 700 |
| Legal fees and expenses | \$ 20,000 |
| Accounting fees and expenses | \$ 7,500 |
| Miscellaneous expenses | \$ 2,000 |
| Total | \$ 37,330 |

Item 15. Indemnification of Officers and Directors

We are organized under the laws of the State of Texas. Section 8.101 of the TBOC provides that a corporation may indemnify any director or officer who was, is or is threatened to be named as a defendant or respondent in a proceeding because he is or was a director or officer, provided that the director or officer (i) conducted himself in good faith, (ii) reasonably believed (a) in the case of conduct in his official capacity, that his conduct was in the corporation's best interests or (b) in all other cases, that his conduct was at least not opposed to the corporation's best interests and (iii) in the case of any criminal proceeding, had no reasonable cause to believe his conduct was unlawful. Subject to certain exceptions, a director or officer may not be indemnified if such person is found liable to the corporation or if such person is found liable on the basis that he improperly received a personal benefit. Under Texas law, reasonable expenses incurred by a director or officer may be paid or reimbursed by the corporation in advance of a final disposition of the proceeding after the corporation receives a written affirmation by the director or officer of his good faith belief that he has met the standard of conduct necessary for indemnification and a written undertaking by or on behalf of the director or officer to repay the amount if it is ultimately determined that the director or officer is not entitled to indemnification by the corporation. Texas law requires a corporation to indemnify an officer or director against reasonable expenses incurred in connection with a proceeding in which he is named a defendant or respondent because he is or was a director or officer if he is wholly successful in the defense of the proceeding.

Texas law also permits a corporation to purchase and maintain insurance or another arrangement on behalf of any person who is or was a director or officer against any liability asserted against him and incurred by him in such a capacity or arising out of his status as such a person, whether or not the corporation would have the power to indemnify him against that liability under Section 8.101 of the TBOC.

Our Restated Certificate of Formation and our Bylaws require the company to indemnify each of our directors and officers against liabilities imposed upon them (including reasonable amounts paid in settlement) and expenses

incurred by them in connection with any claim made against them or any action, suit or proceeding to which they may be a party by reason of their being or having been a director or officer of the company. To the extent permissible by applicable law, the grant of mandatory indemnification to our officers and directors shall extend to proceedings involving the negligence of such persons. Management believes that such indemnification provisions are necessary to attract and retain qualified persons as directors and executive officers. We have purchased insurance against certain costs of indemnification that may be incurred by us and by our officers and

directors. Any repeal or modification of Article X of our Restated Certificate of Formation shall not adversely affect any right of protection of an officer or director existing at the time of the repeal or modification.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable.

Item 16. Exhibits

| Exhibit Number | Description |
|----------------|---|
| 1.1 | Form of Underwriting Agreement (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| 3.1 | Restated Certificate of Formation of International Isotopes Inc. (incorporated by reference to Exhibit 3.1 of our Annual Report on Form 10-K for the fiscal year ended December 31, 2009, filed on March 31, 2010). |
| 3.2 | Bylaws of International Isotopes Inc. (incorporated by reference to Exhibit 3.2 to our Registration Statement on Form SB-2 filed on May 1, 1997 (Registration No. 333-26269)). |
| 4.1 | Form of Common Stock Certificate (incorporated by reference to (incorporated by reference to Exhibit 4.1 to our Registration Statement on Form SB-2 filed on May 1, 1997 (Registration No. 33-26269)). |
| <u>4.2*</u> | <u>Form of Senior Debt Indenture</u> |
| <u>4.3*</u> | <u>Form of Subordinated Debt Indenture</u> |
| 4.4 | Form of Warrant (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| 4.5 | Form of Preferred Stock Certificate (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| 4.6 | Form of Certificate of Designation with respect to Preferred Stock (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| <u>5.1*</u> | <u>Opinion of Perkins Coie LLP</u> |
| 12.1 | Statement regarding computation of ratios (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| <u>23.1*</u> | <u>Consent of Hansen, Barnett & Maxwell, P.C., independent auditors</u> |
| <u>23.2*</u> | <u>Consent of Perkins Coie LLP (included in Exhibit 5.1).</u> |
| 24.1* | Power of attorney (included on the signature page to the registration statement). |
| 25.1 | Statement of Eligibility on Form T-1 under the Trust Indenture Act of 1939, as amended, under the Senior Debt Indenture (to be filed by amendment or as an exhibit to a report pursuant to Section 13(a), 13(c) or 15(d) of the Exchange Act) |
| 25.2 | Statement of Eligibility on Form T-1 under the Trust Indenture Act of 1939, as amended, under the Subordinated Debt Indenture (to be filed by amendment or as an exhibit to a report pursuant to Section |

13(a), 13(c) or 15(d) of the Exchange Act)

* Filed herewith

Item 17. 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 the 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 the 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 the aggregate, the changes in volume and price represent no more than 20% 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 the registration statement or any material change to such information in the registration statement;

Provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) 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 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 the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the 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 under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5) or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii) or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in prospectus. As provided

in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which the prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date; and

(5) 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, the undersigned registrant undertakes 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 an 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.

(d) The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus 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.

(f) The undersigned registrant hereby undertakes to file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act in accordance with the rules and regulations prescribed by the Commission under Section 305(b)(2) of the Act.

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-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, there under duly authorized, in the City of Idaho Falls, State of Idaho, on the 16th day of June, 2010.

International Isotopes Inc.

/s/ Steve T. Laflin

By: Steve T. Laflin

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Steve T. Laflin and Laurie A. McKenzie-Carter, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agent, with full power of each to act alone, with full powers of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this registration statement (including post-effective amendments and any related registration statements filed pursuant to Rule 462 and otherwise), and to file the same with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their substitute or resubstitute, may lawfully do or cause to be done by virtue hereof.

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

| Signature | Title | Date |
|---|--|---------------|
| <u>/s/ Ralph M. Richart</u> Ralph M. Richart | Chairman of the Board | June 16, 2010 |
| <u>/s/ Steve T. Laflin</u> Steve T. Laflin | Director, President, and Chief Executive Officer (Principal Executive Officer) | June 16, 2010 |
| <u>/s/ Laurie A. McKenzie-Carter</u> Laurie A. McKenzie-Carter | Chief Financial Officer (Principal Finance and Accounting Officer) | June 16, 2010 |
| <u>/s/ Christopher Grosso</u> Christopher Grosso | Director | June 16, 2010 |

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* Filed herewith