

INTERNATIONAL ISOTOPES INC
Form POS AM
July 15, 2011

As filed with the Securities and Exchange Commission on July 15, 2011

Registration No. 333-171140

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

Post-Effective Amendment No. 5

to

FORM S-1

**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)

3823

(Primary Standard Industrial
Classification Code Number)

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

1900 Sixteenth Street, Suite 1400

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.

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.

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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 (1)	Proposed Maximum Offering Price Per Unit	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common stock, par value \$0.01				
Common stock, par value \$0.01 Shares				
Underlying Warrants				
Total			\$12,548,933.20	\$1,536.44

(1)

No additional securities are being registered and registration fees were paid upon filing of the original Form S-1 Registration Statement with the Securities and Exchange Commission on December 13, 2010 (Registration No. 333-171140). Therefore, no further registration fee is required.

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. The selling shareholders 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 July 15, 2011

PROSPECTUS

59,687,333 Shares

Common Stock, par value \$0.01

This prospectus relates to the offer and sale from time to time of up to 29,075,000 shares of our outstanding common stock and 30,612,333 shares of our common stock issuable upon the exercise of warrants previously issued to certain shareholders named in this prospectus pursuant to a private placement completed on October 29, 2010.

The selling shareholders may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices. We will not receive any of the proceeds from the sale of the shares. We will, however, receive the proceeds of any cash exercise of the warrants.

Our common stock is quoted on the OTC Bulletin Board® under the ticker symbol INIS.OB. On June 29, 2011, the last sale price of the common stock, as reported on the OTC Bulletin Board®, was \$0.15 per share.

Investing in our securities involves risk. You should carefully review the risks and uncertainties described under the heading Risk Factors beginning on page 1 and in the documents which are incorporated by reference herein.

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 _____, 2011.

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You should rely on the information that is contained in or incorporated by reference into this prospectus or that is contained in any free writing prospectus we may authorize to be delivered to you. We have not authorized anyone to provide you with information different from that contained in this prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that information contained in or incorporated by reference into this prospectus is accurate only as of the date on the front cover of this prospectus or the date of the document incorporated by reference, as applicable. Our business, financial condition, results of operations, and prospects may have changed since those dates. The selling shareholders are offering to sell, and seeking offers to buy, our common stock only in jurisdictions where offers and sales are permitted.

This prospectus may be supplemented from time to time to add, update or change information in this prospectus. Any statement contained in this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in such prospectus supplement modifies or supersedes such statement. Any statement so modified will be deemed to constitute a part of this prospectus only as so modified, and any statement so superseded will be deemed not to constitute a part of this prospectus.

The registration statement containing this prospectus, including the exhibits to the registration statement, provides additional information about us and the securities offered under this prospectus. The registration statement, including the exhibits, can be read on the U.S. Securities and Exchange Commission's, or SEC, website or at the SEC offices mentioned under the heading "Where You Can Find More Information."

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.

EXPLANATORY NOTE

This Post-Effective Amendment No. 5 to the Registration Statement on Form S-1, as amended (File No. 333-171140) (the Registration Statement) is being filed in order to update the information required in Item 12 of Form S-1.

COMPANY INFORMATION

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 www.sec.gov.

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 below and 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.

Future equity issuances or a sale of a substantial number of shares of our common stock may cause the price of our common stock to decline.

Because we may need to raise additional capital in the future to construct our depleted UF₆ de-conversion and FEP facility, among other things, we may conduct additional equity offerings. If we or our shareholders sell substantial amounts of our common stock (including shares issued upon the exercise of options and warrants) in the public market, the market price of our common stock could fall. A decline in the market price of our common stock could make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate.

CAUTIONARY 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, 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

We are filing the registration statement of which this prospectus is a part to permit holders of the shares of our common stock described in the section entitled *Selling Shareholders* to resell such shares. We will not receive any proceeds from the sale of shares by the selling shareholders. All net proceeds from the sale of the common stock covered by this prospectus will go to the selling shareholders. It is unlikely that any outstanding warrants will be exercised for cash because they contain net exercise provisions that allow the holder to forgo some of the shares that would otherwise be received in order to pay the exercise price. However, if all of the outstanding warrants were exercised for cash, the gross proceeds to us would be \$11.63 million (exclusive of related expenses). The actual exercise of any of these securities however is beyond our control and depends on a number of factors, including the market price of our common stock. The net proceeds, if any, from the exercise of these securities will be used for general corporate purposes.

The selling shareholders will pay any underwriting discounts and commissions and expenses incurred by the selling shareholders for brokerage, accounting, tax or legal services or any other expenses incurred by the selling shareholders in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees, and fees and expenses of our counsel and our accountants.

PRICE RANGE OF COMMON STOCK

Our common stock is quoted on the Over the Counter Bulletin Board under the trading symbol INIS.OB. High asked prices and low bid prices reported by the OTC Bulletin Board during the periods indicated are shown below, which reflect inter-dealer prices, without retail markup, mark-down, or commission and may not reflect actual transactions:

Fiscal Year	Quarter	High Asked	Low Bid
2011	1 st	\$0.30	\$0.15
2011	2 nd	\$0.22	\$0.12
2010	1 st	\$0.59	\$0.38
2010	2 nd	\$0.53	\$0.35
2010	3 rd	\$0.45	\$0.28
2010	4 th	\$0.35	\$0.24
2009	1 st	\$0.40	\$0.17
2009	2 nd	\$0.39	\$0.25
2009	3 rd	\$0.73	\$0.24
2009	4 th	\$0.70	\$0.44
2008	1 st	\$1.15	\$0.77
2008	2 nd	\$0.85	\$0.63
2008	3 rd	\$0.82	\$0.50
2008	4 th	\$0.49	\$0.16

On May 31, 2011, there were 515 holders of record of our common stock. We have never paid any cash dividends on our common stock. In the future, and based upon our profit performance, our Board of Directors will evaluate and determine whether to issue dividends or retain funds for research and development and expansion of our business. It is unlikely that we will pay any dividends to shareholders for the foreseeable future.

SELLING SHAREHOLDERS

We issued 29,075,000 units on October 29, 2010 for a purchase price of \$0.20 per unit. Each unit consists of (i) one share of the Company's common stock and (ii) a common stock purchase warrant to purchase one share of our common stock at an exercise price of \$0.40 per share (subject to adjustment as set forth in the warrants). The warrants expire on October 29, 2015. Pursuant to the registration rights agreement entered into in connection with the issuance among us and the selling shareholders, we agreed to file this registration statement with the SEC to register the disposition of the shares of our common stock we issued to those stockholders and the shares of common stock issuable upon exercise of the warrants and to keep the registration statement effective until the earlier of (i) the date at which time the selling shareholders may sell all of the shares issued and the shares of common stock issuable upon exercise of the Warrants covered by this Registration Statement without restriction pursuant to Rule 144 promulgated under the Securities Act of 1933 or (ii) the date on which the selling shareholders shall have sold all such securities covered by this registration statement. The documents relating to the private placement are attached as exhibits to the Current Report on Form 8-K filed November 1, 2010 with the Securities and Exchange Commission.

The following table sets forth: (1) the name of each of the selling shareholders; (2) the number of shares of our common stock beneficially owned by each such selling shareholder prior to this offering; (3) the number of shares of our common stock covered by this prospectus; (4) the number of shares of our common stock beneficially owned upon completion of this offering, and (5) the percentage (if one percent or more) of common stock beneficially owned by each such selling shareholder after this offering, assuming all of the shares covered hereby are sold. Beneficial ownership is determined in accordance with Rule 13d-3 promulgated by the SEC, and generally includes those shares a selling shareholder has the power to vote or the power to transfer, and stock options and other rights to acquire common stock that are exercisable currently or become exercisable within 60 days. The selling shareholders may decide to sell all, some, or none of the shares of common stock covered hereby. Accordingly, we cannot provide any estimate of the number of shares of our common stock that any of the selling shareholders will hold once the offering is complete. However, for purposes of this table, we have assumed that, after completion of the offering, none of the shares covered by this registration statement will be held by the selling stockholders. The calculation of the percentage owned is based on 323,604,727 shares outstanding on June 28, 2011.

Security Ownership of Selling Shareholders

Shares of Common Stock Beneficially Owned Prior to Offering(1)	Number of Shares of Common Stock Being	Shares of Common Stock to be Beneficially Owned After Offering(2)
---	---	--

Name of Selling Shareholder	Number	Percentage	Registered		Percentage
			for Resale	Number	
Barbara S. Meister TR The Meister Non-Exempt Marital TR U/A 11/17/83	500,000(3)	*	500,000	--	--
Brad K. Carr + Roxane Carr JT TEN	500,000(4)	*	500,000	--	--
Brian Carr & Kari M. Carr TR Carr Family Revoc Living Trust U/A 7/28/06	500,000(5)	*	500,000	--	--
Carolyn R. Long	500,000(6)	*	500,000	--	--
Chris Bougeokles	100,000(7)	*	100,000	--	--
Christopher Rieger TOD Ramona S. Rieger Subject To STA TOD Rules	100,000(8)	*	100,000	--	--

Name of Selling Shareholder	Shares of Common Stock		Number of Shares of Common Stock Being Registered for Resale	Shares of Common Stock	
	Beneficially Owned			to be Beneficially Owned After	
	Prior to Offering(1) Number	Percentage		Offering(2) Number	Percentage
Clearpath LLC	500,000(9)	*	500,000	--	--
Cooper Barrons	1,039,000(10)	*	250,000	789,000	--
Corey Shannon McNamee	500,000(11)	*	500,000	--	--
Corrie Crofts Craig	500,000(12)	*	500,000	--	--
Damon Suter Malinda Suter TR The Suter Family Trust U/A 4/12/02	1,000,000(13)	*	1,000,000	--	--
Daniel Patrick McCormack TOD John W McCormack Subject To STA TOD Rules	10,951,210(14)	3.38%	500,000	10,451,210	3.23%
David Brisbin P/ADM White Pine Productions DBPP David Brisbin	500,000(15)	*	500,000	--	--
David Kratochvil	512,444(16)	*	512,444	--	--
Donald Girard Clark JR + Debra L. Clark JT TEN	500,000(17)	*	500,000	--	--
Earl Peoples P/ADM Ortho Arkansas PSP	500,000(18)	*	500,000	--	--
Firebird Global Master Fund II LTD	32,302,955(19)	9.98%	3,000,000	29,302,955	9.06%
George Feldman	1,000,000(20)	*	1,000,000	--	--
Heidi W. Kiene + Kevin Kiene JT TEN	1,000,000(21)	*	1,000,000	--	--

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Hemant Kathuria P/ADM H. Kathuria Investments II P Plan	300,000(22)	*	300,000	--	--
Henry Louis Schairer Jr.	500,000(23)	*	500,000	--	--
James Bacon TR James V. Bacon Trust U/A 9/14/95 UAD 03/26/09	1,500,000(24)	*	1,500,000	--	--
James E. & James K. Furber TR Furber Family U/A 1/18/07 FBO Trust A Restated	1,000,000(25)	*	1,000,000	--	--
James E. & James K. Furber TR Furber Family U/A 1/18/07 FBO Trust B Restated	1,000,000(2)	*	1,000,000	--	--
James Howard Thomas	250,000 (27)	*	250,000	--	--

Name of Selling Shareholder	Shares of Common Stock		Number of Shares of Common Stock Being Registered for Resale	Shares of Common Stock	
	Beneficially Owned			to be Beneficially Owned After	
	Prior to Offering(1)			Offering(2)	
	Number	Percentage		Number	Percentage
James Kevin Furber & Laura Phipps Furber TTEE Furber Family Trust U/A 7/25/01	500,000(28)	*	500,000	--	--
Jeff Blackburn	500,000(29)	*	500,000	--	--
John M. McCormack + Maryanne McCormack JT TEN	63,342,730(30)	19.57%	500,000	62,842,730	19.42%
John Paul Dejoria TR John Paul Dejoria Family Trust U/A 4/21/04,	2,830,296(31)	*	2,000,000	830,296	--
John R. Downs	250,000(32)	*	250,000	--	--
John W. McCormack TOD Daniel Patrick McCormack Subject to STA TOD Rules	63,342,730(33)	19.57%	500,000	62,842,730	19.42%
Jonathan Edwards + Virginia C. Adams JT TEN	500,000(34)	*	500,000	--	--
Joseph A. & Pamela M. Panella TR Joseph A. & Pamela M. Panella Living TR 1 U/A 5/11/04	750,000(35)	*	750,000	--	--
Joseph McCarthy + Miki McCarthy TEN COM TOD Fiona McCarthy Subject to STA TOD Rules	500,000(36)	*	500,000	--	--
Josh D. Bradbury & Susan Bradbury TR Bradbury	1,500,000(37)	*	1,500,000	--	--

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Revocable TR U/A 12/28/93

Josh D. Bradbury Jr. TR Josh
D. Bradbury Jr. IRREV Trust
U/A 5/1/01

1,500,000(38) * 1,500,000 -- --

Karen Head

1,000,000(39) * 1,000,000 -- --

KK Swogger Asset
Management

800,000(40) * 800,000 -- --

Manuel Cohen

250,000(41) * 250,000 -- --

NFS/FMTC Rollover IRA
FBO Mark Dugger

1,000,000(42) * 1,000,000 -- --

Meagan Anne McCormack
TOD Daniel Patrick
McCormack Subject to STA
TOD Rules

10,951,210(43) 3.38% 500,000 10,451,210 3.23%

Name of Selling Shareholder	Shares of Common Stock		Number of Shares of Common Stock Being Registered for Resale	Shares of Common Stock	
	Beneficially Owned			to be Beneficially Owned After	
	Prior to Offering(1) Number	Percentage		Offering(2) Number	Percentage
Michael J. Hanratty + Lynsay F. Hanratty TEN ENT	1,000,000(44)	*	1,000,000	--	--
Mitchell F. Mayer TOD Janine Jameson Mayer Subject to STA TOD Rules	640,000(45)	*	500,000	--	--
Mitchell Martin + Deborah Martin TEN ENT	500,000(46)	*	500,000	--	--
NFS/FMTC IRA FBO Bert Jude Huntsinger	500,000(47)	*	500,000	--	--
NFS/FMTC IRA FBO Diane D. Spolum	500,000(48)	*	500,000	--	--
NFS/FMTC IRA FBO George Bernard Feldman	1,000,000(49)	*	1,000,000	--	--
NFS/FMTC IRA FBO Helga L. Fuenfhausen	1,000,000(50)	*	1,000,000	--	--
NFS/FMTC Rollover IRA FBO Paul Harper Zink	500,000(51)	*	500,000	--	--
NFS/FMTC Rollover IRA FBO Gerald Mona	500,000(52)	*	500,000	--	--
NFS/FMTC Rollover IRA FBO Kenneth Henry Nass	1,200,000(53)	*	1,200,000	--	--
NFS/FMTC Rollover IRA FBO Mark Stefanelli	500,000(54)	*	500,000	--	--
	500,000(55)	*	500,000	--	--

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NFS/FMTC Rollover IRA FBO
Ralph Dale Edson

NFS/FMTC Rollover IRA FBO Robert M. Weissberg	500,000(56)	*	500,000	--	--
NFS/FMTC Rollover IRA FBO Thomas Aaron Ladner	500,000(57)	*	500,000	--	--
NFS/FMTC Rollover IRA FBO William Gordon McBean	1,012,444(58)	*	1,012,444	--	--
NFS/FMTC SEP IRA FBO Carter Laren	1,000,000(59)	*	1,000,000	--	--

Name of Selling Shareholder	Shares of Common Stock		Number of Shares of Common Stock Being Registered for Resale	Shares of Common Stock	
	Beneficially Owned			to be Beneficially Owned After	
	Prior to Offering(1) Number	Percentage		Offering(2) Number	Percentage
NFS/FMTC SEP IRA FBO James Curtis Brown	500,000(60)	*	500,000	--	--
NFS/FMTC SEP IRA FBO Terry Alan Crews	600,000(61)	*	600,000	--	--
Pamela Harrington Munro	500,000(62)	*	500,000	--	--
Patrick Mullen TR Patrick Mullen Separate PRPRTY TR U/A 7/13/01	500,000(63)	*	500,000	--	--
Paul DiPaolo & Nancy L. Worthington TR DiPaolo Worthington Family TR U/A 1/31/08	500,000(64)	*	500,000	--	--
Peter D. Schiff	2,412,445(65)	*	2,312,445	100,000	*
PWC Holdings	500,000(66)	*	500,000	--	--
Quincy Murphy Inc.	500,000(67)	*	500,000	--	--
Reisner Millennium INVST LLC	500,000(68)	*	500,000	--	--
Richard Potapchuk	3,000,000(69)	*	3,000,000	--	--
Robert Neal Spady + Linda Spady JT TEN	500,000(70)	*	500,000	--	--
Steve Smith	500,000(71)	*	500,000	--	--
Susan K. Hurt & Mark A. Hurt TR Susan K. Hurt Living Trust	500,000(72)	*	500,000	--	--

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U/A 4/30/00

Taslimi Construction Co Inc.	5,000,000(73)	1.55%	5,000,000	--	--
Thomas E. Thompson	250,000 (74)	*	250,000	--	--
Thomas John Pray	500,000(75)	*	500,000	--	--
Timothy Crane TR Timothy R. Crane Trust U/A 12/6/04	1,000,000(76)	*	1,000,000	--	--
William Bradley P/ADM Bradley Anesthesiology PSP	500,000(77)	*	500,000	--	--
William Wiley Marianne Wiley TR Wiley Family Living Trust U/A 7/19/95	500,000(78)	*	500,000	--	--
Yellowstone Holdings	500,000(79)	*	500,000	--	--

* Represents beneficial ownership of less than 1% of our outstanding common stock.

(1) Except as otherwise indicated, each selling shareholder named in the table has sole voting and investment power with respect to all shares of common stock beneficially owned by it. The numbers and percentages shown include (a) the shares of common stock actually owned as of October 20, 2010, and (b) the shares of common stock which

the person or group had the right to acquire upon the exercise of warrants. In calculating the percentage of ownership, all shares of common stock that the identified person or group had the right to acquire upon the exercise of the warrants are deemed to be outstanding for the purpose of computing the percentage of the shares of common stock owned by such person or group, but are not deemed to be outstanding for the purpose of computing the percentage of the shares of common stock owned by any other person or group.

(2) We do not know the extent to which the selling shareholders will sell any of the securities being registered hereby.

(3) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(4) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(5) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(6) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(7) Includes 50,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(8) Includes 50,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(9) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(10) Includes 125,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(11) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(12) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(13) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(14) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(15) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(16) Includes 512,444 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(17) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(18) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(19) Represents shares reported on Schedule 13D/A dated October 29, 2010 and held by Firebird Global Master Fund II, Ltd., FG2 Advisors, LLC, James Passin and Harvey Sawikin. Excludes 10,555,555 shares of common stock subject to warrants which are immediately exercisable except to the extent that such conversion or exercise would result in beneficial ownership by the holder thereof of more than 9.9999% of the shares of common stock then issued and outstanding.

(20) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(21) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

(22) Includes 150,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

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- (23) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (24) Includes 750,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (25) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (26) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (27) Includes 125,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (28) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (29) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (30) Includes 22,402,420 shares beneficially owned by family members. Includes 3,300,000 shares of common stock subject to warrants exercisable within 60 days of June 28, 2011 held by Mr. McCormack and family members and 1,500,000 shares subject to debentures convertible within 60 days of June 28, 2011.
- (31) Includes 1,000,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (32) Includes 125,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (33) Includes 22,402,420 shares beneficially owned by family members. Includes 3,300,000 shares of common stock subject to warrants exercisable within 60 days of June 28, 2011 held by Mr. McCormack and family members and 1,500,000 shares subject to debentures convertible within 60 days of June 28, 2011.
- (34) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (35) Includes 375,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (36) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (37) Includes 750,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (38) Includes 750,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (39) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (40) Includes 400,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (41) Includes 125,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (42) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (43) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

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- (44) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (45) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (46) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (47) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (48) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (49) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (50) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (51) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (52) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (53) Includes 600,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (54) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (55) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (56) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (57) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (58) Includes 762,444 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (59) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (60) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (61) Includes 300,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (62) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (63) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (64) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (65) Includes 1,412,445 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (66) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (67) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (68) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (69) Includes 1,500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

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- (70) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (71) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (72) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (73) Includes 2,500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (74) Includes 125,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (75) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (76) Includes 500,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (77) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (78) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.
- (79) Includes 250,000 of shares subject to warrants exercisable within 60 days of June 28, 2011.

PLAN OF DISTRIBUTION

The selling shareholders and any of their pledgees, donees, transferees, assignees and successors-in-interest may, from time to time, sell any or all of their shares of common stock on any stock exchange, market or trading facility on which the shares are traded or quoted or in private transactions. These sales may be at fixed or negotiated prices. The selling shareholders may use any one or more of the following methods when selling shares:

.
ordinary brokerage transactions and transactions in which the broker-dealer solicits investors;

.
block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;

.
purchases by a broker-dealer as principal and resale by the broker-dealer for its account;

.
an exchange distribution in accordance with the rules of the applicable exchange;

.
privately negotiated transactions;

.
to cover short sales made after the date that this registration statement is declared effective by the Commission;

.

broker-dealers may agree with the selling shareholders to sell a specified number of such shares at a stipulated price per share;

a combination of any such methods of sale; and

any other method permitted pursuant to applicable law.

The selling shareholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling shareholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling shareholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated. The selling shareholders do not expect these commissions and discounts to exceed what is customary in the types of transactions involved.

The selling shareholders may from time to time pledge or grant a security interest in some or all of the shares owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell shares of common stock from time to time under this prospectus, or under an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of selling shareholders to include the pledgee, transferee or other successors in interest as selling shareholders under this prospectus.

Upon the Company being notified in writing by a selling shareholder that any material arrangement has been entered into with a broker-dealer for the sale of common stock through a block trade, special offering, exchange distribution or secondary distribution or a purchase by a broker or dealer, a supplement to this prospectus will be filed, if required, pursuant to Rule 424(b) under the Securities Act, disclosing (i) the name of each such selling shareholder and of the participating broker-dealer(s), (ii) the number of shares involved, (iii) the price at which such the shares of common stock were sold, (iv) the commissions paid or discounts or concessions allowed to such broker-dealer(s), where applicable, (v) that such broker-dealer(s) did not conduct any investigation to verify the information set out or incorporated by reference in this prospectus, and (vi) other facts material to the transaction. In addition, upon the Company being notified in writing by a selling shareholder that a donee or pledgee intends to sell more than 500 shares of common stock, a supplement to this prospectus will be filed if then required in accordance with applicable securities law.

The selling shareholders also may transfer the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

The selling shareholders and any broker-dealers or agents that are involved in selling the shares may be deemed to be underwriters within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Discounts, concessions, commissions and similar selling expenses, if any, that can be attributed to the sale of securities will be paid by the selling shareholder and/or the purchasers. Each selling shareholder has represented and warranted to the Company that it acquired the securities subject to this registration statement in the ordinary course of such selling shareholder's business and, at the time of its purchase of such securities such selling shareholder had no agreements or understandings, directly or indirectly, with any person to distribute any such securities.

The Company has advised each selling shareholder that it may not use shares registered on this registration statement to cover short sales of common stock made prior to the date on which this registration statement shall have been declared effective by the SEC. If a selling shareholder uses this prospectus for any sale of the common stock, it will be subject to the prospectus delivery requirements of the Securities Act. The selling shareholders will be responsible to comply with the applicable provisions of the Securities Act and Exchange Act, and the rules and regulations thereunder promulgated, including, without limitation, Regulation M, as applicable to such selling shareholders in connection with resales of their respective shares under this registration statement.

The Company is required to pay all fees and expenses incident to the registration of the shares, but the Company will not receive any proceeds from the sale of the common stock. The Company has agreed to indemnify the selling shareholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

DESCRIPTION OF SECURITIES

Our authorized capital stock consists of 750,000,000 shares of common stock, \$0.01 par value per share, and 5,000,000 shares of preferred stock, \$0.01 par value per share. 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 and consider our Certificate of Formation and bylaws, which are filed as exhibits to the registration statement, of which this prospectus forms a part, and the applicable provisions of the Texas Business Organizations Code.

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.

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.

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.

LEGAL MATTERS

The validity of the securities being offered by this prospectus will be passed upon for us by Perkins Coie LLP, Denver, Colorado.

EXPERTS

The financial statements incorporated in this prospectus by reference to our Annual Report on Form 10-K for the year ended December 31, 2010 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, on official business days during the hours of 10:00 am to 3:00 pm. 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 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 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 list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus.

We incorporate by reference into this prospectus the documents listed below:

our Annual Report on Form 10-K for the fiscal year ended December 31, 2010, filed on March 31, 2011;

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 Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2011 in connection with the 2011 annual meeting of shareholders;

our Quarterly Report on Form 10-Q for the period ended March 31, 2011, filed on May 18, 2011; and

our Current Report on Form 8-K filed with the SEC on July 14, 2011.

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 Laflin, 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; or to the Company's general email address: admin@intisoid.com.

This prospectus is part of a registration statement on Form S-1 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.

59,687,333 Shares

Common Stock, par value \$0.01

PROSPECTUS

, 2011

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Item 13. Other Expenses of Issuance and Distribution**

The following table sets forth the fees and expenses in connection with the issuance and distribution of the securities being registered hereby, other than underwriting discounts and commissions, all of which will be borne by us. 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	\$1,467.20
Printing and engraving expenses	\$2,500.00
Legal fees and expenses	\$15,000.00
Accounting fees and expenses	\$5,000.00
Miscellaneous expenses	\$1,500.00
Total	\$25,467.20

Item 14. 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 15. Recent Sales of Unregistered Securities

On May 23, 2008, the Company issued 84,270 shares of its common stock to Randall O Kane, 421,348 shares of its common stock to Keith Allberg and 421,348 shares of its common stock to Peter Ouimette in consideration for 11 units of limited liability company interests in RadQual, LLC, an Ohio limited liability company. The securities were sold in reliance on Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each individual represented that it was an accredited investor within the meaning of the Securities Act of 1933, as amended and had reviewed all information about the Company necessary to make an informed investment decision.

On April 9, 2008, the Company entered into a letter agreement with certain holders of their Class C Warrants that amended the Class C Warrants and effected a call on such Warrants. Pursuant to Company's call of these Class C Warrants, the holders of the Warrants exercised all outstanding Class C Warrants for an aggregate exercise price of \$1,333,333.10 and the Company issued (i) 13,333,331 shares of the Company's common stock, par value \$0.01 per share and (ii) Class E Warrants exercisable for 13,333,331 shares of the Company's common stock at an exercise price of \$0.869, which was later restated to an exercise price of \$0.43. The Class E Warrants are exercisable through March 20, 2011 and permit cashless exercise. The exercise price is subject to customary adjustments as set forth in the Warrants. The securities were sold in reliance on Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each holder represented that it was an accredited investor within the meaning of the Securities Act of 1933, as amended and had reviewed all information about the Company necessary to make an informed investment decision.

On November 7, 2008, the Company entered into a Securities Purchase Agreement with certain institutional and private purchasers pursuant to which it sold to the purchasers 8,200,000 units consisting of (i) one (1) share of the Company's common stock, par value \$0.01 per share and (ii) one (1) Class F Warrants exercisable for a share of the Company's common stock at an exercise price of \$0.30, for an aggregate sale price of approximately \$2,050,000. The Securities Purchase Agreement provides the purchasers with certain registration rights if an Investor is unable, at any time following the six-month holding period provided in Rule 144, to sell its Common Stock and underlying securities pursuant to Rule 144. Upon the demand by the purchasers, the Company is required to register all of the Common Stock issued and the underlying securities sold to the purchasers within 45 days from such demand. The registration must be effective 120 days after the date of such demand. The Company must pay the purchasers a monthly amount equal to 1% of the greater of the aggregate purchase price paid by the purchasers or the market value of the shares then outstanding if the registration is not filed or does not become effective on time, or upon the occurrence of certain events described in the Securities Purchase Agreement. The registration rights provisions contain customary indemnification and contribution provisions. The Class F Warrants are for a term of 5 years. The exercise price is subject to customary adjustments as set forth in the Warrants. The Warrants contain provisions limiting exercise in the event that the holder's beneficial ownership of the Company's Common Stock would exceed 9.99%. The Securities

Purchase Agreement and a form of the Class F Warrant were filed with the Company's Current Report on Form 8-K filed on November 12, 2008 as Exhibits 2.1 and 4.1, respectively. The securities were sold in reliance on Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each Investor represented that it was an accredited investor within the meaning of the Securities Act of 1933, as amended and had reviewed all information about the Company necessary to make an informed investment decision.

On September 18, 2009, the Company entered into a Securities Purchase Agreement with certain institutional and private purchasers pursuant to which it sold to the purchasers 3,133,333 units consisting of (i) one (1) share of the Company's common stock, par value \$0.01 per share and (ii) one (1) Class G Warrant exercisable for a share of the Company's common stock at an exercise price of \$0.36, for an aggregate sale price of approximately \$940,000. The Securities Purchase Agreement provides the purchasers with certain registration rights if an Investor is unable, at any time following the six-month holding period provided in Rule 144, to sell its Common Stock and underlying securities pursuant to Rule 144. Upon the demand by the purchasers, the Company is required to register all of the Common Stock issued and the underlying securities sold to the purchasers within 45 days from such demand. The registration must be effective 120 days after the date of such demand. The Company must pay the purchasers a monthly amount equal to 1% of the greater of the aggregate purchase price paid by the purchasers or the market value of the shares then outstanding if the registration is not filed or does not become effective on time, or upon the occurrence of certain events described in the Securities Purchase Agreement. The registration rights provisions contain customary indemnification and contribution provisions. The Class G Warrants are for a term of 2 years. The exercise price is subject to customary adjustments as set forth in the Warrants. The Warrants contain provisions limiting exercise in the event that the holder's beneficial ownership of the Company's Common Stock would exceed 9.99%. The Securities Purchase Agreement and a form of the Class G Warrant were filed with the Company's Current Report on Form 8-K filed on September 18, 2009 as Exhibits 2.1 and 4.1, respectively, and all descriptions of such documents included herein are qualified in their entirety by reference to such documents. Contemporaneously with the transactions discussed above, the Company entered into a Unsecured Note Conversion Agreement with William Nicholson, the holder of an unsecured promissory note pursuant to which the Company was indebted for approximately \$880,000. Pursuant to the Unsecured Note Conversion Agreement, the Company converted approximately \$380,000 of the balance of such promissory note into 1,273,972 units consisting of (i) one (1) share of the Company's Common Stock and (ii) one (1) Class G Warrants exercisable for a share of the Company's common stock at an exercise price of \$0.40. The Unsecured Note Purchase Agreement was filed with the Company's Current Report on Form 8-K filed on September 18, 2009 as Exhibit 2.2. The securities sold in the transactions discussed above were sold in reliance on Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each investor represented that it was an accredited investor within the meaning of the Securities Act of 1933, as amended and had reviewed all information about the Company necessary to make an informed investment decision.

On February 24, 2010, the Company entered into a Securities Purchase Agreement with certain institutional and private purchasers pursuant to which it sold to the purchasers convertible debentures for an aggregate of \$3,075,000. The Debentures accrue a fixed sum of interest equal to 6% of the principal amount automatically upon issuance and mature on August 24, 2011. The Debentures are convertible at the option of the purchasers into shares of the Company's common stock, par value \$0.01 per share or any other class of equity securities issued by the Company for financing purposes after issuance of the Debentures, at an initial conversion price equal to \$0.35, with respect to that portion of the Debenture converted into Common Stock, and the per share subscription price of any Other Equity Securities as set forth in the definitive transaction documents for the applicable equity financing transaction, with respect to that portion of the Debenture converted into other equity securities, subject to adjustment as set forth in the Debentures. Upon maturity, the outstanding principal amount of the Debentures and all accrued but unpaid interest will be converted into Common Stock at a conversion price equal to the lesser of \$0.35 and the average closing price of the Common Stock for the 120 consecutive trading days up to, but not including, the maturity date, subject to adjustment as set forth in the Debentures. To the extent any of the Debentures are outstanding as of the maturity date and are automatically converted pursuant to the terms of the Debentures, then purchasers holding such Debentures will also receive Class H Warrants to purchase the number of shares of Common Stock equal to one half of the number of shares of Common Stock issued upon automatic conversion of the Debenture, at a per share exercise price equal to the lower of \$.60 and 120% of the average closing price of the Common Stock for the 120 consecutive trading days up to, but not including, the maturity date. The Class H Warrants are for a term of 4 years. The exercise price is subject to customary adjustments as set forth in the Class H Warrants. The Debentures contain, and each Class H Warrant that may be issued upon automatic conversion of the Debentures will contain, provisions limiting

exercise in the event that the holder's beneficial ownership of the Company's Common Stock would exceed 9.99%. The Securities Purchase Agreement provides the purchasers with certain registration rights if an Investor is unable, at any time following the six-month holding period provided in Rule 144, to sell its Common Stock and underlying securities pursuant to Rule 144. Upon the demand by the purchasers, the Company is required to register all of the Common Stock issued and the underlying securities sold to the purchasers within 45 days from such demand. The registration must be effective 120 days after the date of such

demand. The Company must pay the purchasers a monthly amount equal to 1% of the greater of the aggregate purchase price paid by the purchasers or the market value of the shares then outstanding if the registration is not filed or does not become effective on time, or upon the occurrence of certain events described in the Securities Purchase Agreement. The registration rights provisions contain customary indemnification and contribution provisions. The Securities Purchase Agreement, a form of the Debenture, and a form of Class H Warrant were filed with the Company's Current Report on Form 8-K as Exhibits 2.1, 4.1 and 4.2, respectively. The securities sold in the transactions discussed above were sold in reliance on Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each Investor represented that it was an accredited investor within the meaning of the Securities Act of 1933, as amended and had reviewed all information about the Company necessary to make an informed investment decision.

On October 29, 2010, the Company entered into a Securities Purchase Agreement with certain institutional and private purchasers pursuant to which the purchasers purchased 29,075,000 units from the Company at a purchase price of \$0.20 per unit. Each Unit consists of (i) one share of the Company's Common Stock, par value \$0.01 per share and (ii) a Common Stock Purchase Warrant to purchase one share of Common Stock at an exercise price of \$0.40 per share (subject to adjustment as set forth in the Warrants). The Securities Purchase Agreement contains customary representations and warranties and other provisions. The Warrants are immediately exercisable at a per share price of \$0.40 and have a term of five years. Each Warrant contains certain call rights of the Company if the closing price of the Common Stock of the Company exceeds \$0.80 for twenty consecutive trading days (as such term is defined in the Securities Purchase Agreement) which can be exercised pursuant to the terms of the Warrants. In connection with the Securities Purchase Agreement, the Company and the Purchasers also entered into a registration rights agreement, dated as of October 29, 2010, pursuant to which the Company will agree to provide certain registration rights with respect to the Shares and the underlying common stock to be issued upon exercise of the Warrants. An additional 1,537,777 Warrants were also issued on October 29, 2010 pursuant to the Securities Purchase Agreement to individuals at Euro Pacific Capital, Inc. as partial compensation for services performed in connection with the issuance of the units. The Company is required to file a registration statement registering the resale of all of the common stock issued and the common stock issuable upon exercise of the warrants sold to the Purchasers within 45 days from the time the Company entered into the Securities Purchase Agreement. The Company must use commercially reasonable efforts to have the registration statement declared effective by the SEC as soon as practicable but in any event within 120 calendar days after the 45 day deadline, or within five business days after the date which the SEC informs the Company (A) that the SEC will not review such registration statement or (B) that the Company may request the acceleration of the effectiveness of such registration statement and the Company makes such request (subject to certain provisos in the Registration Rights Agreement). The Company is also required to make additional mandatory registrations as necessary under the Registration Rights Agreement. The Company must pay the Purchasers a monthly amount equal to 1% (not to exceed 10% in the aggregate) of the aggregate purchase price paid by the purchasers for the Share and Warrants included in such registration statement if the registration statement is not filed, does not become effective on time, does not continue to be effective, or upon the occurrence of certain events described in the Registration Rights Agreement. Pursuant to the Registration Rights Agreement the Company must keep each registration statement effective pursuant to Rule 415 of the Securities Act of 1933 at all times until the earlier of: (i) the date at which time the Purchasers may sell all of the Registrable Securities covered by such registration statement without restriction pursuant to Rule 144 promulgated under the Securities Act of 1993 or (ii) the date on which the purchasers shall have sold all of the Registrable Securities covered by such registration statement. The registration rights provisions contain customary indemnification and contribution provisions. The securities sold in the transactions discussed above were sold in reliance upon Section 4(2) of the Securities Act of 1933, as amended and Regulation D thereunder. Each purchaser represented that it was an accredited investor within the meaning of the Securities Act of 1933 and had reviewed all information about the Company necessary to make an informed investment decision.

On March 25, 2011, the Company issued 13,333,331 Series J Warrants to certain institutional investors who previously held Series E Warrants that expired on March 20, 2011. Each Series J Warrant represents the right to purchase one share of the Company's common stock. The Series J Warrants have an exercise price of \$0.43 per share and expire on September 25, 2011. The Series J Warrants were issued by the Company in reliance on an exemption from registration pursuant to Section 4(2) of the Securities Act of 1933, as amended.

Item 16. Exhibits

Exhibit

Number

Description

2.1

Securities Purchase Agreement dated March 21, 2007 (incorporated by reference to Exhibit 2.1 of the Company's Current Report of Form 8-K filed on March 22, 2007).

2.2

Unit Purchase Agreement effective as of May 23, 2008 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on June 2, 2008).

2.3

Asset Purchase Agreement, dated May 30, 2008 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on June 5, 2008).

2.4

First Amendment to the Asset Purchase Agreement, dated June 3, 2008 (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K filed on June 5, 2008).

2.5

Securities Purchase Agreement dated November 7, 2008 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on November 12, 2008).

2.6

Securities Purchase Agreement dated September 18, 2009 (incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K filed on September 18, 2009).

2.7

Unsecured Note Conversion Agreement dated September 18, 2009 (incorporated by reference to Exhibit 2.2 of the Company's Current Report on Form 8-K filed on September 18, 2009).

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Securities Purchase Agreement dated February 24, 2010 (incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K filed on February 25, 2010).

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Securities Purchase Agreement dated October 29, 2010 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on November 1, 2010).

3.1

Restated Articles of Incorporation as amended (incorporated by reference to Exhibit 3(i) of the Company's Quarterly Report on Form 10-Q for period ended June 30, 2010).

3.2

Bylaws of the Company (incorporated by reference to Exhibit 3.2 of the Company's Registration Statement on Form SB-2 filed on May 1, 1997 (Registration No. 333-26269)).

4.1

Form of Class E Warrant (incorporated by reference to Exhibits 4.1 of the Company's Current Report on Form 8-K filed on April 21, 2008).

4.2

Form of Class F Warrant (incorporated by reference to Exhibits 99.1 of the Company's Current Report on Form 8-K filed on November 12, 2008).

4.3

Form of Class G Warrant (incorporated by reference to Exhibit 2.1 of the Company's Current Report on Form 8-K filed on September 18, 2009).

4.4

Form of Debenture (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on February 25, 2010).

4.5

Form of Class H Warrant (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K filed on February 25, 2010).

4.6

Form of Warrant (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on November 1, 2010).

4.7

Form of Class J Warrant (incorporated by reference to Exhibit 4.7 of the Company's Annual Report on Form 10-K for the year ended December 31, 2010).

5.1

Opinion of Perkins Coie LLP regarding legality of the Common Stock being registered, previously filed.

10.1

2002 Long Term Incentive Plan (incorporated by reference to Exhibit 10.1 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2002).*

10.2

Form of Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.2 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).*

10.3

International Isotopes Employee Stock Purchase Plan (incorporated by reference to Appendix B to the Company's definitive proxy statement on Schedule 14A, as amended, filed on May 6, 2005).*

10.4

Lease Agreement 4137 Commerce Circle (incorporated by reference to Exhibit 10.6 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).

10.5

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Option to Purchase and Right of First Refusal for Property located at 4137 Commerce Circle (incorporated by reference to Exhibit 10.7 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).

10.6

Lease Agreement 3159 Commerce Way (incorporated by reference to Exhibit 10.8 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).

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10.8

Promissory Note dated September 15, 2007 with Compass Bank (formerly with Texas State Bank) (incorporated by reference to Exhibit 10.9 of the Company's Annual Report on Form 10-K for the year ended December 31, 2009).

10.9

Unsecured Note to former Chairman of the Board, Dated April 1, 2002 (incorporated by reference to Exhibit 10.12 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).

10.10

Form of Note Purchase Agreement and Form of Unsecured Convertible Promissory Notes (incorporated by reference to Exhibit 10.13 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2004).

10.11

2006 Equity Incentive Plan (incorporated by reference to Annex A of the Company's definitive proxy statement on Schedule 14A filed on May 1, 2006).

10.12

Alpha Omega Services, Inc. Distributor Agreement dated August 14, 2007 (incorporated by reference to Exhibit 99.1 of the Company's Current Report of Form 8-K filed on August 22, 2007).

10.13

Letter Agreement dated December 21, 2007 between the Company and Firebird Global Master Fund II, Ltd., together with a schedule of substantially identical documents omitted from filing pursuant to Rule 12b-31 promulgated under the Exchange Act (incorporated by reference to the Company's Annual Report on Form 10-K for the year ended December 31, 2008).

10.14

Technical Support Services Agreement, dated May 30, 2008 (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K filed on June 5, 2008).

10.15

Form of Indemnification Agreement (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on September 17, 2008).

10.16

Letter Agreement dated April 9, 2008 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on April 21, 2008).

10.17

Memorandum of Agreement dated October 22, 2009 between International Isotopes Inc. and New Mexico Environment Department (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on October 27, 2009).

10.18

Gemstone Processing Agreement between International Isotopes Inc. and Quali-Tech, Inc. (incorporated by reference to Exhibit 10.1 of Amendment No. 1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009 filed on September 24, 2009).

10.19

Manufacturing Agreement dated as of January 30, 2006 by and between International Isotopes Inc. and RadQual, LLC. (incorporated by reference to Exhibit 10.2 of Amendment No. 1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009 filed on September 24, 2009).

10.20

Change in Terms Agreement dated April 20, 2009 with Compass Bank. (incorporated by reference to Exhibit 10.21 of the Company's Annual Report on Form 10-K for the year ended December 31, 2009).

10.21

Promissory Note with Texas State Bank for Commercial Loan (incorporated by reference to Exhibit 10.11 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2006).

10.22

De-Conversion Services Agreement dated April 13, 2010 by and between International Isotopes Fluorine Products, Inc. and Louisiana Energy Services, LLC. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2010 filed on May 17, 2010).**

10.23

Employment Agreement, by and between International Isotopes Inc. and Stephen Laflin dated as of May 31, 2010 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on June 23, 2010).*

10.24

Work For Others Agreement by and between International Isotopes Inc. and Battelle Energy Alliance, LLC dated July 31, 2010 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on August 3, 2010).

10.25

Sales Agreement effective August 1, 2010 by and between International Isotopes Idaho, Inc. and NTP Radioisotopes (Pty) Ltd. (incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for period ended June 30, 2010).**

10.26

Registration Rights agreement by and between the Company and certain investors party thereto dated October 29, 2010 (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K filed on November 1, 2010).

10.27

Modification #1, dated as of December 22, 2010 to the Amended and Restated Employment Agreement entered into on June 23, 2010 by and between International Isotopes Inc. and Stephen Laflin (incorporated by reference to Exhibit 10.27 of the Company's Annual Report on Form 10-K for the year ended December 31, 2010).*

10.28

Modification #2, dated as of February 18, 2011 to the Amended and Restated Employment Agreement entered into on June 23, 2010 by and between International Isotopes Inc. and Stephen Laflin (incorporated by reference to Exhibit 10.28 of the Company's Annual Report on Form 10-K for the year ended December 31, 2010).*

21.1

Subsidiaries (incorporated by reference to the Company's Annual Report on Form 10 KSB for the year ended December 31, 2005).

23.1

Consent of Hansen, Barnett & Maxwell, P.C.***

23.2

Opinion of Perkins Coie LLP regarding legality of the Common Stock being registered (included in Exhibit 5.1).

*This exhibit constitutes a management contract or compensatory plan or arrangement.

** Contains material that has been omitted pursuant to a request for confidential treatment and such material has been filed separately with the Commission.

***Filed herewith.

Item 17. Undertakings

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;

(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 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.

(5) That, 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.

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.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this post-effective amendment to the 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 15th day of July, 2011.

International Isotopes Inc.

/s/ Steve T. Laflin

By: Steve T. Laflin
President and Chief Executive Officer

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
* Ralph M. Richart	Chairman of the Board	July 15, 2011
/s/ Steve T. Laflin Steve T. Laflin	Director, President, and Chief Executive Officer (Principal Executive Officer)	July 15, 2011
/s/ Laurie A. McKenzie-Carter Laurie A. McKenzie-Carter	Chief Financial Officer (Principal Finance and Accounting Officer)	July 15, 2011
* Christopher Grosso	Director	July 15, 2011

By: /s/ Steve T. Laflin

Steve T. Laflin

Attorney-in-fact



EXHIBIT INDEX

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Technical Support Services Agreement, dated May 30, 2008 (incorporated by reference to Exhibit 99.3 of the Company's Current Report on Form 8-K filed on June 5, 2008).

10.15

Form of Indemnification Agreement (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on September 17, 2008).

10.16

Letter Agreement dated April 9, 2008 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K filed on April 21, 2008).

10.17

Memorandum of Agreement dated October 22, 2009 between International Isotopes Inc. and New Mexico Environment Department (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on October 27, 2009).

10.18

Gemstone Processing Agreement between International Isotopes Inc. and Quali-Tech, Inc. (incorporated by reference to Exhibit 10.1 of Amendment No. 1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009 filed on September 24, 2009).

10.19

Manufacturing Agreement dated as of January 30, 2006 by and between International Isotopes Inc. and RadQual, LLC. (incorporated by reference to Exhibit 10.2 of Amendment No. 1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2009 filed on September 24, 2009).

10.20

Change in Terms Agreement dated April 20, 2009 with Compass Bank. (incorporated by reference to Exhibit 10.21 of the Company's Annual Report on Form 10-K for the year ended December 31, 2009).

10.21

Promissory Note with Texas State Bank for Commercial Loan (incorporated by reference to Exhibit 10.11 of the Company's Annual Report on Form 10-KSB for the year ended December 31, 2006).

10.22

De-Conversion Services Agreement dated April 13, 2010 by and between International Isotopes Fluorine Products, Inc. and Louisiana Energy Services, LLC. (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2010 filed on May 17, 2010).**

10.23

Employment Agreement, by and between International Isotopes Inc. and Stephen Laflin dated as of May 31, 2010 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on June 23, 2010).*

10.24

Work For Others Agreement by and between International Isotopes Inc. and Battelle Energy Alliance, LLC dated July 31, 2010 (incorporated by reference to Exhibit 99.1 of the Company's Current Report on Form 8-K filed on August 3, 2010).

10.25

Sales Agreement effective August 1, 2010 by and between International Isotopes Idaho, Inc. and NTP Radioisotopes (Pty) Ltd. (incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for period ended June 30, 2010).**

10.26

Registration Rights agreement by and between the Company and certain investors party thereto dated October 29, 2010 (incorporated by reference to Exhibit 99.2 of the Company's Current Report on Form 8-K filed on November 1, 2010).

10.27

Modification #1, dated as of December 22, 2010 to the Amended and Restated Employment Agreement entered into on June 23, 2010 by and between International Isotopes Inc. and Stephen Laflin (incorporated by reference to Exhibit 10.27 of the Company's Annual Report on Form 10-K for the year ended December 31, 2010).*

10.28

Modification #2, dated as of February 18, 2011 to the Amended and Restated Employment Agreement entered into on June 23, 2010 by and between International Isotopes Inc. and Stephen Laflin (incorporated by reference to Exhibit 10.28 of the Company's Annual Report on Form 10-K for the year ended December 31, 2010).*

21.1

Subsidiaries (incorporated by reference to the Company's Annual Report on Form 10 KSB for the year ended December 31, 2005).

23.1

Consent of Hansen, Barnett & Maxwell, P.C.***

23.2

Opinion of Perkins Coie LLP regarding legality of the Common Stock being registered (included in Exhibit 5.1).

*This exhibit constitutes a management contract or compensatory plan or arrangement.

** Contains material that has been omitted pursuant to a request for confidential treatment and such material has been filed separately with the Commission.

*** Filed herewith.