INTERNATIONAL ISOTOPES INC
Form 424B2
February 25, 2011

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**Base Prospectus**
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Filed Pursuant to Rule 424(b)(2)
Registration Statement No. 333-167566

**The information in this prospectus supplement is not complete and may be changed. This prospectus supplement and the accompanying base prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.**

**SUBJECT TO COMPLETION, DATED FEBRUARY 25, 2011**

**PRELIMINARY PROSPECTUS SUPPLEMENT**
**(To Prospectus dated June 28, 2010)**

# Shares of Common Stock

We are offering shares of our common stock at a price of Cdn.$ per share. See "The Offering" and "Underwriting" beginning on pages S-8 and S-44 of this prospectus supplement, respectively. We anticipate that the net proceeds of this offering will be between Cdn.$20 million and Cdn.$30 million.

Our common stock is quoted on the Over-the-Counter (OTC) Bulletin Board® under the ticker symbol "INIS.OB." On February 24, 2011, the last sale price of the common stock, as reported on the OTC Bulletin Board®, was $0.28 per share. We have applied to list our shares of common stock for trading on the TSX Venture Exchange (TSXV) under the ticker symbol "INS" upon the successful completion of this offering and subject to any other conditions to listing imposed by the TSXV.

**Investing in our common stock involves a high degree of risk. Before buying any shares of our common stock, you should read the discussion of material risks of investing in our common stock in "Risk Factors" beginning on page S-10 of this prospectus supplement.**

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

| | Per Share | Total |
|---|---|---|
| Public offering price | Cdn.$ | Cdn.$ |
| Underwriting discounts | Cdn.$ | Cdn.$ |

| | | |
|---|---|---|
| Proceeds, before expenses, to us | Cdn.$ | Cdn.$ |

The underwriters may also purchase up to an additional shares of common stock from us at the public offering price, less underwriting discounts, within 30 days from the closing of this offering, to cover over-allotments, if any, and for market stabilization purposes. See "Underwriting" beginning on page S-44 of this prospectus supplement. If the underwriters exercise the option in full, the total underwriting discounts will be Cdn.$ , and the total proceeds, before expenses, to us will be Cdn.$ million.

The underwriters expect the shares of common stock will be ready in book-entry form through the facilties of The Depository Trust Company on or about , 2011.

**Cormark Securities (USA) Limited**

**The date of this prospectus supplement is , 2011.**

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**Prospectus Supplement**



**Base Prospectus**



You should rely only on the information that is contained in or incorporated by reference into this prospectus supplement and the accompanying base prospectus or that is contained in any free writing prospectus we may authorize to be delivered to you relating to this offering. Neither we nor the underwriters have authorized anyone to provide you with information different from that contained in this prospectus supplement and the accompanying base 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 supplement and the accompanying base prospectus is accurate only as of the date on the front cover of this prospectus supplement and the accompanying base prospectus or the date of the document incorporated by reference herein or therein, as applicable. Our business, financial condition, results of operations, and prospects may have changed since those dates. Information in this prospectus supplement updates and modifies the information in the accompanying base prospectus and the information incorporated by reference therein. To the extent that any statements made in this prospectus supplement differ from those in the accompanying base prospectus, the statements made in the accompanying base prospectus and the information incorporated by reference therein are deemed modified or superseded by the statements made in this prospectus supplement. We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted.

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## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement relates to a registration statement that we filed with the United States Securities and Exchange Commission (SEC) utilizing a shelf registration process. Under this shelf registration process, International Isotopes Inc. may, from time to time, offer, sell and issue any of the securities or any combination of the securities described in the accompanying base prospectus in one or more offerings. The accompanying base prospectus provides you with a general description of the securities we may offer. This prospectus supplement contains specific information about the terms of this offering of common stock by International Isotopes Inc. This prospectus supplement may add, update or change information contained in the accompanying base prospectus and the documents incorporated by reference therein. You should read both this prospectus supplement and the accompanying base prospectus, together with the information described under the sections of this prospectus supplement entitled "Where You Can Find More Information" and "Incorporation of Certain Information by Reference" and any additional information you may need to make your investment decision. We have also filed a draft Canadian prospectus supplement and accompanying Canadian base prospectus with the securities commissions or similar regulatory authorities in the Provinces of British Columbia, Alberta, Manitoba and Ontario, Canada (collectively, the Canadian Offering Jurisdictions, and which Canadian-filed draft prospectus supplement and accompanying base prospectus we refer to as the Canadian Prospectus), pursuant to the multijurisdictional disclosure system implemented by the securities regulatory authorities in the United States and Canada. The securities qualified under the Canadian Prospectus may be offered and sold in the Canadian Offering Jurisdictions, subject to any applicable securities laws.

Prospective investors should be aware that the acquisition of the common stock described herein may have tax consequences both in the United States and Canada, as applicable. Such consequences for investors who are resident in, or citizens of, Canada or the United States may not be described fully in this prospectus supplement, the accompanying base prospectus, the documents incorporated by reference herein or therein or the Canadian Prospectus. See "Material United States Federal Income Tax Considerations for Non-U.S. Holders" in this prospectus supplement.

In this prospectus supplement, unless otherwise specified or the context otherwise dictates, the terms "International Isotopes," "INIS," the "Company," "we," "us," "our," or similar references mean International Isotopes Inc., together with its subsidiaries, unless it is clear that such terms refer only to International Isotopes Inc. Unless otherwise stated, currency amounts in this prospectus supplement are stated in United States dollars, or "$."

The registration statement that contains the accompanying base prospectus (SEC File No. 333-167566) (including the exhibits filed with and the information incorporated by reference into the registration statement) contains additional important business and financial information about our Company and the common stock that is not presented or delivered with this prospectus supplement. That registration statement, including the exhibits filed with the registration statement and the information incorporated by reference into the registration statement, can be read at the SEC website or at the SEC office mentioned under the section of this prospectus supplement entitled "Where You Can Find More Information."

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## GLOSSARY OF DEFINED TERMS

"**AHF**" means anhydrous hydrofluoric acid.

"**APTS**" means Advanced Process Technology Systems.

"**AREVA**" means AREVA Inc.

"**$BF_3$**" means boron trifluoride gas.

"**Canadian Offering Jurisdictions**" means British Columbia, Alberta, Manitoba and Ontario Provinces of Canada.

"**CDR**" means Conceptual Design Report.

"**DOE**" means United States Department of Energy.

"**EIS**" means Environmental Impact Statement.

"**EU**" means European Union.

"**Exchange Act**" means the United States Securities Exchange Act of 1934, as amended.

"**FEP**" means our fluorine extraction process.

"**$GeF_4$**" means germanium tetrafluoride.

"**GLE**" means GE-Hitachi Nuclear Energy's Global Laser Enrichment.

"**HF**" means hydrofluoric acid.

"**Honeywell**" means Honeywell International Inc.

"**IRS**" means the Internal Revenue Service.

"**LES**" means Louisiana Energy Services.

"**LLRW**" means Low Level Radioactive Waste.

"**MTU**" means Metric Tons Uranium.

"**NMED**" means New Mexico Environmental Department.

"**NRC**" means the United States Nuclear Regulatory Commission.

"**OTC**" means Over-the-Counter.

**"PCT"** means Patent Cooperation Treaty.

"**SEC**" means the United States Securities and Exchange Commission.

"**Securities Act**" means the United States Securities Act of 1933, as amended.

"**Sequoyah**" means Sequoyah Fuels Corporation.

"**$SiF_4$**" means silicon tetrafluoride.

"**$SiO_2$**" means silicon dioxide.

"**Starmet**" means Starmet Corporation.

"**SWU**" means Separative Work Unit.

"**TSXV**" means TSX Venture Exchange.

"**$UF_4$**" means uranium tetrafluoride.

"**$UF_6$**" means uranium hexafluoride.

"**$UO_2$**" means uranium oxide.

"**USEC**" means United States Enrichment Corp.

"**USRPHC**" means United States real property holding corporation.

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## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights information contained elsewhere or incorporated by reference in this prospectus supplement. This summary is not complete and may not contain all of the information that you should consider before investing in our common stock. Investors should carefully read the entire prospectus supplement, the accompanying base prospectus, including the "Risk Factors" section, and other documents incorporated by reference into this prospectus supplement and the accompanying base prospectus before making an investment decision.*

### Current Business

International Isotopes Inc. was formed as a Texas corporation in 1995. Our wholly-owned subsidiaries are International Isotopes Idaho, Inc., a Texas corporation; International Isotopes Fluorine Products, Inc., an Idaho corporation; and International Isotopes Transportation Services, Inc., an Idaho corporation. Our headquarters and all current operations are located in Idaho Falls, Idaho. Our business consists of six reportable segments which include: Nuclear Medicine Standards, Cobalt Products, Radiochemical Products, Fluorine Products, Radiological Services, and Transportation Services.

We develop and deploy products used in a variety of medical and industrial applications, including cancer treatment, nuclear pharmacy, medical diagnostics, medical therapy products, and radiation protection. Our cobalt products are used in a wide range of therapy devices for radiation treatment of cancer and vascular deformities of the brain. Cobalt sources are also used for container security examinations at United States sea ports and borders. Our radiochemicals, such as Iodine-131, are used in medicine for treatment of a host of thyroid diseases and disorders. Our calibration standards are used in nuclear pharmacy, from testing of imaging machines to calibration of patient dose measurement devices. These products are designed to help ensure that nuclear medicine pharmacies, procedures, and devices perform as intended to offer safe and effective patient treatment, therapy, or imaging. For a more detailed description of our business segments and current operations, please see our Annual Report on Form 10-K for the fiscal year ended December 31, 2009 filed with the SEC on March 31, 2010, which is incorporated by reference into this prospectus supplement and the accompanying base prospectus.

In addition to our current product lines, we expect a number of opportunities to arise out of the shift from foreign to domestic uranium enrichment and the large amount of depleted $UF_6$ tails which may be produced from these new domestic enrichment operations.

### Purpose of the Offering

We are raising funds in order to capitalize on a significant need that we believe exists within the nuclear fuel cycle to process the large volumes of depleted uranium hexafluoride ($UF_6$) that are expected to result from increased commercial uranium enrichment activities in the United States for the fabrication of nuclear fuel. Other than using a limited amount of the net proceeds to fund our general working capital needs, we intend to use all of the proceeds from this offering to fund our uranium de-conversion and fluorine extraction business and directly related businesses that are described herein. Using the funds raised in this offering, we intend to begin to pursue the construction of a depleted $UF_6$ de-conversion facility that we expect will provide "for-fee" de-conversion services to domestic commercial enrichment facilities. This de-conversion facility in its initial phase will be designed to produce depleted uranium tetrafluoride ($UF_4$) as a by-product of this de-conversion service, which can be used as the raw feed material in our fluorine extraction process (FEP). FEP is our patented technology for extracting high-purity fluoride gases from depleted $UF_4$. We believe that this new commercial opportunity will produce revenues through both the sale of de-conversion services as well as the sale of the fluoride products extracted using FEP in connection with de-conversion.

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Over the past six years we have made significant investments in our business and have achieved several important milestones, including:

- Successfully demonstrating, in our 8,000 square-foot pilot scale test facility in Idaho, the feasibility of FEP both for the production of germanium tetrafluoride gas ($GeF_4$) and boron trifluoride gas ($BF_3$);
- Acquiring the only intact, historically proven, depleted $UF_6$- $UF_4$ de-conversion facility, including software, design, and operating data in the Western hemisphere, which we plan to reassemble at a site in Lea County, New Mexico;
- Hiring an experienced subcontractor (Advanced Process Technology Systems (APTS)) to work on initial conceptual design and licensing of the project;
- Preparing a Conceptual Design Report (CDR) for the facility project that includes cost estimates for construction, and a more advanced set of project specifications that has allowed us to begin negotiations with design and build contractors for the project;
- Conducting extensive site location studies that have resulted in our being gifted (subject to formal land transfer) a suitable 640-acre site for the facility in Lea County, New Mexico;
- Entering into an agreement with the New Mexico Environment Department (NMED) to establish mutually agreeable operating limits and maximum inventories of material for the facility that are consistent with our business model planning;
- Obtaining approval from the Rocky Mountain Low-Level Radioactive Waste Board so that any depleted $UF_6$ can be imported into the region and not be considered a waste shipment provided it is being shipped to us for de-conversion and fluorine extraction;
- Completing a detailed market assessment of the fluoride gases, including silicon tetrafluoride ($SiF_4$) and $BF_3$, planned for production at our proposed facility for its initial phases, and confirmed this market assessment is consistent with our business model;
- Submitting a facility license application and environmental report to the United States Nuclear Regulatory Commission (NRC), which has accepted the application and is currently conducting the license review process;
- Completing and submitting loan applications to the United States Department of Energy (DOE) under its loan program for renewable energy projects to potentially provide up to approximately $97.9 million in debt financing for the facility project; and
- Entering into an off-take de-conversion services agreement with Louisiana Energy Services (LES) which is operating the URENCO USA enrichment facility located in Lea County, New Mexico, the largest new commercial uranium enrichment facility in the United States.

We have applied to obtain a listing on the TSXV upon the successful completion of this offering to increase and broaden awareness of our company and our activities and to create increased liquidity in our stock. We believe that the funds raised by this offering will provide us with sufficient operating capital to complete the design, engineering, and licensing activities over the next year and allow us to commence construction of the de-conversion facility in 2012. We anticipate construction will take approximately 12 months and that the facility will commence operations in 2013. We plan to continue to fund licensing activities, formal design, engineering and component testing related to a depleted $UF_6$ de-conversion and FEP facility, to make certain capital expenditures related to our de-conversion activities with the proceeds of

this offering, and support general working capital needs with the proceeds of this offering. In addition, we plan to seek additional agreements with other United States commercial uranium enrichment companies to provide de-conversion services and with prospective customers of our various fluoride products and anhydrous hydrofluoric acid (AHF) to be produced

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through de-conversion and FEP. The construction of the facility will be contingent upon our ability to raise, through additional equity offerings or debt financing, approximately $ million of additional capital in excess of what we raise in this offering.

**The Need to Be Addressed**

In order to use uranium as nuclear fuel it must be chemically processed and enriched. The first step in the process is uranium mining and milling to produce $U_3O_8$, or "yellow cake." Yellow cake is then converted to $UF_6$ gas through a multi-step chemical process using nitric acid, ammonium hydroxide, hydrogen, and finally hydrofluoric acid. $UF_6$ gas is then passed through a centrifuge at an enrichment facility. In the enrichment process, the concentration of the $U_{235}$ atoms present in $UF_6$ gas are increased from their naturally occurring level of 0.7% up to a level of 3-5% for fuel in commercial nuclear power plants. The enriched $UF_6$ is then converted into uranium oxide and fabricated into nuclear fuel. During the enrichment process, approximately 90% of the $UF_6$ emerges as depleted $UF_6$ "tails" in which the concentration of the $U_{235}$ atom has been reduced from 0.7% down to 0.25%. In the case of a typical 1,000 megawatt commercial nuclear reactor, approximately 37,000 pounds of enriched uranium is required to fuel the reactor for one year, which produces about 485,000 pounds of depleted $UF_6$ "tails."

Depleted $UF_6$ cannot be directly disposed of because it is chemically reactive and varies in physical state, from a gas, above 133°F, to a solid, below that temperature at normal atmospheric pressures. Therefore, in order to dispose of depleted $UF_6$, some or all of the fluorine must be removed in a process called de-conversion, which converts the uranium into a less or non-reactive oxide such as uranium oxide ($UO_2$) or $U_3O_8$. The depleted uranium can be disposed of in Low Level Radioactive Waste (LLRW) landfills that are licensed to receive such waste.

The United States currently imports about 90% of its enriched uranium for nuclear fuel in domestic nuclear reactors. Several companies have publicly announced that they are evaluating, planning or building new uranium enrichment facilities in the United States, including United States Enrichment Corp. (USEC), Inc., LES, AREVA, Inc. (AREVA) and GE-Hitachi Nuclear Energy's Global Laser Enrichment (GLE) project. These planned facilities are at various stages of design, construction, licensing and production. If and when all of these facilities are completed, at their initial stated capacity, we believe they will produce in excess of 80 million pounds of depleted $UF_6$ each year by about 2018.

Historically, depleted $UF_6$ tails have been stored outdoors in large 14-ton steel cylinders. According to the NRC, in the United States alone, there is already in excess of 1.5 billion pounds of depleted $UF_6$ in storage by the DOE, which the DOE estimates will take between 15 and 20 years to process at its de-conversion facilities. The European Union (EU) has similar storage issues, with thousands of steel cylinders on outdoor storage pads. We do not believe that these new commercial enrichment facilities will be able to rely on storage as a viable long-term solution to the management of depleted $UF_6$ for several reasons. First, the NRC has imposed, and we believe is likely to continue to impose, restrictions in the operating licenses granted to these enrichment facilities that limit the amount of onsite storage of $UF_6$. The NRC also imposes bonding requirements based on the amount of depleted $UF_6$ stored by these companies to cover the eventual de-conversion cost and disposal of such material. Additionally, there is a long history of environmental concerns with outdoor storage of the existing quantities of depleted uranium stored in the United States and abroad. The potential environmental liability in the EU and the United States related to the storage of this depleted $UF_6$ has heightened public awareness of this storage issue and increased public pressure for treatment, or de-conversion, and disposal of that material.

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**Strategy**

With the anticipated growth in United States domestic commercial enrichment activities, we believe that management of depleted $UF_6$ tails is a significant issue facing the nuclear power industry in the United States. Our strategy to address this issue is to secure de-conversion service contracts with enrichment facilities, whereby we will take the depleted $UF_6$ tails as they are generated and provide fee-based de-conversion services. We have already executed a de-conversion services agreement with LES, a subsidiary of URENCO, and operator of the newly constructed URENCO USA enrichment facility in Eunice, New Mexico. The site location we have chosen for our de-conversion facility is just 25 miles from the URENCO USA facility. We are currently negotiating with other commercial uranium enrichment companies to provide similar de-conversion services for their depleted $UF_6$ tails.

We believe that our competitive advantage to establish a de-conversion service business is our ability to combine de-conversion with our patented FEP process. By combining these processes we anticipate deriving revenue both from the for-fee $UF_6$ de-conversions and through the production and sale of high purity fluoride products from the fluorine that is extracted in the de-conversion process using the $UF_6$ as the raw materials for our FEP. Historically, there has been little or no economic incentive for de-conversion. The enrichment of $UF_6$ in the United States has historically been conducted on a fairly limited scale by the government or government supported facilities. Therefore, depleted $UF_6$ tails have been stored at various United States government sites or overseas where the enrichment process was carried out.

Combining FEP with a large-scale depleted $UF_6$ de-conversion project has the potential to produce millions of pounds of high-purity, high-value fluoride gases. We believe these gases can be sold to specialty gas suppliers or used to manufacture secondary products such as silane or even high-purity silicon itself. High-purity fluoride compounds are in growing demand for many cutting edge and high technology products. These specialty gases are in demand for ion-implantation, etchants, chemical vapor deposition processes for microelectronics, and manufacturing organic complexes for a host of applications in the petroleum industry. We anticipate that the full-scale production costs of these specialty gases using FEP will be low compared to processes used by our competitors. Because we anticipate generating fee revenue through de-conversion services that provides us with our raw materials ($UF_6$ and $UF_4$) at a net negative cost, we expect to have very competitive production costs for the fluoride end products.

We believe our proposed strategy will create a strong industrial business model with three revenue streams. First, we intend to generate revenue by providing "for-fee" de-conversion services. Second, we intend to produce revenue through the sale of fluoride gases produced through FEP or fluoride products produced from these gases. Third, we intend to produce revenue from the sale of AHF, also produced as a by-product of the de-conversion process. In addition, there may be opportunities to generate revenue by offering related services, such as transportation or cylinder cleaning and retesting. We believe our de-conversion service will provide a complete, economic, and relatively "green" solution for management of depleted $UF_6$ tails.

**Our Planned De-Conversion and FEP Facility (Phase I)**

We intend to construct a processing plant that will combine $UF_6$ de-conversion and FEP. The plant will consist of an area for de-converting depleted $UF_6$ into depleted $UF_4$ feedstock for FEP, a $UF_4$ storage area, a FEP production plant, and a waste packaging and cylinder refurbishment area. We anticipate integrating the de-conversion of depleted $UF_6$ with FEP in multiple phases. The proceeds of this offering are expected to be sufficient to complete the licensing, design and engineering of a facility capable of converting depleted $UF_6$ into $UF_4$, and then extracting fluoride gas from the $UF_4$ using FEP. We estimate that the total cost to implement our Phase I plans is approximately $125 million. We will, therefore, need to raise approximately $ million of additional capital after this offering for

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construction and working capital for this Phase I of the facility. Based on our current expectations regarding the timeline for licensing, design and construction of the planned facility, and assuming there are no significant unexpected events or delays and we are successful in raising the capital necessary to construct the facility, we anticipate beginning construction in 2012 and commencing the first phase of commercial operations in 2013. We anticipate that the Phase I facility will be capable of producing approximately 100,000 lbs $SiF_4$, 1.9 million lbs $BF_3$, and 900,000 lbs AHF from approximately 8,065,000 lbs of depleted $UF_6$, based on an annual availability of 85% for depleted $UF_6$ conversion and 85% for depleted $UF_4$ conversions during mature operations.

Historically, Sequoyah Fuels Corporation (Sequoyah) operated a depleted $UF_6$ to depleted $UF_4$ de-conversion facility in the United States that had been placed on care and maintenance since 1993. We evaluated that facility and found it to be in suitable condition and of proper scale for re-use as the de-conversion section of our Phase I de-conversion and FEP facility. On May 30, 2008, we acquired that facility from Sequoyah, along with all equipment deemed suitable for re-use, and engineering materials consisting of all historical operating data, original architectural design plans, engineering data, operating procedures, operating software, process knowledge and safety basis documents.

We completed an extensive site selection process in the latter half of 2008 that culminated in March 2009 in our selection of a location west of Hobbs, in Lea County New Mexico, for the proposed facility. The site selection process consisted of multiple site visits, public meetings in each location and completion of a questionnaire package by the appropriate government and economic development agencies in each of the prospective areas. Throughout this process, public acceptance of our business plan and our planned operations was a major consideration for site selection.

We have contracted with APTS to complete the conceptual design for the facility, help us complete the NRC license application, and support the NRC license review process. The planned facility will require an operating license and an Environmental Impact Statement (EIS) from the NRC. The start of construction of the depleted $UF_6$ de-conversion and FEP facility will be dependent upon the NRC's schedule for licensing and permitting, the critical path being its completion of the EIS for the facility. In December 2009, we submitted the license application to the NRC, including an Environmental Report and Integrated Safety Analysis Summary, to possess and use source and by-product material at the proposed facility. In February 2010, the NRC completed an acceptance review of the application and determined the application to be acceptable for formal review. The NRC has completed its initial technical review of our application and has provided us with requests for additional information. We have responded to nearly all of these requests and have not identified any significant omissions in our application or unresolved technical issues in preparing our responses. Based on the NRC's projection of administrative and technical review schedules, the agency has indicated that it anticipates completing the license review and issuing its Safety Evaluation Report and EIS by about January 2012. However, this date could change depending on NRC budget and resource constraints, the findings of the NRC's technical review, or other factors.

In addition to the NRC license application, we entered into an agreement with the NMED which sets forth certain limitations on quantities of materials and containers that can be stored at our facility. We do not expect these limitations to pose any barrier to our proposed operations. The agreement was requested by the NMED prior to our submitting a license application to the NRC. In the future, the state will require additional permits for construction and operations including ground, air, and water discharge. We have identified appropriate subcontractors and consultants that are experienced with preparing these permits in the State of New Mexico and do not anticipate any problems in their preparation and approval.

Our agreement with NMED also provides that LLRW produced by our facility will not be disposed of in New Mexico. Currently, the NRC is revising its regulations on the disposal of depleted uranium waste at LLRW disposal facilities that accept substantial quantities of depleted uranium, such as the

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volumes to be produced by our planned facility. These revised regulations may subject these disposal facilities to additional analyses, operational requirements, site-specific conditions and limitations. The NRC plans to complete the technical basis document for this rulemaking in early 2011; the proposed rule and draft guidance document by September 30, 2011; and the final rule by September 30, 2012. One potential requirement of the revised regulations is a performance assessment of the disposal site to demonstrate long-term protection of public health and the environment. Regardless of the outcome of this rulemaking process, we believe we will still be able to dispose of the waste and we anticipate that the disposal costs will be borne by our customers.

**Facility Funding**

We estimate that the total cost of the design, engineering and construction for this project will be approximately $125 million, significantly in excess of the funds anticipated to be raised in this offering. We have submitted a complete application to the DOE Loan Guarantee Office for a loan for the balance of the capital cost of the project in a principal amount up to $97.9 million. The application was made under the DOE's program solicitation for "Energy Savings in Manufacturing Processes" (solicitation # DE-FOA-0000140) titled Energy Efficient Fluorine Gas Production and Depleted Uranium De-conversion. The DOE loan program provides low cost loans for up to 80% of the capital cost of qualifying projects in the fields of energy and energy efficiency. If we are approved under this program, funding would be made available directly from the federal government, which we would not expect until the end of 2011. We believe that uranium de-conversion and FEP qualifies under this DOE solicitation because production of industrial fluoride gases using FEP is very energy efficient and uses, in the case of $BF_3$, approximately 40% of the energy used in existing production methods for $BF_3$. However, there can be no assurance that the DOE will determine our project to be a qualifying project or that the DOE will award us a loan.

The DOE loan program consists of a two part application process. We completed our initial Part 1 application in June 2010. The Part 1 application provides a general description of the project, including the technology, economic benefit, and justified suitability of the project under the renewable energy DOE solicitation program. Our Part 1 application included letters of support from both the Idaho and New Mexico delegations and a letter of support from the President of AREVA. The Part 2 application requires much greater detail about the technology and economics of the project and is required to include an independent engineering and credit worthiness assessment, which were completed and submitted to the DOE at the end of 2010. Both of those independent assessments submitted to the DOE favorably viewed the project under the requirements of the DOE loan office program. The DOE review of the application is expected to take about six months.

If the DOE loan application is unsuccessful, we will have to raise the balance of the funds required for Phase I of the planned facility through additional equity or debt financing. In parallel with our actions to pursue the DOE loan, we will also continue to work towards establishing additional supply and service agreements with prospective customers both for de-conversion services and the various fluoride products. We believe that these additional agreements, if entered into, would strengthen our position to complete additional equity raises or obtain alternative debt financing, or a combination of both, should the DOE loan not be approved.

**Market Competition**

We believe that our competitive position and business model give us an advantage over the various alternatives that commercial enrichment companies have for obtaining de-conversion services. To our knowledge, there are no other currently operating, or planned, commercial depleted $UF_6$ de-conversion facilities in the United States.

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The DOE has constructed two de-conversion plants that are in various stages of start-up testing for operations to process depleted $UF_6$, including the 1.5 billion pound stockpile of depleted $UF_6$ currently being stored by the DOE. The process technology adopted by the DOE in its de-conversion plants is to de-convert depleted $UF_6$ into $UO_2$ and produce large quantities of aqueous hydrofluoric acid (HF) by-product. The large volumes of aqueous HF the DOE will produce from these facilities has limited commercial value. Therefore, we believe the DOE will likely need to further process that aqueous HF, through neutralization, into waste. The DOE is required by law to accept depleted $UF_6$ from NRC licensed enrichment facilities, but the DOE is required to recover from such entities the full cost of providing those services. Therefore, if the DOE were to provide depleted uranium de-conversion services to commercial enrichment companies, the DOE would be required to charge them for the full cost of its de-conversion service. Because that charge could exceed estimates or quotations provided by the DOE in advance of providing the services, the full cost recovery requirement may subject these companies to additional financial exposure by way of retroactive charges and price volatility. Because we believe we will be in a position to offer lower prices due to our anticipated lower operating costs and ability to profit from the sale of fluoride products produced from FEP, we do not believe that the DOE facilities will be significant competitors to our commercial de-conversion services.

There are four $UF_6$ de-conversion facilities in the United States that de-convert enriched uranium for fuel fabrication and use the same chemical process that the DOE's depleted $UF_6$ de-conversion facility will use. However, we believe these four facilities will not be used to de-convert depleted $UF_6$ because of concerns with contaminating the high-value enriched uranium with depleted material and the scale of these facilities is not compatible with the large quantities of depleted $UF_6$ that will need to be processed.

Based on this lack of capacity for the de-conversion of commercially produced depleted $UF_6$ in the United States, we believe that, upon completion of our de-conversion facility, we will be well positioned in the market and will provide a valuable and economically viable service to our prospective customers, who will have limited alternatives. We believe that it is unlikely that any commercial enrichment company would construct its own depleted $UF_6$ de-conversion facility because there would be little, if any, financial incentive for such construction with the additional high capital costs and the inability to make such an operation economical on a small scale without a process such as FEP to extract additional value from the depleted material. Additionally, with transportation costs and EU regulations regarding disposal of uranium oxide, we do not believe that international de-conversion facilities, such as the AREVA facility in France, will be competitive for the de-conversion of depleted $UF_6$ produced in the United States.

**Toronto Venture Exchange Listing**

We have applied to list our shares of common stock for trading on the TSXV upon the completion of this offering. Our common stock is presently quoted on the OTC Bulletin Board®. Our Board of Directors is of the opinion that our exposure to investors and the financial community is limited on the OTC Bulletin Board®. The Toronto Stock Exchange and the TSXV together host more uranium companies than any other exchange globally, and as a result, the Toronto exchanges have become a center for uranium investors around the globe.

**Corporate Information**

Our principal executive offices are located at 4137 Commerce Circle, Idaho Falls, Idaho 83401, and our phone number is (208) 524-5300. Our website is located at www.internationalisotopes.com. Information contained on our website does not constitute, and shall not be deemed to constitute, part of this prospectus supplement, the accompanying base prospectus, the Canadian Prospectus or any other report or document we file with or furnish to the SEC or the securities regulatory authorities in the Canadian Offering Jurisdictions.

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**THE OFFERING**

| | |
|---|---|
| Issuer | International Isotopes Inc. |
| Securities offered by us | shares of our common stock. |
| Offering Price | Cdn.$ per share of common stock |
| Over-allotment option | shares of our common stock. Unless otherwise indicated, the information in this prospectus assumes no exercise of the underwriters' over-allotment option. |
| Common stock to be outstanding after the offering | shares ( shares if the underwriters exercise their over-allotment option to purchase additional shares in full)(1) |
| Use of proceeds | The net proceeds to us from the sale of the common stock offered hereby are expected to be approximately Cdn.$ (Cdn.$ if the underwriters exercise their over-allotment option to purchase additional shares of common stock in full) after deducting the underwriting discount and our estimated offering expenses. We intend to use the net proceeds of this offering (i) to fund continued licensing activities, formal design, engineering and component testing related to a depleted $UF_6$ de-conversion and FEP facility, (ii) for certain capital expenditures related to our de-conversion activities, and (iii) for general working capital purposes, as more fully described in the Section entitled "Use of Proceeds" beginning on page S-27 of this prospectus supplement. |
| Over the Counter Bulletin Board Symbol | INIS.OB. |
| Proposed TSXV Symbol | INS |
| Transfer Agent | The transfer agent and co-transfer agent for our common stock are Computershare Trust Company, N.A. in the United States, and Computershare Investor Services Inc. in Canada, respectively. |
| Risk factors | You should carefully read and consider the information set forth in "Risk Factors" beginning on page S-10 of this prospectus supplement and additional risks described in the documents we incorporate by reference before investing in our common stock. |

(1) The number of shares of our common stock that will be outstanding after this offering is based on the number of shares outstanding on 2011, and does not include:

425,000 shares of our common stock reserved for issuance upon conversion of the issued and outstanding shares of our Series B Convertible Redeemable Preferred Stock;

26,700,000 shares of common stock issuable upon exercise of outstanding options granted under our stock option plans, with a weighted average exercise price of $0.16 per share;

7,283,528 additional shares of common stock available for future issuance under our stock option plans;

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1,474,986 additional shares of common stock available for future issuance under our employee stock purchase plan;

56,552,969 shares of common stock reserved for issuance upon exercise of outstanding warrants; and

9,312,857 shares of common stock reserved for issuance upon conversion of convertible debentures; *plus* 4,656,429 shares of common stock issuable upon exercise of warrants that may be issued upon conversion of such convertible debentures.

To the extent that any options or warrants are exercised, new options are issued under our stock option plans or we otherwise issue additional shares of common stock or securities convertible into shares of common stock in the future, there will be further dilution to new investors.

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## RISK FACTORS

*Investing in our common stock involves a high degree of risk. The following risk factors should be considered carefully before you decide to buy our common stock. The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. If any of the events or circumstances discussed in these risk factors were to occur, our business, financial condition or results of operations would likely suffer. In that event, the trading price of our common stock could decline, and you could lose all or part of your investment. You should carefully consider the following factors, together with all of the other information included in or incorporated by reference in this prospectus supplement and the accompanying base prospectus, before you decide whether to invest in our common stock.*

### Risks Related To Our Proposed De-Conversion and FEP Business

***We do not have an operating history with respect to our strategy to combine de-conversion services and FEP produced fluoride gas products and this business may not succeed.***

We have no operating results with respect to providing de-conversion services or producing high volumes of fluoride gas products using FEP to date and, therefore, we do not have an operating history upon which you can evaluate this business or our prospects. Our prospects must be considered in light of the risks and uncertainties encountered in entering a new line of business. Some of these risks relate to our potential inability to:

- construct our planned de-conversion and FEP production plant and obtain the additional financing necessary for such construction;
- obtain the necessary regulatory approvals;
- secure additional agreements to provide de-conversion services, on acceptable terms, pursuant to which we would obtain the depleted $UF_6$ necessary for de-conversion and produce depleted $UF_4$ for FEP operations;
- produce commercially economic volumes of high purity fluoride gas using FEP;
- secure customers for our fluoride gas products, on acceptable terms;
- effectively manage this new business and its operations;
- successfully establish and maintain our intended low-cost structure;
- successfully obtain disposal services for our depleted uranium waste stream; and
- successfully address the other risks described throughout this prospectus.

If we cannot successfully manage these risks, our business and results of operations and financial condition will suffer.

***We will need to raise significant additional funds to complete the construction of our de-conversion and FEP facility.***

We anticipate that the proceeds of this offering will be primarily used to fund continued licensing activities, formal design, engineering and component testing related to a depleted $UF_6$ de-conversion and FEP facility, and for certain capital expenditures related to our de-conversion

services. We estimate that the total cost to implement our Phase I plans is approximately $125 million. We will, therefore, need to raise approximately $ million of additional capital after this offering for construction and working capital for Phase I of the facility. There is no guarantee that we will be able to raise the additional capital required to complete the facility on acceptable terms, or at all. In addition, the total funds required to complete this project have been based upon early preliminary estimates and there

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can be no assurance that unforeseen expenses will not be incurred and additional funding required to complete the project. As of December 31, 2010, we have two outstanding loans with Compass bank. One loan carries an outstanding balance of $32,547 with an interest rate of 9.2%, and matures September 15, 2011. The second loan matures April 20, 2011, and has an outstanding balance of $407,083, with an interest rate of 7.25%. Both of those loans are secured by our accounts receivable and fixed assets. We also owe $500,000 to our former Chairman of the Board pursuant to a note that matures in April 2012. Principal and interest payments on this note are paid annually based upon net profits (annual principal payment to equal to 30% of net pre-tax profits). On February 24, 2010, we sold convertible debentures for an aggregate amount of $3,075,000, and at December 31, 2010 the amount outstanding of such debt was $2,782,137 (net of beneficial conversion feature of $292,863. Although cash flow from current operations is adequate to support our current operating activities and periodic payments on these notes, alternate sources of funding will be necessary to pay off these notes at maturity should we not be able to renew and extend their terms.

***We may be unsuccessful in obtaining a loan from the DOE to complete construction of our de-conversion and FEP facility.***

We have submitted an application to the DOE Loan Guarantee Office for a loan for the construction of our de-conversion and FEP facility. The DOE loan program provides low cost loans for up to 80% of the capital cost of qualifying projects in the fields of energy and energy efficiency. There can be no guarantee that the DOE will determine our project to be a qualifying project or that the DOE will award us a loan. If the loan application is unsuccessful, we will have to raise the balance of the funds required for the planned facility through additional equity or debt financing. There can be no assurance that we will be able to secure additional equity or debt financing on acceptable terms, or at all, if the DOE loan is not available.

***The market for our de-conversion services may be adversely affected if planned enrichment facilities that would create by-products suitable for our de-conversion services are not completed.***

We plan to build a de-conversion and FEP production plant, in part, to process the anticipated $UF_6$ by-product from certain enrichment facilities being planned by several companies, including USEC, LES, AREVA, Inc. and GLE. If these anticipated enrichment facilities are not completed, we may not have sufficient demand for our de-conversion services to realize the expected economic benefit from our planned de-conversion and FEP production plant.

***We currently have only one contract to provide de-conversion services to an enrichment firm.***

We currently have only one effective de-conversion services agreement, such agreement being with LES. The agreement is conditional upon, among other things, each party obtaining necessary third party and government approvals, LES obtaining the approval of the NRC to the amendment of a provision in LES's materials license that prohibits shipments of depleted uranium to de-conversion facilities employing AHF in the de-conversion process, and our meeting certain performance milestones in the construction and start-up of the planned facility. The initial term of the agreement extends for a period sufficient to cover five years of de-conversion services once our planned uranium de-conversion facility is operational, based on operations starting no later than January 1, 2014. If we cannot demonstrate certain production capacities in accordance with the agreement, LES has the option to terminate the agreement and we would have no opportunity to cure pursuant to the terms of the agreement.

We need to secure additional de-conversion services agreements in order to operate our Phase I de-conversion and FEP facility at its currently planned capacity; however, there can be no assurance that additional de-conversion services agreements will be secured. Failure to meet the conditions set forth in the agreement with LES, or a failure to obtain additional off take agreements or sufficient

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quantities of depleted $UF_6$ for de-conversion would have a significant and direct impact on our ability to complete the project and our ability to generate revenue from our de-conversion and FEP facility.

***There is no history of large-scale commercial fluoride gas production utilizing FEP.***

We have successfully demonstrated the feasibility of using FEP to produce $GeF_4$ and $BF_3$. Starmet Corporation (Starmet), which was the original patent owner and developer of the FEP process, also used FEP to produce $SiF_4$. However, FEP has not been used for large-scale commercial production of the size and magnitude envisioned in conjunction with the de-conversion process and there may be technical issues and process challenges related to the utilization of FEP for large-scale commercial production. Unforeseen issues associated with constructing and scaling up these new FEP operations could significantly impact our proposed schedule and our overall ability to produce high-purity fluoride gas in the quantities anticipated.

***We cannot guarantee that we will secure customers for our fluoride gas products or that there will be a significant market for such products at the time we expect to begin our FEP operations.***

The successful and economical operation of the depleted $UF_6$ de-conversion and FEP facility will require that we reach agreement with one or more commercial companies for the sale of our fluoride products. At the present time, we do not have any contracts or other commitments from customers to purchase our fluoride gas. Failure to secure such sales agreements would have a significant and direct impact on our ability to ultimately complete the project and earn revenues from fluoride gas production.

Our beliefs with respect to market opportunities for fluoride gas, including information with respect to pricing, market size and growth, are based on information available to us. There can be no guarantee as to the accuracy of such information or that the information will be accurate as of the time that we have completed construction of our de-conversion and FEP facility. The size of the fluoride gas market, the price of various fluoride gases and the market acceptance of our fluoride gas products are subject to many factors beyond our control, including general economic conditions and demand for fluoride gases at the time we begin FEP operations. Furthermore, we may be unsuccessful in obtaining market share at acceptable prices.

***The licensing and environmental permitting process with respect to the construction of our planned depleted $UF_6$ de-conversion and FEP facility is ongoing and we cannot guarantee the amount of time required to obtain approval from the NRC and the State of New Mexico for operation of these facilities, or that approval will be granted at all.***

The timeframe discussed in this prospectus for obtaining NRC licensing is based upon the NRC's best estimates of the time required to complete the license application review. However, we have no control over the actual time required by the NRC to complete its review and the environmental review process entails a series of public meetings that could delay or disrupt the license process. Furthermore, the NRC may decline to grant the required licenses, which would have a material adverse effect on our business plans.

Several federal, state and local environmental permits will be required to be issued, or authorizations obtained, prior to commencement of construction and/or operations. We are at various stages of evaluating required permits and preparing application materials for the various permits, including without limitation air quality, surface and ground water quality, and waste related permits. At this point, we cannot be certain that we will be able to obtain all required permits, that there will not be significant permitting related delays, or that permits will be obtained with favorable permit terms.

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***The DOE is obligated to take depleted uranium from enrichment companies.***

The DOE has constructed two depleted uranium de-conversion facilities. These facilities will be obligated to process depleted uranium produced from United States commercial uranium enrichment facilities. We cannot assure you that enrichment companies will not select the DOE as their de-conversion service provider. If we are unable to meet the milestones required by our de-conversion services agreement with LES and it terminates that agreement, and other enrichment companies select the DOE as their de-conversion services provider, we will not be able to realize the expected economic benefit from our planned de-conversion and FEP production plant

***We will be handling large quantities of depleted $UF_6$ and fluoride gases, which are radioactive and hazardous materials respectively, and are subject to intense regulation.***

The hazardous nature of depleted $UF_6$ and fluoride gases affects the actions we are required to take for licensing, air permitting, environmental review, emergency response, liability insurance, personnel training, and generally increases the level of concern by the general public with respect to our handling of these materials. All of these factors complicate the licensing and operations processes and involve a host of additional regulatory factors that could affect the timeline for completing our de-conversion and FEP facility and cost estimates, and involve political pressures that could negatively influence operations. Additionally, the NRC is revising its regulations on the disposal of depleted uranium waste at LLRW disposal facilities that accept substantial quantities of depleted uranium. Any changes to the current regulations may result in increased disposal costs that we intend to pass through to our customers, which, depending on the significance of the increased cost, may cause potential customers to continue to store their depleted $UF_6$.

***We will be subject to competition from the DOE and other companies.***

While there are no currently operating commercial depleted $UF_6$ de-conversion facilities in the United States, there are four $UF_6$ de-conversion facilities in the United States that de-convert enriched uranium for fuel fabrication and the DOE is currently building two de-conversion plants intending to process depleted $UF_6$, including the 1.5 billion pounds of depleted $UF_6$ stored by the DOE. Additionally, AREVA currently operates a de-conversion plant in France, URENCO a facility in the U.K. and Rosatom has constructed a facility in Russia. There can be no guarantee that the existing $UF_6$ de-conversion facilities will not build additional facilities to expand their operations and compete with us in providing de-conversion services or that commercial enrichment companies will not choose to ship their depleted $UF_6$ overseas for processing in France, the U.K. or Russia.

***We currently do not hold title to the property in Lea County, New Mexico where the plant is to be constructed.***

The property location for our planned facility is contained in Lea County, New Mexico. Lea County has agreed to transfer the property to us under the provisions of the New Mexico Local Economic Development Act; however, the transfer will require a title insurer to evaluate and agree with the legal soundness of the transfer process. We anticipate that title to this property will be transferred to us pursuant to the New Mexico Local Economic Development Act. Until we complete initial environmental studies to assess the possibility of threatened or endangered species on the land and the land transfer process is completed, there can be no guarantee that the transfer will be completed or that the property will be acceptable to us for the construction of the planned facility.

***We may incur significant additional costs if the equipment we plan to re-use from the Sequoyah de-conversion facility to build our de-conversion and FEP production facility is not suitable for use in the planned de-conversion and FEP production facility.***

We plan to dismantle and re-use the Sequoyah de-conversion facility to construct our de-conversion and FEP production facility. The Sequoyah facility was used to de-convert depleted $UF_6$

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to depleted $UF_4$. It has remained idle since 1993. The Sequoyah facility may contain unanticipated defects, age-related wear or other issues that make it unsuitable for re-use in our de-conversion and FEP production facility. We could incur significant additional costs and delays if we have to construct or otherwise secure components of the de-conversion and FEP production facility that we had planned to re-used from the Sequoyah facility.

***After completing Phase I of our planned de-conversion and FEP production facility, we may not have sufficient earnings to complete additional planned phases of the facility.***

We plan to integrate the de-conversion of depleted $UF_6$ with FEP in multiple phases. After funding Phase I, we plan to fund additional phases through earnings. If we do not realize the earnings necessary to fund these additional phases, we may need to find other sources of capital. There is no guarantee that we will be able to raise the additional capital required to complete these phases on acceptable terms, or at all. In addition, the total funds required to complete these phases have been based upon early preliminary estimates and there can be no assurance that unforeseen expenses will not be incurred and additional funding required to complete these phases will be obtained.

***Our business may be harmed if we fail to protect our proprietary FEP technology utilized in our planned de-conversion and FEP production facility.***

We rely on patents to protect our intellectual property rights to the FEP technology to be used in our planned de-conversion and FEP production plant. Although we have filed a corresponding international Patent Cooperation Treaty (PCT) application to seek international protection for the FEP process, we currently have no international protection for our FEP process. We cannot be certain that the FEP-related patents will be issued in all countries where our patents can be practiced. Further, our competitors may also be able to design around our patents. The laws of some countries in which our FEP patents are or may be practiced may not protect our products or intellectual property rights to the same extent as do the laws of the United States, increasing the possibility of piracy of our patents. Although we intend to vigorously defend our intellectual property rights, we may not be able to prevent misappropriation of our FEP technology. Our competitors may also independently develop technologies that are substantially equivalent or superior to our technology.

We may need to engage in legal actions to enforce our intellectual property rights to the FEP technology, which could require the spending of a significant amount of resources and the attention and efforts of our management and technical personnel. Accordingly, we may initiate claims or litigation against third parties for infringement of our proprietary rights to FEP technology or to establish the validity of our proprietary rights. Our involvement in any patent dispute or other intellectual property dispute could have a material adverse effect on our business. Adverse determinations in any litigation could subject us to significant liabilities to third parties, require us to seek licenses from third parties and prevent us from manufacturing and selling our products. Any of these situations could have a material adverse effect on our business.

**Risks Related To Our Current Business Operations**

***We are dependent on various third parties in connection with our business operations.***

The production of high specific activity cobalt is dependent upon the DOE, and its prime-operating contractor, which controls the Idaho reactor. Loss of the ability to use these irradiation services would significantly impact our cobalt products business segment because there is not currently another reactor available in the United States that is capable of providing this type of service for us. Our gemstone production is tied to an exclusive agreement with Quali-Tech, Inc., and future gemstone irradiation services are dependent upon the continuation of that agreement. Should this agreement terminate, sales in our radiological services would be negatively impacted because the agreement prohibits us from processing gemstones for other customers for two years after the agreement

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terminates. Our nuclear medicine calibration and reference standard manufacturing is conducted under an exclusive contract with RadQual, LLC, which in turn has agreements in place with several companies for marketing and sales.

One of our main core business segments, cobalt products, is dependent on continued access to the Idaho research reactor and our continued ability to carry out work under the DOE's Federal Work for Others non-government sponsor programs. Our radiochemical iodine is supplied through a contract with a single supply source. Unanticipated contract terminations by any of these suppliers and other third parties can have a material adverse impact on operations, financial results, and cash flow.

***We are dependent on a limited number of customers in connection with our current business operations***.

During 2010, sales to one major customer accounted for 54% of our total gross revenue. Sales under exclusive contract with this customer represented 29%, 29%, and 33% of our total gross revenues for the years ended December 31, 2010, 2009, and 2008, respectively. Combined sales to our three largest customers accounted for 77% of our total gross revenues during 2010. Combined sales to these three customers accounted for 51% of gross revenue in 2009 and 50% in 2008. Although we are making efforts to reduce our dependency on a small number of customers, the loss of any one of these significant customers could have a significant impact on our future results of operations and financial condition. Unanticipated contract terminations by any of these current customers could have a material adverse impact on operations, financial results, and cash flow.

***We are subject to competition from other companies.***

Each of our existing business areas has direct competition from other businesses. High specific activity cobalt is supplied by other reactor facilities around the world. Nuclear medicine calibration and reference standards are being produced by one other major manufacturer in the United States. Most of our radiochemicals are also manufactured by several other companies in the world, and there are other suppliers of high-purity fluoride products. Each of our competitors has significantly greater financial resources that could give them competitive advantage over us.

**Risks Related To Our Company Generally**

***We have incurred and may continue to incur losses.***

With the exception of 2002, we have incurred net losses for most fiscal periods since our inception. From inception through September 30, 2010, we have generated $50,414,399 in revenues and accumulated deficit (including preferred stock dividends and returns) in the amount of $ 104,089,288. The negative cash flow we have sustained has materially reduced our working capital, which in turn, could materially and negatively impact our ability to fund future operations. Management has taken, and continues to take, actions to improve our results. The availability of necessary working capital, however, is subject to many factors beyond our control, including our ability to obtain favorable financing, economic cycles, market acceptance of our products, competitors' responses to our products, the intensity of competition in our markets, and the level of demand for our products.

***Our operations expose us to the risk of material environmental liabilities.***

We are subject to potentially material liabilities related to the remediation of environmental hazards and to personal injuries or property damages that may be caused by hazardous substance releases and exposures. The materials used in our operations subject us to risks of environmental contamination that subject us to liability, including remediation obligations that could be very costly. In addition, the discovery of previously unknown contamination could require us to incur costs in the future that would have a negative effect on our financial condition or results of operations. An irrevocable, automatically renewable letter of credit against a certificate of deposit at Wells Fargo Bank

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N.A. has been used to provide the financial assurance required by the NRC for our Idaho facility license for decommissioning upon termination of operations and a similar mechanism will be required to fund the decommissioning of the new facility. However, if a contamination event from the spread of uranium occurs within, or outside, of our facility, we would be financially responsible to remediate such spills and could have to borrow money or fund the remediation liability from our future revenue. We may not be able to borrow the funds, or have available revenue, sufficient to meet this potential liability, which could have a significant negative impact on our results of operations.

***We are dependent upon key personnel.***

Our ongoing operations are dependent on Steve T. Laflin, President and Chief Executive Officer. The loss of Mr. Laflin could have a material adverse effect on our business. We have a $2 million key man life insurance policy on Mr. Laflin and an employment agreement that extends through April 30, 2011. There is no assurance that we will be able to retain Mr. Laflin or our existing personnel or attract additional qualified employees. The loss of any of our key personnel or an inability to attract additional qualified employees could result in a significant decline in revenue.

***General economic conditions in markets in which we do business can impact the demand for our goods and services. Decreased demand for our products and services can have a negative impact on our financial performance and cash flow.***

Demand for our products and services, in part, depends on the general economic conditions affecting the countries and industries in which we do business. A downturn in economic conditions in a country or industry that we serve may negatively impact demand for our products and services, in turn negatively impacting our operations and financial results. Further, changes in demand for our products and services can magnify the impact of economic cycles on our businesses. For instance, our topaz gemstone processing is affected by the demand for luxury items such as jewelry as well as by the instability of foreign markets which are key in the manufacture of products using irradiated gemstones.

***Volatility in raw material and energy costs, interruption in ordinary sources of supply and an inability to recover unanticipated increases in energy and raw material costs from customers could result in lost sales or significantly increase the cost of doing business.***

Market and economic conditions affecting the costs of raw materials, utilities, energy costs, and infrastructure required to provide for the delivery of our goods and services are beyond our control and any disruption or halt in supplies, or rapid escalations in costs could affect our ability to manufacture products or to competitively price our products in the marketplace. For instance, an interruption in the supply of isotopes such as cobalt -57 or iodine -131 could result in lost sales of nuclear medicine and calibration standards sales and radiochemical products

***We are subject to extensive government regulation in jurisdictions around the globe in which we do business. Regulations address, among other things, environmental compliance, import/export restrictions, healthcare services, taxes and financial reporting, and can significantly increase the cost of doing business, which in turn can negatively impact our operations, financial results and cash flow.***

We are subject to government regulation and intervention both in the United States and in all foreign jurisdictions in which we conduct business. Compliance with applicable laws and regulations results in higher capital expenditures and operating costs and changes to current regulations with which we must comply can necessitate further capital expenditures and increases in operating costs to enable continued compliance. Additionally, from time to time, we may be involved in legal or administrative

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proceedings under certain of these laws and regulations. Significant areas of regulation and intervention include the following:

**Radioactive Waste.** All of our manufacturing processes generate some radioactive waste. We must handle this waste pursuant to the Low Level Radioactive Waste Policy Act of 1980, which requires the safe disposal of mildly radioactive materials. The estimated costs for storage and disposal of these materials have been included in the manufacturing and sales price of our products. However, actual disposal costs are subject to change at the discretion of the disposal site and are ultimately applied at the time of disposal. The NRC is revising its regulations on the disposal of depleted uranium waste at LLRW disposal facilities that accept substantial quantities of depleted uranium. If commercial LLRW disposal facilities are not readily available to us, we may not be able to provide the de-conversion services at the level assumed by our business model.

**Health Compliance.** Health regulations, dictated by the United States Occupational Safety and Health Administration and NRC are extensive in our business. There is no assurance that our activities will not at times result in liability under health regulations. Costs and expenses resulting from such liability may materially negatively impact our operations and financial condition. Overall, health laws and regulations will continue to affect our business worldwide.

**Environmental Regulation.** We are subject to various federal, state, local and foreign government requirements regulating the discharge of materials into the environment or otherwise relating to the protection of the environment. These laws and regulations include, but are not limited to the Comprehensive Environmental Response, Compensation, and Liability Act, the Resource Conservation and Recovery Act and state statutes such as the Idaho Hazardous Waste Management Act, the Low Level Radioactive Waste Policy Act of 1980, NRC regulations concerning various irradiated, radioactive, and depleted uranium materials, and United States Department of Transportation regulations concerning shipment of radioactive materials. Certain of these laws and regulations can impose substantial fines and criminal sanctions for violations, and require installation of costly equipment or operational changes to limit emissions and/or decrease the likelihood of accidental hazardous substance releases. We incur, and expect to continue to incur capital and operating costs to comply with these laws and regulations. In addition, changes in laws, regulations and enforcement of policies, or the imposition of new clean-up requirements or remedial techniques could require us to incur costs in the future that would have a negative effect on our financial condition or results of operations.

**Import/Export Regulation.** We are subject to significant regulatory oversight of our import and export operations due to the nature of our product offerings. Penalties for non-compliance can be significant and violations can result in adverse publicity.

**Taxes.** We structure our operations to be tax efficient and to make use of tax credits and other incentives. Nevertheless, changes in tax laws, actual results of operations, final audit of tax returns by taxing authorities, and the timing and rate at which tax credits can be utilized can change the rate at which we are taxed, thereby affecting our financial results and cash flow.

**Financial Accounting Standards.** Our financial results can be impacted by new or modified financial accounting standards.

***We may incur material losses and costs as a result of product liability claims that may be brought against us.***

We face an inherent business risk of exposure to product liability claims in the event that products supplied by us fail to perform as expected or such failures result, or are alleged to result, in bodily injury. Although we have purchased insurance with coverage and in amounts that we believe to be adequate and reasonable in light of our current and planned operations, including our new uranium de-conversion and fluoride gas production business, if a successful product liability claim if brought against us in excess of our available insurance coverage or established reserves, it would have a material adverse effect on our business and financial results.

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***Our earnings, cash flow and financial position are exposed to financial market risks worldwide, including interest rates.***

Fluctuations in domestic and world markets could adversely affect interest rates and impact our ability to obtain credit or attract investors. Such market risk could have a negative impact on future business opportunities including our ability to raise additional capital for planned business expansion. We also purchase some of our radiochemical products from overseas suppliers and the price of those products could be adversely affected through changes in currency exchange rates.

***Catastrophic events such as natural disasters, pandemics, war and acts of terrorism could disrupt our business or the business of our suppliers or customers, and any such disruptions could have a negative impact on our operations, financial results and cash flow.***

Our operations are at all times subject to the occurrence of catastrophic events outside our control, ranging from severe weather conditions such as hurricanes, floods, earthquakes and storms, to health epidemics and pandemics, to acts of war and terrorism. Any such event could cause a serious business disruption that could affect our ability to produce and distribute our products and possibly expose us to third-party liability claims. Additionally, such events could impact our suppliers, in which event energy and raw materials may be unavailable to us, and our customers, who may be unable to purchase or accept our products and services. Any such occurrence could have a negative impact on our operations and financial condition.

***Our future growth is largely dependent upon our ability to develop new technologies that achieve market acceptance with acceptable margins.***

Our businesses operate in global markets that are characterized by rapidly changing technologies and evolving industry standards. Accordingly, our future growth rate depends upon a number of factors, including our ability to (i) identify emerging technological trends in our target end-markets, (ii) develop and maintain competitive products, (iii) enhance our products by adding innovative features that differentiate our products from those of our competitors, and (iv) develop, manufacture and bring products to market quickly and cost-effectively.

Our ability to develop new products based on technological innovation can affect our competitive position and requires the investment of significant resources. These development efforts divert resources from other potential investments in our businesses, and they may not lead to the development of new technologies or products on a timely basis or that meet the needs of our customers as fully as competitive offerings. In addition, the markets for our products may not develop or grow as we currently anticipate. The failure of our technologies or products to gain market acceptance due to more attractive offerings by our competitors could significantly reduce our revenues and adversely affect our competitive standing and prospects.

***Protecting our intellectual property is critical to our innovation efforts***.

We currently own a number of United States patents; however, our intellectual property rights may be challenged, invalidated, unenforceable, infringed upon by third parties, or otherwise compromised, including validity challenges through reexamination before the United States Patent Office and/or litigation based upon alleged disclosures in the prior art of our patented concepts or a challenge that one or more of our patents is obvious in view of the prior art. Additionally, we may be unable to maintain, renew or enter into new licenses of third party proprietary intellectual property as necessary on commercially reasonable terms. Moreover, under current United States patent law, United States patents, and the associated rights, expire 20 years after the earliest priority date. Some of our earliest patents related to FEP are set to expire in 2018. In some non-United States countries, laws affecting intellectual property are uncertain in their application, which can affect the scope or enforceability of

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our patents and other intellectual property rights. Any of these events or factors could diminish or cause us to lose the competitive advantages associated with our intellectual property, subject us to judgments, penalties and significant litigation costs, and/or temporarily or permanently disrupt our sales and marketing of the affected products or services.

**Risks Related To Our Common Stock and This Offering**

***Trading in our common stock is limited and the price of our common stock may be subject to substantial volatility.***

Our common stock has historically been quoted on the OTC Bulletin Board® under the ticker symbol "INIS.OB.," The market for our securities is limited, the price of our stock is volatile, and the risk to investors in our common stock is greater than the risk associated with stock trading on other markets. These factors may reduce the potential market for our common stock by reducing the number of potential investors. This may make it more difficult for investors in our common stock to sell shares to third parties or to otherwise dispose of their shares. This could cause our stock price to decline.

We have applied to list our shares of common stock for trading on the TSXV upon the successful completion of this offering. Although we anticipate that this listing, if obtained, will increase the potential market for our common stock, we cannot forecast the effect that the listing will have on the market for our common stock or the volatility of the market for our common stock.

Additionally, the price of our common stock may be volatile as a result of a number of factors, including, but not limited to, the following:

- our ability to complete the planned de-conversion facility on the planned schedule or at all;
- our ability to successfully conceive and develop new products and services to enhance the performance characteristics and methods of manufacture of existing products;
- our ability to successfully execute our business plan;
- our ability to retain existing customers and customers' continued demand for our products and services;
- the timing of our research and development expenditures and of new product introductions;
- the timing and level of acceptance of new products or enhanced versions of our existing products; and
- price and volume fluctuations in the stock market at large which do not relate to our operating performance.

***Our common stock is subject to currency exchange rate risk.***

Our common stock is quoted and traded in United States dollars on the OTC Bulletin Board®, which may trade differently from our common stock that we expect to be traded in Canadian dollars on the TSXV. In addition, fluctuations in the exchange rate between the Canadian dollar and the United States dollar will likely affect the relative value of our common stock in the two different currencies and, as a result, will likely affect the market price of the common shares quoted on the OTC Bulletin Board®. These trading differences and currency exchange fluctuations may affect the market value of our common stock. The Canadian dollar has been subject to fluctuations against the United States dollar in the past, and may be subject to significant fluctuations in the future. Previous fluctuations or periods of relative stability in the exchange rate of the Canadian dollar and the United States dollar are not necessarily indicative of fluctuations or periods of relative stability in those rates that may occur in the future. The exchange rate between the Canadian dollar and the United States dollar is the result of the supply of, and the demand for, those currencies. Changes in the exchange rate result over time

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from the interaction of many factors directly or indirectly affecting economic and political conditions in Canada and the United States, including economic and political developments in other countries. Of particular importance are rates of inflation, interest rate levels, the balance of payments and the extent of governmental surpluses or deficits in Canada and the United States, all of which are in turn sensitive to the monetary, fiscal and trade policies pursued by Canada, the United States and other jurisdictions important to international trade and finance.

***You will suffer an immediate and substantial dilution in the net tangible book value of the common stock you purchase and may suffer additional dilution upon any future exercise of outstanding options and warrants to purchase our common stock.***

The offering price of our common stock will be substantially higher than the un-audited net tangible book value per share of our common stock of $ (or Cdn.$ ) as of , which is based on shares of our common stock outstanding as of that date and assumes no exercise of outstanding options or warrants. Based on the assumed offering price of Cdn.$ per share of common stock and after taking into account applicable underwriting discounts and estimated offering expenses payable by us, if you purchase common stock in this offering, you will suffer immediate and substantial dilution of $ (or Cdn.$ )per share in the net tangible book value of the common stock.

As of February , 2011, there were approximately 26,700,000 shares of common stock issuable upon exercise of stock options outstanding, at a weighted average exercise price of $0.16 per share. An additional 8,758,514 shares of common stock are reserved for issuance under our 2006 Equity Incentive Plan and our Employee Stock Purchase Plan as of February , 2011. We expect to issue additional options to purchase shares of our common stock to compensate employees and consultants, and may issue additional shares to raise capital. Any such issuances will have the effect of further diluting the interest of the holders of our securities. Also outstanding as of February , 2011, are warrants for the issuance of an additional 56,552,969 shares of common stock. We also have 425,000 shares of common stock reserved for issuance upon conversion of our issued and outstanding shares of Series B Convertible Redeemable Preferred Stock.

Additionally, we have issued convertible debentures with an aggregate principal balance of $3,075,000, which accrued a fixed sum of interest equal to 6% of the principal amount automatically upon issuance. These debentures are convertible at the option of the holders into shares of our common stock at an initial conversion price equal to $0.35, subject to certain adjustments. Upon maturity on August 24, 2011, 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 our 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 investors holding such debentures will 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.

***We have discretion as to the use of the proceeds from this offering in connection with our proposed de-conversion and FEP business and may not obtain a significant return on the use of these proceeds.***

Our management has discretion as to how to spend the proceeds from this offering in connection with our proposed de-conversion and FEP business and may spend these proceeds in ways with which our shareholders may not agree. We anticipate using the proceeds from this offering to fund continued licensing activities, formal design, engineering and component testing related to a depleted $UF_6$ de-conversion and FEP facility, for certain capital expenditures related to our de-conversion activities,

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and for general working capital purposes. See "Use of Proceeds." Investment of the proceeds may not yield a favorable return for us or our shareholders.

***We currently do not intend to pay dividends on our common stock.***

We currently do not plan to pay dividends on shares of our common stock in the near future. Consequently, your only opportunity to achieve a return on your investment in us will be if the market price of our common stock appreciates.

***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 $UF_6$ 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.

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## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying base prospectus, and information incorporated by reference herein and therein contain "forward-looking statements" within the meaning of applicable United States and Canadian securities laws. Such statements are based on assumptions and expectations which may not be realized and are inherently subject to risks, uncertainties and other factors, many of which cannot be predicted with accuracy and some of which might not even be anticipated. In some cases, you can identify forward-looking statements by terminology such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "plan," "potential," "predict," "should," or "will," or the negative of those terms, or comparable terminology. With respect to forward-looking statements and information contained in this prospectus, we have made assumptions regarding, among other things:

- the timing of our research and development expenditures and of new product introductions;
- lead-time for completion of construction and commissioning of the planned de-conversion facility;
- estimates related to the cost, engineering, design and capacity of the de-conversion facility;
- the timing and level of acceptance of new products or enhanced versions of our existing products;
- the market for our products and prices received for our products;
- the availability of raw materials for de-conversion;
- the cost and availability of financing available to us and to the de-conversion facility; and
- estimates related to future costs of production, establishing de-conversion plant operations, capital requirements, research and operating expenditures.

Such forward looking statements include, but are not limited to, statements regarding:

- our intention to continue negotiations with Mr. Laflin regarding a longer term employment agreement;
- the estimated costs and estimated performance period for the provision of certain irradiation services using the Advanced Test Reactor at the Idaho National Laboratory;
- our expectation that International Isotopes Idaho, Inc. will renegotiate the price for purchases of Fission Iodine-131 after August 31, 2011;
- our expectation that investments in the construction of a depleted $UF_6$ de-conversion and FEP facility will exceed current revenue from sales by a significant amount and that we will continue to incur significant losses until the commencement of commercial operations;

our continued access to the Idaho reactor for cobalt production remains subject to approval by the prime operating contractor based upon the priorities of its experiments program;

our belief that the loss of relationships with third parties could adversely affect operating results by causing a possible loss of sales;

our belief that additional processing capabilities and license amendments could be implemented that would permit processing of other reactor produced isotopes by us;

our expectation that research and development expenses will continue to increase as the uranium de-conversion project progresses;

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our plans to continue to market our sealed source products in foreign markets, particularly South America, and to research and pursue additional transportation containers for shipments of materials;

our anticipation of continued growth in the cobalt products segment;

our expectation to have a minimum of $2,656,000 in bulk cobalt sales to GE-Hitachi Nuclear Energy Americas, LLC over a four-year period;

our expectation of strengthened sales from improvements in general economic conditions and steps to implements an IS0-9000 quality program that will allow sales of calibration and reference standards into Canada and the EU;

our anticipation that the volume of retail sales of gemstones will resume as economic conditions improve;

our intention to increase pricing of radiochemical products to implement alternate shipment methods, which we expect will increase revenues and reduce costs;

our plans to develop fluorine products in conjunction with uranium de-conversion, in order to take advantage of the anticipated need for depleted uranium de-conversion services;

our plans to use the FEP facility in Idaho for testing individual components and analytical processes required for the planned uranium de-conversion facility and the production and sale of $GeF_4$;

our belief that revenues and net income for nuclear medicine standards will improve as customers resume purchases of nuclear medicine products that were previously postponed because of economic considerations;

our anticipation that we will not record further impairments charges;

our expectation that we will not write off any accounts receivable;

our future plans to acquire the remaining shares of RadQual, LLC;

our future liquidity and capital funding requirements will depend on numerous factors;

our estimated market price and production capacity of $AHF_3$;

our plans to file a registration statement registering the resale of commons tock issued and common stock issuable upon exercise of warrants pursuant to certain securities purchase agreements between us and purchasers of our securities;

our expectation that we may encounter additional regulations affecting transportation, storage, sale and import/export of radioactive materials;

our belief that the DOE's review of our loan application will take approximately six months;

our belief that limitations imposed by the agreement with NMED will not pose any barrier to our operations;

our intention to pursue the construction of a depleted $UF_6$ de-conversion and FEP facility and our belief that it will be the only commercial de-conversion facility in the United States when it commences operations;

the total cost of the design, engineering and construction for the first phase of this project being approximately $125 million;

our belief that depleted $UF_6$ de-conversion and FEP qualifies under the DOE loan solicitation for "Energy Savings in Manufacturing Processes;"

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the proceeds of this offering being sufficient to complete the licensing, design and engineering of a depleted $UF_6$ de-conversion and FEP facility;

our timeline for licensing, design, construction and commencement of commercial operations for a depleted $UF_6$ de-conversion and FEP facility;

the capacity, and anticipated production associated with, and completion of the various phases of operations, and our plans to increase capacity at our depleted $UF_6$ de-conversion and FEP facility in multiple phases from revenue generated from Phase I operations;

our expectations regarding a shift from foreign to domestic uranium enrichment and that the increased domestic production still is not likely to meet the full United States demand for uranium enrichment for reactor fuel;

the amount of depleted $UF_6$ tails to be produced by new enrichment companies and our belief that such amounts will be larger than the federal government's facilities and our commercial facility combined will be able to process;

our belief that these enrichment companies will not be able to rely on storage as a viable long-term solution to the management of depleted $UF_6$ and that it is unlikely an enrichment company would construct its own $UF_6$ de-conversion facility;

our belief that these enrichment companies will turn to for-fee de-conversion services to manage their depleted $UF_6$;

our ability to pass through the expense of waste disposal to enrichment companies in de-conversion services agreements;

our belief that the LES agreement itself could provide us with enough material to utilize approximately 70% of the Phase I facility capacity;

our ability to produce large volumes of high-purity, high-value, fluoride gases though FEP, and particularly if FEP is paired with a large-scale depleted $UF_6$ de-conversion project;

our belief that FEP has several competitive advantages as compared to traditional methods of producing fluoride gases, and our belief that there will be opportunities for us to sell the fluoride gas products intended to be produced from FEP;

our ability to secure the property in Lea County, New Mexico for the construction of the facility;

our belief that the full-scale production costs of FEP produced fluoride gases will be low compared to processes used by our competitors and that we expect to have a net negative raw material cost for the fluoride gases;

that we will secure additional patent protections directed to the process knowledge gained in the start-up of our FEP pilot facility;

our ability to control, confine, and contain the uranium handled during FEP and our belief that this will help ensure product purity and prevent the spread of uranium to undesirable locations where secondary radioactive waste streams could result;

our plans to generate revenue by providing "for-fee" de-conversion services and through the sale of fluoride gases produced through FEP, fluoride products produced from these gases, and AHF;

opportunities with respect to providing transportation and uranium cylinder management services to enrichment companies;

NRC limitations on the amount of depleted $UF_6$ that can be stored by enrichment companies and the amount of time that it is allowed to be stored;

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NRC bonding requirements related to future de-conversion costs for the depleted $UF_6$ that is stored; and

our anticipation that future research activities will focus in areas of silane manufacture, high-purity silicon products, and fluorination technologies.

Any or all of our forward-looking statements in this prospectus supplement, the accompanying base prospectus, and in the information incorporated by reference herein and therein may turn out to be inaccurate. Forward-looking statements reflect our current expectations or forecasts of future events or results and are inherently uncertain. Factors that could cause actual results to differ materially from those in the forward-looking statements are discussed under the section entitled "Risk Factors" beginning on page S-10 of this prospectus supplement. 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 caution investors not to place undue reliance on these forward looking statements, which speak only as of the date hereof. 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 from time to time in our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, any amendments thereto, as well as in any other public filings with the SEC. We qualify all of our forward-looking statements by these cautionary statements.

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## CURRENCY AND EXCHANGE RATES

In this prospectus supplement, unless otherwise specified or the context otherwise requires, all dollar amounts are expressed in U.S. dollars. The following table sets forth: (i) the rates of exchange for U.S. dollars, expressed in Canadian dollars, in effect at the end of the periods indicated; (ii) the average exchange rates in effect during such periods; (iii) the high rate of exchange in effect during such periods; and (iv) the low rate of exchange in effect during such periods, such rates, in each case, based on the noon rates of exchange for conversion of one U.S. dollar to Canadian dollars as reported by the Bank of Canada.

| | Year ended December 31 | | |
|---|---|---|---|
| | **2010** | **2009** | **2008** |
| Rate at end of period | $ 0.9946 | $ 1.0466 | $ 1.2246 |
| Average rate for period | 1.0303 | 1.1415 | 1.0660 |
| High for period | 1.0848 | 1.3066 | 1.2969 |
| Low for period | 0.9931 | 1.0251 | 0.9719 |

During the period from January 1, 2011 to February 24, 2011, the average, high and low exchange rates were Cdn.$0.9915, Cdn.$1.0060 and Cdn.$0.9816, respectively.

On February 24, 2011, the noon rate of exchange as reported by the Bank of Canada for conversion of U.S. dollars into Canadian dollars was US$1.00 = Cdn.$0.9842 (U.S.$1.0161 = Cdn.$1.00).

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## USE OF PROCEEDS

We estimate that the net proceeds to us from this offering will be approximately Cdn.$ million after deducting underwriting discounts and our estimated offering expenses (Cdn.$ if the underwriters exercise their over-allotment option to purchase additional shares of common stock in full). We intend to use the net proceeds of this offering approximately as follows:

| | |
|---|---|
| Plant Licensing, Design, Engineering and Testing | |
| Facility and Equipment Capital | |
| General Working Capital | |
| Total | $ |

These expected uses of net proceeds of this offering represent our current intentions based upon our present plans and business conditions. The amounts we actually spend on any particular use may vary significantly depending on a number of factors, including but not limited to, those described in the "Risk Factors" section beginning on page S-10 of this prospectus supplement.

Until such time as the net proceeds of this offering are used as described above, we plan to invest the net proceeds in short-term interest-bearing obligations, investment-grade instruments, certificates of deposit or direct guaranteed obligations of the United States.

## DETERMINATION OF OFFERING PRICE

The public offering price of the common stock offered by this prospectus supplement and the accompanying base prospectus was determined by negotiation between us and the underwriters. Among the factors considered in determining the public offering price of the common stock were:

- the current trading price of our common stock on the OTC Bulletin Board®;
- our history and our prospects;
- the length of time required before full revenue producing operations can begin because of NRC licensing and plant construction;
- the industry in which we operate;
- the status and development prospects for our proposed services;
- our past and present operating results;
- the previous experience of our executive officers; and
- the general condition of the securities markets at the time of this offering.

The offering price stated on the cover page of this prospectus should not be considered an indication of the actual value of our common stock. That price is subject to change as a result of market conditions and other factors, and we cannot assure you that our common stock can be resold at or above the public offering price.

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## CONSOLIDATED CAPITALIZATION

The following table describes our consolidated capitalization as of September 30, 2010 on an actual basis and on an as adjusted basis to reflect the issuance and sale of the shares of common stock offered by this prospectus supplement after deducting the underwriting discount and estimated transaction expenses payable by us (assuming no exercise of the underwriters' over-allotment option to purchase additional shares) and the application of the net proceeds from this offering as described under the section entitled "Use of Proceeds" beginning on page S-27 of this prospectus supplement. The amount of proceeds we ultimately receive from this offering is dependent upon numerous factors and subject to general market conditions. This information should be read in conjunction with, and is qualified in its entirety by, the audited consolidated financial statements and schedules and notes thereto included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2009 and the consolidated financial statements and notes thereto included in our Quarterly Report on Form 10-Q for the period ended September 30, 2010, incorporated by reference in this prospectus supplement.

| | At September 30, 2010 | |
|---|---|---|
| | Actual | As Adjusted to Give Effect to the Offering |
| Notes payable, excluding current installments | $ 509,426 | |
| Convertible debentures, net of beneficial conversion feature of $410,004 | 2,664,996 | |
| Mandatorily redeemable convertible preferred stock (850 shares issued and outstanding) | 850,000 | |
| Total long-term liabilities | 4,462,244 | |
| Shareholders' equity: | | |
| Common stock, $0.01 par value (750,000,000 shares authorized; 293,944,348 shares issued and outstanding; shares issued and outstanding as adjusted to give effect to this offering)[1] | 2,939,443 | |
| Additional paid-in capital | 101,788,809 | |
| Accumulated deficit | (104,089,288) | |
| Total shareholders' equity | 638,964 | |
| Total capitalization | $ 5,101,208 | |

(1) Excludes as of February 25, 2011:

425,000 shares of our common stock reserved for issuance upon conversion of the issued and outstanding shares of our Series B Convertible Redeemable Preferred Stock;

26,700,000 shares of common stock issuable upon exercise of outstanding options granted under our stock option plans, with a weighted average exercise price of $0.16 per share;

7,283,528 additional shares of common stock available for future issuance under our stock option plans;

1,474,986 additional shares of common stock available for future issuance under our employee stock purchase plan;

56,552,969 shares of common stock reserved for issuance upon exercise of outstanding warrants; and

9,312,857 shares of common stock reserved for issuance upon conversion of convertible debentures; *plus* 4,656,429 shares of common stock issuable upon exercise of warrants that may be issued upon conversion of such convertible debentures.

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## DILUTION

If you invest in our common stock, your ownership interest will be diluted to the extent of the difference between the public offering price per share of common stock and the adjusted net tangible book value per share of common stock immediately after this offering. The net tangible book value of our common stock as of December 31, 2010 was $5,183,992, or $0.016 per share. Net tangible book value per share is determined by dividing (1) our total tangible assets less our total liabilities by (2) the number of shares of common stock outstanding.

After giving effect to our sale of shares of common stock in this offering at a public offering price of Cdn.$ per share and after deducting underwriting discounts and estimated offering expenses payable by us, our adjusted net tangible book value as of December 31, 2010 would have been $ , or $ (or Cdn.$ ) per share. This represents an immediate increase in net tangible book value to existing shareholders of $ (or Cdn.$ ) per share and an immediate dilution to new investors of $ (or Cdn.$ ) per share. The following table illustrates this per share dilution:

| | |
|---|---|
| Public offering price per share | Cdn.$ |
| Net tangible book value per share as of December 31, 2010 | Cdn.$ |
| Increase per share attributable to sale of shares in this offering | |
| Adjusted net tangible book value per share after this offering | |
| Dilution per share to new investors | Cdn.$ |

If the underwriters exercise their over-allotment option in-full to purchase additional shares of common stock in this offering, the adjusted net tangible book value per share after the offering would be $ (or Cdn.$ ) per share, the increase in the net tangible book value per share to existing shareholders would be $ per share and the dilution to new investors purchasing common stock in this offering would be $ (or Cdn.$ ) per share.

The preceding discussion and table is based on the number of shares of common stock outstanding as of December 31, 2010 and excludes shares issuable upon conversion or outstanding options, warrants, convertible debentures and shares of preferred stock, as well as shares available for issuance under our stock option plans and employee stock purchase plan.

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## OUR BUSINESS

### Overview

International Isotopes Inc. was formed as a Texas corporation in 1995. Our wholly-owned subsidiaries are International Isotopes Idaho, Inc., a Texas corporation; International Isotopes Fluorine Products, Inc., an Idaho corporation; and International Isotopes Transportation Services, Inc., an Idaho corporation. Our headquarters and all current operations are located in Idaho Falls, Idaho. Our business consists of six reportable segments which include: Nuclear Medicine Standards, Cobalt Products, Radiochemical Products, Fluorine Products, Radiological Services, and Transportation Services.

We develop and deploy products used in a variety of medical and industrial applications, including cancer treatment, nuclear pharmacy, medical diagnostics, medical therapy products, and radiation protection. Our cobalt products are used in a wide range of therapy devices for radiation treatment of cancer and vascular deformities of the brain. Cobalt sources are also used for container security examinations at United States sea ports and borders. Our radiochemicals, such as Iodine-131, are used in medicine for treatment of a host of thyroid diseases and disorders. Our calibration standards are used in nuclear pharmacy, from testing of imaging machines to calibration of patient dose measurement devices. These products are designed to help ensure that nuclear medicine pharmacies, procedures, and devices perform as intended to offer safe and effective patient treatment, therapy, or imaging. For a more detailed description of our business segments and current operations, please see our Annual Report on Form 10-K for the fiscal year ended December 31, 2009 filed with the SEC on March 31, 2010, which is incorporated by reference into this prospectus supplement and the accompanying base prospectus.

In addition to our current product lines, we expect a number of opportunities to arise out of the shift from foreign to domestic uranium enrichment and the large amount of depleted $UF_6$ tails which may be produced from these new domestic enrichment operations. We are conducting this offering in order to raise funds to pursue these opportunities, with only a limited amount of the net proceeds from this offering intended to be used by us to fund our general working capital needs. As a result, almost all of the net proceeds from this offering will be used to fund our enriched uranium de-conversion business and directly related businesses that are described herein.

Through the funds raised in this offering, we intend to pursue the construction of a depleted $UF_6$ de-conversion facility that will provide "for-fee" de-conversion services to enrichment facilities, which we believe will be the only such commercial facility in the United States when it commences operations. The interim product of de-conversion is the production of depleted $UF_4$, which is then used as the raw material in FEP. Using our FEP, we believe that we can produce large volumes of high-purity, high-value, fluoride gases from the depleted $UF_4$, which are in demand for ion-implantation, etchants, and chemical vapor deposition processes for microelectronics, and manufacturing organic complexes for a host of applications in the petroleum industry. We plan to continue to explore and expand the number and breadth of fluoride gas products that can be produced utilizing FEP and the products that can, in turn, be produced with the fluoride gas products themselves. In addition to the potential revenues from de-conversion services and fluoride gas sales, we anticipate that this business will also provide an opportunity for additional revenue streams through the sale of AHF produced from the de-conversion process. We also may provide a range of additional services to enrichment companies such as transportation and uranium cylinder management. Several companies have commercially committed to constructing uranium enrichment facilities in the United States, and we believe that construction of the planned new facilities will result in a larger amount of depleted $UF_6$ tails than the federal government and our commercial facility combined will be able to process. We expect this will result in more opportunities to supply de-conversion services to uranium enrichment facilities and provide even greater opportunity for the large-scale production of fluoride gases from FEP and its secondary products, such as silane, organic complexes, or poly silicon.

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**Depleted $UF_6$ De-Conversion Opportunity**

***Overview of Nuclear Fuel Cycle and Management of Depleted $UF_6$***

We believe that there is an emerging significant need and commercial opportunity within the front end of the nuclear fuel cycle. In order to use uranium as nuclear fuel it must be chemically processed and enriched. The first step in the process is uranium mining and milling to produce $U_3O_8$, or "yellow cake." Yellow cake is then converted to $UF_6$ gas through a multi-step chemical process using nitric acid, ammonium hydroxide, hydrogen, and finally hydrofluoric acid. $UF_6$ gas is then passed through a centrifuge at an enrichment facility. In the enrichment process, the concentration of the $U_{235}$ atoms present in $UF_6$ gas are increased from their naturally occurring level of 0.7% of the uranium mass up to approximately a level of 3-5% for fuel in commercial nuclear power plants. The enriched $UF_6$ is then converted into uranium oxide and fabricated into nuclear fuel. During the enrichment process only 10% of the uranium emerges in the enriched state and is useable in reactor fuel. The remaining 90% of the $UF_6$ emerges as depleted $UF_6$ "tails" in which the concentration of the $U_{235}$ atom has been reduced from 0.7% down to approximately 0.25%.

The depleted $UF_6$ by-product from the front end of the nuclear fuel cycle has relatively low levels of natural radioactivity as compared to the expended reactor fuel resulting from back end of the nuclear fuel cycle, which contains highly radioactive materials, mostly consisting of spent fuel rods. Of all the by-product material within the nuclear fuel cycle, depleted $UF_6$ from the front end of the cycle constitutes about 90% of the total volume. In the case of a typical 1,000 megawatt commercial nuclear reactor, approximately 37,000 pounds of enriched uranium (as $UF_6$) is required to fuel the reactor for one year, which produces about 485,000 pounds of depleted $UF_6$ "tails." Since the beginning of the nuclear era 60 years ago, except for long-term storage, there has never been a viable, proven, economic solution for the management of the vast quantities of depleted $UF_6$ tails resulting from the enrichment process.

Depleted $UF_6$ is a chemical form of uranium that cannot be directly disposed of because it is chemically reactive and varies in physical state, from a gas, above 133?F, to a solid, below that temperature at normal atmospheric pressures. Therefore, in order to dispose of depleted $UF_6$, some or all of the fluorine must be removed in a process called de-conversion, to make the uranium a less or non-reactive oxide such as $UO_2$ or $U_3O_8$. In one of these granular, solid states, the depleted uranium can be disposed of in LLRW landfills that are licensed to receive such waste. Historically, there has been little or no economic incentive for de-conversion. The enrichment of $UF_6$ in the United States has historically been conducted on a fairly limited scale by the government or government funded entities. Therefore, depleted $UF_6$ tails have been stored overseas where the enrichment took place or at various United States government sites.

***Anticipated Growth in United States Commercial Uranium Enrichment***

The United States currently imports about 90% of its enriched uranium for nuclear fuel for United States nuclear reactors. In 2009, the United States produced approximately 3.8 million pounds of $U_3O_8$ and required approximately 51.1 million pounds of $U_3O_8$ to support fuel production for its domestic nuclear reactors. Based on 2009 uranium requirements, the United States would require approximately 14 million units of enrichment capacity (known as separative work units, or SWUs) to fulfill its enriched uranium needs. Within the United States, USEC currently operates a uranium enrichment facility that utilizes an older gaseous diffusion technology that is extremely energy intensive. Despite USEC's ability to enrich uranium at its gas diffusion plant, USEC imports most of its enriched uranium from Russia under the "Megatons to Megawatts" program, an agreement that was entered into in 1993 between the United States and Russia to downblended Russian stockpiles of high-enriched uranium to low-enriched uranium for use as nuclear fuel. Under that agreement, USEC is paying Russia below-market prices and reselling the enriched uranium in the United States at current market prices. Approximately 400 metric tons have been downblended thus far under the program. The program is scheduled for completion in

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2013, at which time 500 metric tons of weapons grade enriched uranium will have been downblended to lower enriched reactor-grade material over a period of approximately 20 years.

Several companies have publicly announced that they are evaluating, planning or building new uranium enrichment facilities in the United States, including USEC, LES, AREVA, and GLE. These planned facilities are at various stages of development. The URENCO USA facility is licensed and started operations in 2010. That project will continue to operate even as it continues construction to continually expand enrichment capacity over the next four to six years. GLE has completed and submitted its license application to the NRC and is conducting testing of its first commercial test loop for the commercial operation of its planned facility in Wilmington, North Carolina. AREVA has announced a site location in eastern Idaho, has recently been granted a contingent $2 billion dollar loan guarantee from the DOE for construction of its facility, expects to have an NRC license for the facility in the third quarter of 2011, and to start production by 2017. Finally, USEC's American Centrifuge Program is seeking a DOE loan guarantee which, it states in its public filings, is a prerequisite to completing the commercial construction of its project. USEC has already been granted a license for this facility by the NRC and is currently awaiting DOE's decision on its DOE loan application.

The enrichment output capacity of these planned facilities roughly equals the current contract demand for fuel to United States and international reactors. If and when these facilities are completed, at their initial stated capacity, we believe they will produce in excess of 80 million pounds of depleted $UF_6$ in the United States each year. The following is a summary of the status and announced capacities of the four new United States enrichment companies and is based upon publicly available information issued by such companies:

| Company | Anticipated Opening Date | Full Production Date | Annual Capacity-Metric Tons Uranium (MTU)(1) | Annual Capacity-Separative Work Unit (MM SWU)(1) | Estimated Annual Depleted $UF_6$ Production (MM lbs) |
|---|---|---|---|---|---|
| LES | Started operations June 2010 | 2015 | 9,500 | 5.7 | 26.6 |
| AREVA(2) | 2014 | 2019 | 11,000 | 6.6 | 30.8 |
| GLE(3) | 2012 | 2017 | 5,800 - 10,000 | 3.5 - 6.0 | 16.3 - 28 |
| USEC(4) | 2014 | 2017 | 5,800 | 3.5 | 16.3 |
| | | **Total:** | **32,100 - 36,300 MTU** | **19.3 - 21.8 MM SWU** | **90.0 - 101.7 MM lbs** |

(1) The enrichment plant capacity of 5,000 MTU is roughly equivalent to a 3 million SWU facility and would result in the generation of about 14 million pounds of depleted $UF_6$ tails assuming an enrichment between 4%-5% $U_{235}$ and a residual assay value of about 0.2% $U_{235}$ in the tails. There is about 1.47 pounds of $UF_6$ for each pound of uranium.

(2) AREVA's planned enrichment facility just outside of Idaho Falls, Idaho, will use the same proven technology that it uses in its European facilities. According to AREVA press releases, AREVA submitted its license application to the NRC at the end of 2008 and expects to begin construction in late 2011, start operations in 2014, and reach full production in 2019.

(3) According to GLE press releases, GLE's enrichment process will be based on laser enrichment technology known as Separation of Isotopes by Laser Excitation, or SILEX, which has been under development by GE Hitachi Nuclear Energy for several years. GLE is constructing a test loop facility to demonstrate commercial feasibility of this technology GLE announced the successful preliminary results of its commercial test loop in April 2010. In connection with testing, GLE prepared and submitted its NRC license application in June 2009. GLE originally announced an anticipated 2012 opening date. GLE anticipated an announcement by the end of 2010 as to the commercial scaleability of the SILEX technology, but at the current time has not made such public report of progress. Additionally, they had some plan failures in mid-December 2010. GLE has not announced revised dates for plant operations.

(4) According to certain USEC press releases, USEC is constructing a plant in Piketon, Ohio utilizing a larger scale centrifuge operation that has never been demonstrated. USEC's demonstration plant was expected to be

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operational in 2009, but its project has reported numerous delays, cost overruns, and is likely to report further delays. USEC notes that continued development and commercial construction are dependent upon their receipt of a DOE loan guarantee. USEC anticipates needing 24 months to begin initial commercial operations after receiving the necessary financing to complete the plant, and another 36 months to complete the plant. The DOE rejected USEC's application for the loan guarantee in August 2009, but then retracted the rejection and has given USEC the opportunity to demonstrate certain key milestones in the project.

Operating at the full 32,100-36,300 MTU aggregate planned capacity, we estimate that these plants could ultimately produce at least 90 million pounds of depleted $UF_6$ annually that will need to be managed. The anticipated growth in United States nuclear power generation supports growth in demand for nuclear fuel, domestic $UF_6$ enrichment and an increase in domestic depleted $UF_6$ generation. The NRC limitations on the amount of depleted $UF_6$ that can be stored and the amount of time that it is allowed to be stored, and bonding requirements related to future de-conversion costs for the depleted $UF_6$ that is stored. As such, we believe that this increased domestic uranium enrichment capability will create a further need to address the management of the depleted $UF_6$ that we anticipate will be produced from commercial enrichment facilities.

***Historical Management of Depleted $UF_6$***

Historically, depleted $UF_6$ tails have simply been stored outdoors in large 14-ton steel cylinders. According to the NRC, in the United States alone, there is already in excess of 1.5 billion pounds of depleted $UF_6$ in storage by the DOE. The EU has similar storage issues, with thousands of steel cylinders on outdoor storage pads. We do not believe that these new commercial enrichment facilities will be able to rely on storage as a viable long-term solution to the management of depleted $UF_6$. First, the NRC has imposed, and we believe is likely to continue to impose, restrictions in the operating licenses granted to these enrichment facilities that limit the amount of onsite storage of $UF_6$. URENCO USA, the first new and only operating commercial enrichment facility in the United States, was granted an NRC operating license that limits the amount of onsite storage of $UF_6$ to 15,727 cylinders. The NRC also imposes bonding requirements based on the amount of depleted $UF_6$ stored by these companies to cover the eventual de-conversion cost and disposal of such material. Additionally, we do not believe that enrichment companies will choose to use the DOE for de-conversion services. The DOE will charge a fee for its de-conversion service based upon full recovery of all DOE costs associated with the process. Prior to that time, commercial enrichment companies will be burdened with the cost and liability of on site storage of their depleted tails and are required to provide financial assurance bonding to cover the future de-conversion cost of that material. Finally, there is a long history of environmental concerns with outdoor storage of the existing quantities of depleted uranium stored in the United States and abroad. The potential environmental liability in the EU and the United States related to the storage of this depleted $UF_6$ has heightened public awareness of this storage issue and increased public pressure for treatment, or de-conversion, and disposal of that material.

Because of the storage limitations and bonding requirements imposed by the NRC and the environment liabilities facing these commercial enrichment facilities, we believe that if economically viable, these companies will turn to for-fee de-conversion services to manage their depleted $UF_6$.

***Our Depleted $UF_6$ De-conversion Strategy***

Given the anticipated growth in United States domestic commercial enrichment activities, we believe that management of depleted $UF_6$ tails is a significant issue facing the United States nuclear power industry. Our strategy to address this issue is to secure de-conversion services contracts with enrichment facilities, whereby we will take the depleted $UF_6$ tails as they are generated and provide fee-based de-conversion services. We believe our de-conversion service will provide a complete, economic, and relatively "green" solution for management of depleted $UF_6$ tails.

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Our Phase I de-conversion plant will de-convert depleted $UF_6$ into depleted $UF_4$, and then use that depleted $UF_4$ as a key input in FEP. The first step of the de-conversion process produces AHF in a form that is commercially valuable. Later, an intended expansion of the project, expected to be funded through revenue generated in Phase I, is expected to more than double plant capacity and likely use a direct $UF_6$ to $UO_2$ de-conversion process that also produces AHF. This process has been demonstrated in a pilot scale facility that was operated by another commercial company in the 1990s and was patented at that time. Although we do not own these patents, they expire in 2011 and thus we expect to be able to utilize the process at that time. This strategy will allow maximum production capacity while ensuring that we continually extract high-purity fluoride products in the process. The remaining depleted $UO_2$ at the end of the process will be packaged for waste disposal. The depleted $UO_2$ is considered a LLRW and it must be disposed of in an approved LLRW facility, such as the disposal facility operated by Energy Solutions in Clive, Utah. Waste disposal, while a significant cost, is a pass through expense in the de-conversion services agreement with LES and we anticipate that it will be passed through with the other enrichment company de-conversion service contracts as well.

We believe our proposed strategy creates a business model for a fully developed de-conversion facility with potentially three revenue streams. First, we intend to generate revenue by providing "for-fee" de-conversion services. Second, we intend to produce revenue through the sale of fluoride gases produced through FEP or fluoride products produced from these gases. Third, we intend to produce revenue from the sale of AHF, also produced as a by-product of the de-conversion process. In addition, there may be opportunities to generate revenue by offering related services, such as transportation or cylinder cleaning and retesting.

In April 2010, we entered into a de-conversion services agreement with LES, a subsidiary of URENCO, and operator of the newly constructed enrichment facility in Eunice, New Mexico. The site location we have chosen for our facility is 25 miles from the URENCO USA facility. It is also 30 miles from a new LLRW waste disposal facility being constructed in Andrews County, Texas. Should that facility complete its licensing for acceptance of large quantities of depleted uranium, we will be ideally located not only for receipt of raw material from the URENCO USA facility, but also for disposal of the uranium oxide byproduct of the de-conversion process.

Pursuant to the agreement, LES must provide certain minimum volumes of depleted $UF_6$ to us for de-conversion. We will de-convert the depleted $UF_6$ and dispose of the uranium oxide resulting from the de-conversion process for a fee, plus the cost of disposal at the time the depleted $UF_6$ is accepted by us. We will be responsible for all necessary transportation, security, emergency response and handling of the depleted uranium from the URENCO USA facility to our de-conversion facility, and will take title and assume liability with respect to such material upon such possession. We will also offer a cylinder cleaning and inspection service to the URENCO USA facility. The initial term of the agreement extends for a period sufficient to cover five years of de-conversion services once our planned uranium de-conversion facility is operational, based on operations starting no later than January 1, 2014. The agreement is conditional upon, among other things, each party obtaining necessary third-party and government approvals, LES obtaining the approval of the NRC of an amendment of a provision in LES's materials license that prohibits shipments of depleted uranium to de-conversion facilities employing AHF in the de-conversion process, and our meeting certain performance milestones in the construction and start-up of the planned facility. If we cannot demonstrate certain production capacities in accordance with the agreement, LES has the option to terminate the agreement and we do not have a right to cure pursuant to the agreement.

We are currently negotiating with other commercial uranium enrichment companies to provide de-conversion services for their depleted $UF_6$ tails. However, there can be no guarantee that additional agreements will be secured. Nevertheless, we believe that the LES agreement itself, at the minimum contract quantities, could provide us with enough material to utilize approximately 70% of the Phase I facility capacity. It will be important to the planned additional phases and longer term business growth

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in this area, however, that we secure additional off-take agreements with one or more of the remaining firms and under terms suitable to us.

**Fluorine Extraction Process Opportunity**

In addition to the opportunity to provide de-conversion services, our FEP, which can be combined with de-conversion services, provides us with an opportunity to produce and market high-purity fluoride gas products in the specialty gas industry. FEP uses depleted $UF_4$ as its feedstock. FEP "mines" the depleted $UF_4$ by separating the fluorine from the uranium, producing a high-purity fluoride gas and a uranium oxide.

Combining FEP with a large-scale depleted $UF_6$ de-conversion project could produce millions of pounds of high-purity, high-value fluoride gases. We believe these gases can be sold to specialty gas suppliers or used to manufacture secondary products such as silane, various organic complexes, or even high-purity silicon itself. High-purity fluoride compounds are in growing demand for many cutting edge and high tech products. These specialty gases are in demand for ion-implantation, etchants, chemical vapor deposition processes for microelectronics, and manufacturing organic complexes for a host of applications in the petroleum industry. We anticipate that the full-scale production costs of these specialty gases using FEP will be low compared to processes used by our competitors. Because we anticipate generating fee revenue through de-conversion services, we expect to have a net negative raw material cost for our FEP feedstock material.

***The Fluorine Extraction Process***

Conventional methods for production of fluoride gases either use elemental fluorine as a starting material or the gas is extracted as a by-product of another commercial process. In either case these conventional processes produce gases of fairly low quality that require extensive purification for most specialty applications. Starmet began development of FEP in 1996. Starmet worked in conjunction with USEC in response to an anticipated request for proposal from the DOE on the construction of two depleted $UF_6$ de-conversion facilities intended to begin managing the 1.5 billion pounds of depleted $UF_6$ stockpiled by the DOE. Like us, Starmet wanted to develop a technology that could be combined with a de-conversion facility. Starmet had been producing depleted uranium metal from $UF_4$ for the United States Army for decades and had very large stockpiles of depleted $UF_4$. When USEC lost its bid to provide de-conversion services, it ceased financial support of Starmet's FEP research.

Our original FEP technology was patented by Starmet and is covered by seven United States patents, the earliest of which expires in 2018. We acquired the FEP patents in 2004 as Starmet was forced into bankruptcy due to environmental chemical contamination issues caused by its unrelated historical activities for the United States Department of Defense.

FEP can be carried out as a simple, one step reaction process between two granular, solid materials, $UF_4$ and a metal oxide. Under suitable conditions, this reaction produces a fluoride gas and uranium oxide. FEP can be used to produce a variety of fluoride gases, including $BF_3$, $GeF_4$, $SiF_4$, and possibly several others. For example, to produce $SiF_4$, $UF_4$ is mixed with silicon dioxide ($SiO_2$, silica sand) and heated to a temperature of between 500 and 800°C. Heating produces a reaction between $SiO_2$ and $UF_4$ that results in the silicon and uranium "swapping partners" to form $SiF_4$, a gas, and $UO_2$ in the form of a free flowing powder. Similarly, $BF_3$, $GeF_4$, or other fluoride gases can be produced by substituting $SiO_2$ with the appropriate metal oxide (i.e., $B_2O_3$ or $GeO_2$). Fluoride gas produced by FEP does not contain uranium even though depleted $UF_4$ is used as the source of fluorine. This is because the uranium remains in the solid state throughout the process. Because only fluorine is mobilized in this solid-to-solid reaction, the overall purity of FEP produced gas is generally higher than that produced by conventional methods.

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Overall, we believe that our FEP has several competitive advantages as compared to traditional methods of producing fluoride gases:

*FEP is a unique and exclusive process.* To our knowledge, FEP currently is not being employed by any other company anywhere in the world. We have exclusive ownership of seven United States patents for this technology. In addition, we obtained a patent on the overall FEP process as a result of the process knowledge gained in the start-up of our FEP pilot facility. This patent provides broad intellectual property protection of the process and extends through 2029. We have filed a corresponding international PCT application to seek international protection for the FEP process.

*FEP products require far less energy to produce compared to conventional fluoride production.* Because we are starting with a raw material reserve in depleted $UF_6$ that has vast quantities of pure fluorine atoms trapped within, our FEP is able to extract the fluoride products utilizing significantly less energy than conventional fluoride production. Our analysis of the energy consumption of FEP-produced $BF_3$ versus current production methods indicates energy consumption savings of about 60%.

*FEP uses low cost raw materials obtained during the de-conversion process.* As discussed above, we intend to complement our de-conversion services with FEP. The depleted $UF_4$ feedstock material for FEP is expected to be supplied as a by-product of our de-conversion of depleted $UF_6$ produced from uranium enrichment operations at a net negative raw material cost.

*FEP utilizes conventional process technology and equipment.* Although FEP reaction vessels and components are unique to this process, the remainder of specialty gas collection, transfer, purification, and analysis equipment are not. There are a wide range of commercial suppliers that produce the piping, equipment, and related hardware associated with the gas handling industry.

*FEP involves strong reactions that are relatively easy to control.* FEP has been demonstrated on a fairly large scale by Starmet for production of $SiF_4$ and through operation of our pilot plant for production of $GeF_4$. We recently converted our Idaho pilot facility to the production of $BF_3$, and have carried out dozens of successful production runs. In all cases, the reaction process itself has proven to be strong and relatively easy to control. While technical issues and challenges have occurred during our development of the small scale commercial process and there are still likely to be scaling issues related to development of the large process, overall our knowledge and experience with the fundamental process gives us confidence in our ability to develop a large-scale commercial FEP operation.

*FEP does not generate any secondary radioactive waste streams.* FEP is carried out as a solid-to-solid or solid-to-liquid reaction process in which no uranium passes out of the primary reaction vessel. Therefore, no uranium is detectable in any downstream piping or product materials. We believe that our ability to control, confine, and contain the uranium handled during FEP will help ensure product purity, but should also prevent the spread of uranium to undesirable locations where secondary radioactive waste streams could result.

***Customer and Target Market for Fluoride Gases and Hydrofluoric Acid***

We believe that there will be opportunities for us to sell the fluoride gas products we intend to produce from FEP, particularly for $BF_3$ and $SiF_4$, the two main gases planned for production in the FEP facility. We believe that the global market for $SiF_4$ is currently valued at between $80 and $100 million, with intrinsic growth of 6-8% per year. This gas has three distinct market applications for use in semiconductor processes, silicon deposition, and poly silicon manufacturing. The market size and prices vary by application. We intend to target the high-purity gas market, which demands approximately 500,000 pounds of $SiF_4$ annually at prices ranging from $70 to $90 per pound. We

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believe that there may also be a significant future opportunity to use $SiF_4$ extracted from FEP to produce silane or other silicon products. There is a significant merchant market for those products and annual growth rates in the range of 15%-20%. We plan to continue to evaluate this potential opportunity and consider it for development in conjunction with later planned phases of the project. We anticipate that our Phase I facility will produce about 100,000 pounds of $SiF_4$ per year, which we believe will fit well within the existing market applications at current prices.

The global market for $BF_3$ is currently believed to be valued at between $90 and $130 million, with intrinsic growth matching U.S. GDP growth. This gas is used as a catalyst to produce several organic complexes and for various nuclear power products, such as shielding, reactor neutron absorbing poison, nuclear instruments, and for semiconductor or solar cell silicon. Currently, Honeywell International Inc. (Honeywell) is the only producer of $BF_3$ in the U.S. This market has historically been very stable as driven by catalyst demand, with annual volumes of approximately 11,000,000 pounds of $BF_3$ at prices ranging from $8 to $12 per pound. We anticipate that our Phase I facility will produce approximately 1.9 million pounds of $BF_3$ per year, which we believe will fit well within these existing market applications and at current prices.

There are a number of global specialty gas producers that use traditional fluoride gas production methods to produce $SiF_4$ and $BF_3$ and sell these products in the U.S. market, such as MEMC Pasadena, Inc., Air Products and Chemicals, Inc., Linde AG, Air Liquide, S.A, Honeywell, Shanghai Fluoride Chemicals Co., Ltd., and Navin Fluorine International Limited. We believe that our FEP produced gases will be able to compete with these suppliers in terms of both price and quality. Since FEP operation costs are anticipated to be low, as compared to traditional production methods, requiring only minimal staffing for plant operation, and our principal raw material, depleted $UF_4$, can be obtained in conjunction with our de-conversion services at no additional cost, we estimate our production costs for fluoride gases will be low and will enhance our ability to compete in this market. Because of our expected cost advantage, we believe our FEP products will be highly competitive.

The de-conversion process we plan to use will also result in the production of AHF. AHF acid is used in a variety of industrial applications, primarily for the production of fluorocarbons and aluminum. The main process for its production is the treatment of acid grade fluorspar with concentrated sulfuric acid. Honeywell is the largest producer of hydrofluoric acid in North America with approximately 180,000 metric tons of annual production capacity. In total, it is estimated that North American producers have capacity of approximately 440,000 metric tons. Other areas globally with large scale production are Europe and Asia.

Another important use of AHF is uranium conversion of $U_3O_8$ to $UF_6$. It is estimated that globally, uranium conversion activities require in excess of 60 million pounds of hydrofluoric acid annually and demand is expected to rise. Pricing is difficult to determine with certainty as it is typically subject to large volume contracts with unpublished pricing. Honeywell, as one of the primary producers, has been increasing prices over the past few years in response to greater input costs. We estimated that market prices are currently in excess of $1 per pound. We anticipate that our Phase I facility will produce approximately 900,000 pounds of AHF per year, which we believe will fit well within these existing market applications and prices.

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***Our Idaho FEP Pilot Production Facility***

We initially decided to use the existing stockpiles of depleted $UF_4$ that were available in the United States and constructed a FEP facility, located in Idaho Falls, Idaho, that would produce $GeF_4$. We chose $GeF_4$ because it is a fluoride gas that is being used extensively in research and development as an ion implant material and the market for the gas was very small, compared to the $SiF_4$ or $BF_3$ markets. A small market translated into a plant we could construct for a relatively nominal cost, yet be large enough to satisfy our primary objective of proving the commercial viability of FEP technology.

In 2006, we finished construction of this $GeF_4$ FEP production facility. Since 2006, the plant has gone through testing, alteration, and scale-up to achieve commercial levels of production. The plant utilizes a batch production method and is fairly efficient in that it requires just three employees to operate. We also have installed in the plant a state-of-the-art fluorine laboratory with sensitive analytical equipment including a MIDAC FTIR model I series with isolatable gas cell compartment, a VARIAN GC model CP-3800 for analytical evaluations, and an ICP mass spectroscopy unit for metals analysis. With this laboratory equipment, we are capable of completing the gas analysis required to confirm a wide range of gas purity specifications.

We have operated the facility to demonstrate commercial quantity production capability, including development and documentation of a complete laboratory process for quality certification of the product gas. We provided a qualification sample of the gas to a prospective customer in early 2009, and that customer verified the quality and purity of the product as meeting all customer commercial specifications. During 2009, we spent our resources in the facility working towards development of analytical processes for the other FEP gases we plan to produce in the larger depleted $UF_6$ de-conversion and FEP facility. During 2010, we converted this facility into the batch production $BF_3$, which we ultimately anticipate will be the primary fluoride gas that will be produced in our planned uranium de-conversion and FEP facility. Following system conversions necessary to produce $BF_3$, we also developed the laboratory analysis processes to analyze $BF_3$ gas and more than a dozen small scale production runs were completed, producing small quantities of $BF_3$ gas. Again, the FEP process for $BF_3$ gas production proved itself to be robust and this pilot testing was informative for future commercial scale production. The $BF_3$ gas production through FEP is highly efficient in that the boron liquefies at the reaction temperature, which facilitates complete mixing of the reactants and results in a near complete reaction of all reactant products. Additionally, the pilot testing indicated that the $BF_3$ gas product is much less reactive and corrosive than the $GeF_4$ gas product, especially at higher reaction temperatures. Because of this lower reactive nature of the $BF_3$, we anticipate being able to use significantly less expensive construction materials for the main FEP systems in our planned commercial facility. In parallel with formal design of the new facility, we intend to continue testing and scaling up of FEP components in the Idaho pilot plant planned in the design of the larger uranium de-conversion and FEP facility. The current NRC license for the Idaho pilot plant permits up to 6,000 Kg of uranium and a wide range of research activities. Therefore, we believe that all of the planned testing to support the larger uranium facility can be carried out in the existing Idaho pilot plant without any additional permits or licenses from the NRC or the State of Idaho.

***A Green Solution for the Nuclear Industry***

There are several aspects of our proposed de-conversion FEP project that demonstrate its "green" qualities and overall environmental importance. During development of this project we sought to capitalize upon these important "green" aspects in relations with the public and regulatory community. For instance, we are recycling and recovering valuable materials (AHF, $BF_3$, and $SiF_4$) from the depleted $UF_6$ tails that are the voluminous by-product material from the enrichment process. There is currently only one other operating de-conversion plant in the world, AREVA's plant in France, and it de-converts the $UF_6$ into an oxide form for disposal and does not extract any significant value from the fluorine contained in the depleted $UF_6$.

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Using FEP, we are able to produce these fluoride products with just a fraction of the energy typically required to produce those products by conventional means. In the production of AHF, for example, conventional methods require seven times more energy per pound of AHF produced than is required by FEP during de-conversion. The energy consumption from FEP produced $BF_3$ is about half of the energy required by current manufacturing methods.

Additionally, fluoride products are used in manufacturing high performance electronics and the manufacture of polysilicon for photovoltaics (solar cell) applications.

In the design of our planned facility, we have given environmental considerations a very high priority. We have designed an environmental process system that will re-use 100% of all water used in our treatment systems. The facility will also include a significant solar array to off-set administrative electrical loads and a geothermal system to reduce energy requirements for heating and cooling systems. The small amount of waste water that will be produced from our sewage system (~3,000 gallons per day) will be triple-treated and then used to irrigate a small nursery. We plan to donate the shrubs and trees raised in this nursery to the City of Hobbs, New Mexico.

We believe that the numerous planned commercial uranium enrichment facilities in the United States and the significant volume of depleted $UF_6$ that will be produced from their operations create a promising business opportunity for a commercial de-conversion facility such as ours.

**Hybrid Uranium De-Conversion/FEP Production Facility**

In order to take advantage of the opportunities related to de-conversion services and fluoride gas products, we intend to construct a depleted uranium processing plant that will allow for both uranium de-conversion and FEP. These processes will require the design and engineering of major support systems such as AHF, $SiF_4$, and $BF_3$ storage and packaging, depleted uranium oxide powder handling and packaging, and depleted uranium cylinder cleaning and inspection.

The plant will consist of an area for de-converting depleted $UF_6$ into depleted $UF_4$ feedstock for FEP, a depleted $UF_4$ storage area, and a FEP production plant, and a waste packaging and cylinder refurbishment area. We anticipate integrating the de-conversion of depleted $UF_6$ with FEP in several phases. The proceeds of this offering are expected to be sufficient to complete the licensing, design and engineering of a facility capable of converting depleted $UF_6$ into depleted $UF_4$, and then extracting fluoride gas from the $UF_4$ using FEP. We will need to raise approximately $ million of additional capital for construction and working capital for this Phase I of the facility. Based on our current expectations regarding the timeline for licensing, design and construction of the planned facility, assuming there are no significant unexpected events or delays and we are successful in raising the capital necessary to construct the facility, we anticipate beginning construction in 2012 and commencing the first phase of commercial operations in 2013. We anticipate that the Phase I facility will be capable of producing approximately 100,000 lbs $SiF_4$, 1.9 million lbs $BF_3$, and 900,000 lbs anhydrous hydrofluoric acid from approximately 8,065,000 lbs of depleted $UF_6$, based on an annual availability of 85% for depleted $UF_6$ conversion and 85% for depleted $UF_4$ conversions during mature operations.

Historically, Sequoyah operated a depleted $UF_6$ to depleted $UF_4$ de-conversion facility in the United States. The facility has been idled and placed on care and maintenance since 1993. The facility had operated for about seven years and was fully automated. The plant was de-converting $UF_6$ and producing depleted $UF_4$ as a starting material for the production of depleted uranium metal. In order to mitigate the time lag and costs of constructing a new de-conversion plant, we evaluated the Sequoyah de-conversion facility for re-use and found it to be in suitable condition and of proper scale for re-use as the de-conversion section of our Phase I de-conversion and FEP facility. On May 30, 2008, we acquired that facility from Sequoyah, along with all the equipment deemed suitable for re-use, and engineering materials consisting of all historical operating data, original architectural design plans, engineering data, operating procedures, operating software, process knowledge and safety basis

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documents. Once licensing activities have progressed sufficiently to allow for the start of construction, we plan to relocate the acquired assets to our planned 640-acre site in Lea County west of Hobbs, New Mexico and combine them with facilities for FEP. When the new depleted uranium de-conversion and FEP facility is constructed, we intend to use many of the acquired plant components and update certain systems and hardware to utilize current best available design technology. The opportunity to acquire assets of the existing facility represents a large savings to us in both cost and time.

We have contracted with APTS to complete the conceptual design for our facility and help us complete the NRC license application. APTS prepared a CDR in June 2009, which includes cost estimates for the construction of the facility. APTS has also prepared a specifications package to solicit a design-and-build contractor and that selection process is currently underway. Selection of the design-and-build contractor is expected to take place in early 2011, with formal design beginning immediately thereafter. APTS will also assist us in coordinating the dismantling and relocation of the assets we acquired from Sequoyah. The members and management of APTS, including James Thomas, President of APTS, have significant experience relating to uranium and fluorine product industries.

***Site Selection Process for the Facility***

We completed an extensive site selection process in the latter half of 2008 that culminated in March 2009 in our selection of a location in Lea County, west of Hobbs, New Mexico, for the proposed facility. The site selection process consisted of multiple site visits, public meetings in each location and completion of a questionnaire package by the appropriate government and economic development agencies in each of the prospective areas. Throughout this process, public acceptance of our business plan and our planned operations was a major consideration for selection. The Lea County site application package noted some significant benefits and incentives for our project, including:

- No negative public response in the public meetings held in the immediate area to date;
- Positive encouragement from the state government including the Governor's office, and cabinet secretaries for Economic Development and Environmental Protection;
- 640 acre gift for the location of the facility, which is further subject to formal land transfer;
- job training tax credit incentives;
- property tax abatements (over 30 years);
- job creation tax credits; and
- manufacturer investment tax credit.

An Industrial Revenue Bond for the project totaling $72 million has been approved by Lea County, New Mexico facilitating the property tax abatement referenced above and a sales tax exemption on the construction of the facility. Although approved, the bond will not be issued until the land is transferred to us under the New Mexico Local Economic Development Act, which we anticipate occurring in early 2011. The bond will provide for relief from sales tax on the acquisition of all equipment purchased for the facility. The bond will be a self-funded instrument that will remain in place for 30 years.

***Facility Licensing Process***

The planned facility will require an operating license and an EIS from the NRC. The start of construction of the depleted $UF_6$ de-conversion and FEP facility will be dependent upon the NRC's schedule for licensing and permitting, the critical path being its completion of the EIS for the facility. In December 2009, we submitted a license application to the NRC, including an Environmental Report and Integrated Safety Analysis Summary, to possess and use source and by-product material at the

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proposed facility. In February 2010, the NRC completed an acceptance review of the application and determined that the application was acceptable for formal review. During the remainder of 2010 the NRC established review teams and requested additional information from us. We are working to respond to these requests and anticipate providing the NRC with the requested information during the first quarter of 2011. Based on the NRC's projection of administrative and technical review schedules, it has indicated that it anticipates completing the license review and issuing its Safety Evaluation Report and EIS by January 2012. However, this date could change depending on NRC budget and resource constraints, the findings of the NRC's technical review, or other factors. This license application does not require the NRC to conduct a mandatory hearing, but a notice of opportunity for stakeholders to request a hearing was required to be published in the Federal Register. The deadline for this hearing request was June 4, 2010 and the NRC has confirmed that no member of the public made any request for a hearing. We also plan to submit an additional request in 2011, for some limited pre-license construction activities at the new uranium facility site location. If approved by the NRC, this pre-license construction would be limited to certain non-process items such as roads, warehouses, and administration buildings, etc. The first public meeting on the license application was conducted by the NRC in January 2010. During this meeting approximately 85 residents attended and voiced support for the project. There was public support voiced from all levels of state government and no opposition to the project. On July 29, 2010, the NRC conducted its public scoping meeting for the EIS. The purpose of the meeting was to gather public comment for the content and direction of the EIS. The meeting was well attended by various members of the public and local government and much support was expressed for the project, without any objections either in writing or by the meeting participants.

In addition to the NRC license application, we entered into an agreement with the NMED which sets forth certain limitations on quantities of materials and containers that can be stored at our facility. We do not expect these limitations to pose any barrier to our proposed operations. The agreement was requested by the NMED prior to our submitting a license application to the NRC. In the future, the State will require additional permits for construction and operations including ground, air, and water discharge. We have identified appropriate subcontractors and consultants that are experienced with preparing these permits in the State of New Mexico and thus far do not anticipate any problems in their preparation and approval.

Our agreement with NMED also provides that LLRW produced by our facility will not be disposed of in New Mexico. Currently, the NRC is revising its regulations on the disposal of depleted uranium waste at LLRW disposal facilities that accept substantial quantities of depleted uranium, such as the volumes to be produced by our planned facility. These revised regulations may subject these disposal facilities to additional analyses, operational requirements, site-specific conditions and limitations. The NRC plans to complete the technical basis document for this rulemaking in early 2011; the proposed rule and draft guidance document by September 30, 2011; and the final rule by September 30, 2012. One potential requirement of the revised regulations is a performance assessment of the disposal site to demonstrate long-term protection of public health and the environment. Regardless of the outcome of this rulemaking process, we believe we will still be able to dispose of the waste and we anticipate that the disposal costs will be borne by our customers.

**Facility Funding**

We estimate that the total cost of the design, engineering and construction for Phase I of this project will be approximately $125 million, significantly in excess of the funds anticipated to be raised in this offering. We have submitted an application to the DOE Loan Guarantee Office for a loan for the balance of the capital cost of the project under the DOE's program solicitation for "Energy Savings in Manufacturing Processes" (solicitation # DE-FOA-0000140) titled Energy Efficient Fluorine Gas Production and Depleted Uranium De-conversion. The DOE loan program provides low cost loans for up to 80% of the capital cost of qualifying projects in the fields of energy and energy efficiency. If we

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are approved under this program, funding would be made available directly from the federal government. The Part 1 application was submitted to the DOE in June 2010 and the final Part 2 application was submitted in December 2010. The Part 2 application included both an independent engineers' assessment of the project and creditworthiness assessment. Both of those assessments favorably viewed the project under the requirements of the DOE loan office program. The requested loan amount is about $ million which represents 80% of the total qualified project costs and we have requested a 20 year term on the loan. We expect that the DOE will respond to this loan application around mid 2011 and, if we are successful, we believe funding would be available around the end of 2011. We believe that uranium de-conversion and FEP qualifies under the DOE loan guarantee solicitation for "Energy Savings in Manufacturing Processes" because production of industrial fluoride gases using FEP is very energy efficient and uses, in the case of $BF_3$, approximately 40% of the energy used in existing production methods for $BF_3$. However, there can be no assurance that the DOE will determine our project to be a qualifying project or that the DOE will award us a loan.

The DOE loan program consists of a two part application process. We completed our initial Part 1 application in June 2010. The Part 1 application provides a general description of the project, including the technology, economic benefit, and justified suitability of the project under the renewable energy DOE solicitation program. Our Part 1 application included letters of support from both the Idaho and New Mexico delegations and a letter of support from the President of AREVA. The Part 2 application requires much greater detail about the technology and economics of the project and is required to include an independent engineering and credit worthiness assessment, which were completed and submitted to the DOE at the end of 2010. Both of those independent assessments submitted to the DOE favorably viewed the project under the requirements of the DOE loan office program. The DOE review of the application is expected to take about six months.

If the DOE loan application is unsuccessful we will have to raise the balance of the funds required for Phase I of the planned facility through additional equity or debt financing. In parallel with our actions to pursue the DOE guarantee, we will also continue to work towards establishing additional supply and service agreements with prospective customers both for de-conversion services and the various fluoride products. We believe that these additional agreements, if entered into, will strengthen our position to complete additional equity raises or obtain alternative debt financing, or a combination of both, should the DOE loan guarantee not be approved.

**Market Competition**

We believe that our competitive position and business model give us an advantage over the various alternatives that commercial enrichment companies have for obtaining de-conversion services. To our knowledge, there are no currently operating commercial depleted $UF_6$ de-conversion facilities in the United States.

The DOE has constructed two de-conversion plants that are in various stages of start-up testing for operations to process depleted $UF_6$, including the 1.5 billion pound stockpile of depleted $UF_6$ currently being stored by the DOE. The process technology adopted by the DOE in its de-conversion plants is to de-convert depleted $UF_6$ into $UO_2$ and produce large quantities of aqueous HF by-product. The large volumes of aqueous HF the DOE will produce from these facilities has limited commercial value. Therefore, we believe the DOE will likely need to further process that aqueous HF, through neutralization, into waste. The DOE is required by law to accept depleted $UF_6$ from NRC licensed enrichment facilities, but the DOE is required to recover from such entities the full cost of providing those services. Therefore, if the DOE were to provide depleted uranium de-conversion services to commercial enrichment companies, the DOE would be required to charge them for the full cost of its de-conversion service. Because that charge could exceed estimates or quotations provided by the DOE in advance of providing the services, the full cost recovery requirement may subject these companies to additional financial exposure by way of retroactive charges and price volatility. Because we believe we

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will be in a position to offer lower prices due to our anticipated lower operating costs and ability to profit from the sale of fluoride products produced from FEP, we do not believe that the DOE facilities will be significant competitors to our commercial de-conversion services.

There are four $UF_6$ de-conversion facilities in the United States that de-convert enriched uranium for fuel fabrication and use the same chemical process that the DOE's depleted $UF_6$ de-conversion facility will use. However, we believe these four facilities will not be used to de-convert depleted $UF_6$ because of concerns with contaminating the high-value enriched uranium with depleted material and the scale of these facilities is not compatible with the large quantities of depleted $UF_6$ that will need to be processed.

Based on this lack of capacity for the de-conversion of commercially produced depleted $UF_6$ in the United States, we believe that, upon completion of our de-conversion facility, we will be well positioned in the market to provide a valuable and economically viable service to our prospective customers, who will have limited alternatives. We believe that it is unlikely that any commercial enrichment company would construct its own depleted $UF_6$ de-conversion facility because there would be little, if any, financial incentive for such construction with the additional high capital costs and the inability to make such an operation economical on a small scale without a process such as FEP to extract additional value from the depleted material. Additionally, with transportation costs and EU regulations regarding disposal of uranium oxide, we do not believe that international de-conversion facilities, such as the AREVA facility in France, will be competitive for the de-conversion of depleted $UF_6$ produced in the United States.

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## UNDERWRITING

We and Cormark Securities Inc. (through its agent affiliate in the United States, Cormark Securities (USA) Limited) and (for purposes of this section, together, the "Underwriters" and each an "Underwriter") have entered into an underwriting agreement with respect to the shares of common stock being offered hereby. Subject to the terms and conditions of the underwriting agreement, each Underwriter has agreed to severally purchase from us the following number of shares of common stock at an offering price less the underwriting discount set forth on the cover page of this prospectus supplement.

| Underwriter | Number of Shares |
|---|---|
| Cormark Securities Inc. | |
| Total | |

The Underwriters have agreed to purchase all of the shares of common stock sold under the underwriting agreement if any of the shares are purchased, other than shares covered by the over-allotment option described below. The underwriting agreement provides that the Underwriters' obligation to purchase shares of common stock depends on the satisfaction of the conditions contained in the underwriting agreement, including:

The representations and warranties made by us to the Underwriters are true;

There is no material change in our business; and

We deliver customary closing documents to the Underwriters.

Additionally, the obligations of the Underwriters under the underwriting agreement may be terminated at any Underwriters' discretion upon the occurrence of certain stated events. We have agreed to indemnify each Underwriter and its directors, officers, shareholders, agents and employees against certain liabilities and expenses, including liabilities under the Securities Act and Canadian securities laws. We have also agreed to contribute to payments each Underwriter may be required to make in respect of such liabilities.

We have granted the Underwriters an over-allotment option exercisable for 30 days from the date of the closing of this offering to purchase a total of up to shares of common stock, at the public offering price per share, less the underwriting discount. The Underwriters may exercise this over-allotment option solely to cover any over-allotments, if any, made in connection with this offering and for market stabilization purposes. To the extent the Underwriters exercise this over-allotment option in whole or in part, each will be obligated, subject to conditions contained in the underwriting agreement, to purchase a number of additional shares of common stock approximately proportionate to that Underwriter's initial commitment amount reflected in the above table.

We have applied to list the shares of common stock offered hereby on the TSXV. Listing will be subject to fulfillment of all the listing requirements of the TSXV.

The Underwriters have advised us that they propose initially to offer the common stock to the public at the public offering price on the cover page of this prospectus supplement and to dealers at that price less a concession not in excess of $ (or Cdn.$ ) per share. The Underwriters may allow, and the dealers may re-allow, a discount not in excess of $ (or Cdn.$ ) per share to other dealers. If all of the shares of common stock cannot be sold at the public offering price, the offering price and other selling terms may be changed. Any such reduction will not affect the offering proceeds received by us.

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The following table shows the per share and total underwriting discount to be paid to the Underwriters by us. The information assumes either no exercise or full exercise by the Underwriters of their over-allotment option to purchase additional shares of common stock.

| | Without Option | With Option |
|---|---|---|
| Per Share | Cdn.$ | Cdn.$ |
| Total | Cdn.$ | Cdn.$ |

With respect to the sale of common stock under this prospectus supplement, the maximum aggregate value of compensation to be received by any member of the Financial Industry Regulatory Authority, Inc. (FINRA) or independent broker or dealer will not be greater than eight percent (8%) of the gross proceeds of the offering.

We estimate that our share of the total expenses of the offering, excluding the underwriting discount will be approximately $ , which includes approximately $ in reimbursable expenses to be paid to the Underwriters.

The underwriters' commission will also include the issuance of compensation warrants at the completion of the offering to the underwriters that will be equal to 3% of the total number of shares of common stock issued in the offering. The exercise price for the compensation warrants will be equal to the public offering price for the shares of common stock in the offering, and will expire two years following the date of the closing date and any over-allotment closing date, as applicable, for the offering. The compensation warrants will be immediately exercisable, and may be exercised on a cashless-exercise basis. The warrant holder will have, in that capacity, no voting, dividend or other stockholder rights. Further, the Company has not granted resale registration rights to the underwriters with respect to the shares of common stock underlying such compensation warrants. Pursuant to the rules of FINRA the compensation warrants may not be sold, transferred, assigned, pledged, or hypothecated, or be the subject of any hedging, short sale, derivative, put, or call transaction that would result in the effective economic disposition of the securities by any person for a period of 180 days immediately following the date of effectiveness or commencement of sales of the offering, except to any FINRA member participating in the offering and the officers or partners thereof, or as otherwise permitted under the FINRA Corporate Financing Rule.

We and our officers and directors have agreed that, subject to certain exceptions, for a period of 180 days from the date of the underwriting agreement, we and they will not, without the prior written consent of Cormark Securities Inc., directly or indirectly, offer, sell, agree to offer or sell, solicit offers to purchase, grant any call option or purchase any put option with respect to, pledge, borrow or otherwise dispose of any shares of common stock or any securities convertible into or exchangeable for shares of common stock, and will not establish or increase any "put equivalent position" or liquidate or decrease any "call equivalent position" with respect to any shares of common stock or any securities convertible into or exchangeable for shares of common stock (in each case within the meaning of Section 16 of the Exchange Act and the rules and regulations promulgated thereunder), or otherwise enter into any swap, derivative or other transaction or arrangement that transfers to another, in whole or in part, any economic consequence of ownership of any of shares of common stock or any securities convertible into or exchangeable for shares of common stock. In respect of our officers and directors, such restrictions will not apply to a maximum of 10% (25% in the event that we are classified as a "Tier 1 issuer" by the TSXV) of the shares of common stock owned by each such officer and director.

The offering is being made concurrently in Canada in the Canadian Offering Jurisdictions pursuant to the multijurisdictional disclosure system implemented by the United States and Canada. The common stock will be offered in the Canadian Offering Jurisdictions and the United States through the Underwriters either directly or, if applicable, through their respective registered broker-dealer affiliates.

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Subject to applicable law, the Underwriters may offer the common stock outside of the Canadian Offering Jurisdictions and the United States.

In connection with the offering, the Underwriters may purchase and sell common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by an Underwriter of a greater number of shares than it is required to purchase in the offering. "Covered" short sales are sales made in an amount not greater than the Underwriters' over-allotment option to purchase additional shares of common stock from us in the offering. The Underwriters may close out any covered short position by either exercising the over-allotment option to purchase additional shares or purchasing shares in the open market. In determining the source of shares of common stock to close out the covered short position, the Underwriters will consider, among other things, the price of common stock available for purchase in the open market as compared to the price at which the Underwriters may purchase additional shares of common stock pursuant to the over-allotment option. "Naked" short sales are any sales in excess of such over-allotment option. The Underwriters must close out any naked short position by purchasing shares of common stock in the open market. A naked short position is more likely to be created if the Underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the Underwriters in the open market prior to the completion of the offering.

Purchases to cover a short position and stabilizing transactions, as well as other purchases by the Underwriters for their own accounts, may have the effect of preventing or delaying a decline in the market price of shares of our common stock, and may stabilize, maintain or otherwise affect the market price of our common stock. As a result, the price of our common stock may be higher than the price that otherwise might exist in the open market. If these activities are commenced, they may be discontinued at any time. These transactions may be effected on the TSXV, in the over-the-counter market or otherwise.

This prospectus supplement and the accompanying base prospectus in electronic format may be made available on Internet sites or through other online services maintained by one or more of the Underwriters, or by their affiliates. Other than any prospectus supplement and the accompanying base prospectus made available in electronic format in this manner, the information on any website containing this prospectus supplement and the accompanying base prospectus is not part of this prospectus supplement, the accompanying base prospectus, the registration statement of which this prospectus supplement forms a part, or the Canadian Prospectus, and such information has not been approved or endorsed by us or any Underwriter in such capacity and should not be relied on by prospective investors.

The underwriting agreement will be included as an exhibit to a current report on Form 8-K that will be filed with the SEC in connection with the consummation of this offering.

**United Kingdom**

The shares of common stock offered hereby may not be offered or sold and will not be offered or sold to any persons in the United Kingdom other than to persons whose ordinary activities involve them in acquiring, holding, managing or disposing of investments (as principal or as agent) for the purposes of their businesses and in compliance with all applicable provisions of the Financial Services and Markets Act 2000 (FSMA) with respect to anything done in relation to our common shares in, from or otherwise involving the United Kingdom. Each underwriter may only communicate or cause to be communicated any invitation or inducement to engage in investment activity within the meaning of Section 21 of the FSMA received by it in connection with the issue or sale of the shares of common stock offered hereby in circumstances in which Section 21(1) of the FSMA does not apply to the

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Company. This prospectus supplement and the accompanying base prospectus are only directed at (a) persons outside the United Kingdom, (b) persons having professional experience in matters relating to investments who fall within the definition of "investment professionals" in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"), (c) high net worth bodies corporate, unincorporated associations and partnerships and trustees of high value trusts as described in Article 49(2) of the Order and (d) persons to whom an invitation or endorsement to engage in investment activity (within the meaning of Section 21 of the FSMA) in connection with the issue or sale of any shares of common stock offered hereby may otherwise lawfully be communicated or caused to be communicated (all such persons together herein referred to as "relevant persons". Without limitation to the other restrictions referred to herein, an investment or investment activity to which this prospectus supplement and the accompanying base prospectus relates may be made available only to, and may be engaged only with, relevant persons, and persons within the United Kingdom who receive this communication. Those who are not relevant persons should not act or rely on this prospectus supplement or the accompanying base prospectus.

## MATERIAL UNITED STATES FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS

The following is a summary of the material United States federal tax considerations with respect to the ownership and disposition of our common stock to non-United States holders, but does not purport to be a complete analysis of all the potential tax considerations relating thereto. This summary is based upon the provisions of the Internal Revenue Code, Treasury regulations promulgated thereunder, administrative rulings and judicial decisions, all as of the date hereof, all of which are subject to change, possibly with retroactive effect. We have not sought a ruling from the Internal Revenue Service (or the IRS) with respect to the statements made and the conclusions reached in the following summary, and there can be no assurance that the IRS will agree with these statements and conclusions.

This summary does not address the tax considerations arising under the laws of any state, local or other jurisdiction and is limited to investors who will hold our common stock as a capital asset for tax purposes. This summary does not address all tax considerations that may be important to a particular investor in light of the investor's circumstances, or to certain categories of investors that may be subject to special rules, such as:

- banks, insurance companies or other financial institutions (except to the extent specifically set forth below);
- persons subject to the alternative minimum tax;
- tax-exempt organizations;
- controlled foreign corporations, passive foreign investment companies and corporations that accumulate earnings to avoid United States federal income tax;
- dealers in securities or currencies and traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- persons that own, or are deemed to own, more than five percent of our capital stock (except to the extent specifically set forth below);
- certain former citizens or long-term residents of the United States;
- persons who hold our common stock as a position in a hedging transaction, "straddle," "conversion transaction" or other risk reduction transaction; or

persons deemed to sell our common stock under the constructive sale provisions of the Internal Revenue Code.

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In addition, if a partnership (including any entity classified as a partnership for United States federal income tax purposes) holds our common stock, the tax treatment of a partner generally will depend on the status of the partner and upon the activities of the partnership. Accordingly, partnerships that hold our common stock, and partners in such partnerships, should consult their tax advisors.

**The following discussion of material United States federal income and estate tax consequences is for general information only. You are urged to consult your tax advisor with respect to the application of the United States federal income tax laws to your particular situation, as well as any tax consequences of the purchase, ownership and disposition of our common stock arising under the United States federal estate or gift tax rules or under the laws of any state, local, non-United States or other taxing jurisdiction or under any applicable tax treaty.**

**Non-U.S. Holder Defined**

For purposes of this discussion, you are a non-United States holder if you are any holder other than a (i) United States citizen or United States resident alien, (ii) a corporation or other entity taxable as a corporation for United States federal income tax purposes, that was created or organized in or under the laws of the United States, any state thereof or the District of Columbia, (iii) an estate whose income is subject to United States federal income taxation regardless of its source, or (iv) a trust that either is subject to the supervision of a court within the United States and has one or more United States persons with authority to control all of its substantial decisions, or has a valid election in effect under applicable United States Treasury Regulations to be treated as a United States person.

**Distributions**

If we make distributions on our common stock, these distributions generally will constitute dividends for United States tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under United States federal income tax principles. To the extent these distributions exceed both our current and our accumulated earnings and profits, they will constitute a return of capital and will first reduce your basis in our common stock, but not below zero, and then will be treated as gain from the sale of stock.

Any dividend paid to you generally will be subject to withholding either at a rate of 30% of the gross amount of the dividend or such lower rate as may be specified by an applicable income tax treaty. In order to receive a reduced treaty rate, you must provide us with an IRS Form W-8BEN or other appropriate version of IRS Form W-8 certifying qualification for the reduced rate. If you are eligible for a reduced rate of withholding pursuant to an income tax treaty, you may obtain a refund of any excess amounts withheld by filing an appropriate claim for refund with the IRS. If you hold our common stock through a financial institution or other agent acting on your behalf, you will be required to provide appropriate documentation to the agent, which then will be required to provide certification to us or our paying agent, either directly or through other intermediaries.

Dividends received by you that are effectively connected with your conduct of a United States trade or business are exempt from withholding. Dividends received by you that are effectively connected with your conduct of a United States trade or business (and, if required by an applicable income tax treaty, are attributable to a permanent establishment that such holder maintains in the United States) are exempt from withholding. In order to claim this exemption, you must provide us with an IRS Form W-8ECI or other applicable IRS Form W-8 properly certifying exemption. Such effectively connected dividends, although not subject to withholding, are taxed at the same graduated United States federal income tax rates applicable to United States persons, net of certain deductions and credits, subject to an applicable income tax treaty providing otherwise. In addition, if you are a corporate non-United States holder, dividends you receive that are effectively connected with your

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conduct of a United States trade or business may also be subject to a branch profits tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty.

**Gain on Disposition of Common Stock**

You generally will not be subject to United States federal income tax on any gain realized upon the sale or other disposition of our common stock unless:

- the gain is effectively connected with your conduct of a United States trade or business (and, if an income tax treaty applies, the gain is attributable to a permanent establishment maintained by you in the United States);
- you are an individual who is present in the United States for a period or periods aggregating 183 days or more during the calendar year in which the sale or disposition occurs and certain other conditions are met; or
- our common stock constitutes a United States real property interest by reason of our status as a "United States real property holding corporation" (or USRPHC) for United States federal income tax purposes at any time within the shorter of the five-year period preceding the disposition or your holding period for our common stock.

If you are described in the first bullet above, you will be required to pay tax on the net gain derived from the sale at the same graduated United States federal income tax rates applicable to United States persons (net of certain deductions and credits), and if you are a corporate non-United States holder, you may be subject to the branch profits tax at a rate of 30% or such lower rate as may be specified by an applicable income tax treaty. If you are described in the second bullet above, you will be required to pay a flat 30% tax on the gain derived from the sale, which tax may be offset by United States source capital losses (even though you are not considered a resident of the United States).

We believe that we are not currently and will not become a USRPHC. However, because the determination of whether we are a USRPHC depends on the fair market value of our United States real property relative to the fair market value of our other business assets, there can be no assurance that we will not become a USRPHC in the future. Even if we become a USRPHC, however, as long as our common stock is regularly traded on an established securities market, our common stock will be treated as a United States real property interest only if you actually or constructively hold more than five percent of such regularly traded common stock at any time during the applicable period specified in the Internal Revenue Code.

**Federal Estate Tax**

Our common stock beneficially owned at the time of death by an individual who is not a citizen or resident of the United States (as defined for United States federal estate tax purposes) generally will be includible in the decedent's gross estate for United States federal estate tax purposes, unless an applicable estate tax treaty provides otherwise.

**Backup Withholding and Information Reporting**

Generally, we must report annually to the IRS the amount of dividends paid to you, your name and address, and the amount of tax withheld, if any. A similar report is sent to you. Pursuant to applicable income tax treaties or other agreements, the IRS may make these reports available to tax authorities in your country of residence.

Payments of dividends on or the gross proceeds of disposition of our common stock may be subject to information reporting and backup withholding at a current rate of 28% unless you establish an

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exemption, for example by properly certifying your non-United States status on a Form W-8BEN or another appropriate version of IRS Form W-8. Notwithstanding the foregoing, backup withholding and information reporting may apply if either we or our paying agent has actual knowledge, or reason to know, that you are a United States person.

Backup withholding is not an additional tax. Any amounts withheld from a payment to you under the backup withholding rules will be allowed as a credit against your United States federal income tax liability and may entitle you to a refund, provided that the required information or returns are furnished to the IRS in a timely manner.

**Additional Withholding Requirements**

Recently enacted legislation generally will impose a United States federal withholding tax of 30% on dividends and the gross proceeds of a disposition of our common stock paid after December 31, 2012 to a foreign financial institution (as specifically defined for this purpose) unless such institution enters into an agreement with the United States government to withhold on certain payments and to collect and provide to the United States tax authorities substantial information regarding United States account holders of such institution (which includes certain equity and debt holders of such institution, as well as certain account holders that are foreign entities with United States owners). The legislation also will generally impose a United States federal withholding tax of 30% on dividends and the gross proceeds of a disposition of our common stock paid after December 31, 2012 to a non-financial foreign entity unless such entity provides the withholding agent with either a certification that it does not have any substantial direct or indirect United States owners or provides information regarding direct and indirect United States owners of the entity. Under certain circumstances, a Non-United States holder might be eligible for refunds or credits of such taxes. Holders are encouraged to consult with their own tax advisors regarding the possible implications of the legislation on their investment in our common stock.

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## LEGAL MATTERS

Certain matters related to United States law in connection with the common stock offered hereby will be passed upon for us by Perkins Coie LLP and on behalf of the underwriters by Troutman Sanders LLP. Certain legal matters related to Canadian law in connection with the common stock offered hereby will be passed upon on behalf of us by Borden Ladner Gervais LLP and on behalf of the underwriters by Heenan Blaikie LLP.

## EXPERTS

Our auditors, Hansen, Barnett & Maxwell, P.C., are independent of us in accordance with the rules of the Public Company Accounting Oversight Board and in accordance with the applicable rules and regulations of the SEC. The financial statements incorporated in this prospectus supplement by reference to our Annual Report on Form 10-K for the year ended December 31, 2009 have been so incorporated in reliance on the report of Hansen, Barnett & Maxwell, P.C., independent accountants, given on the authority of said firm as experts in auditing and accounting.

## WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information electronically with the SEC. You may read and copy these reports, proxy statements and other information at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of its 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 are subject to the filing requirements prescribed by the securities legislation of certain Canadian provinces where we are reporting issuer. You are invited to read and copy any reports, statements or other information that we file with the Canadian provincial securities commissions or other similar regulatory authorities available from the System for Electronic Document Analysis and Retrieval at http://www.sedar.com, which is commonly known by the acronym "SEDAR," the Canadian equivalent to the SEC's EDGAR system.

We also make available on or through our Internet site copies of these reports as soon as reasonably practicable after we electronically file or furnish them to the SEC. Our Internet site can be found at http://www.internationalisotopes.com. Information contained on our website does not constitute, and shall not be deemed to constitute, part of this prospectus supplement, the accompanying base prospectus, the Canadian Prospectus or any other report or documents we file with or furnish to the SEC or with the applicable Canadian securities regulators.

## 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 supplement and the accompanying base prospectus are not complete. You should read the information incorporated by reference for more detail. We incorporate by reference in two ways. First, we list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus supplement. Second, the information in documents that we file in the future will update and supersede the current information in, and be incorporated by reference in, this prospectus supplement.

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We incorporate by reference into this prospectus supplement the documents listed below, any filings we subsequently make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act until this offering of common stock is completed (in each case, except for the information furnished under Item 2.02 or Item 7.01 in any current report on Form 8-K and Form 8-K/A); provided, however, that we are not incorporating by reference any additional documents or information furnished and not filed with the SEC:

Our Annual Report on Form 10-K for the fiscal year ended December 31, 2009 filed with the SEC on March 31, 2010;

Our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2010 filed with the SEC on May 17, 2010, for the quarter ended June 30, 2010 filed with the SEC on August 16, 2010, and for the quarter ended September 30, 2010 filed with the SEC on November 5, 2010;

The description of our common stock that is contained in our Registration Statement on Form 8-A dated August 1, 1997, filed pursuant to Section 12 of the Exchange Act, and all amendments thereto and reports which have been filed for the purpose of updating such description;

Our Current Reports on Form 8-K, filed with the SEC on February 25, 2010; April 20, 2010, May 27, 2010, June 23, 2010, July 21, 2010, August 3, 2010, August 10, 2010, and November 1, 2010; and

The portions of our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2010 and subsequently amended on June 7, 2010 in connection with the 2009 annual meeting of shareholders that are incorporated by reference in the Annual Report on Form 10-K for the year ended December 31, 2009.

We will provide each person, including any beneficial owner, to whom a prospectus supplement is delivered, a copy of any or all of these filings, and any exhibits we have specifically incorporated by reference as an exhibit to the registration statement of which this prospectus supplement forms a part, upon written or oral request at no cost to the requester. Requests should be directed in writing or by telephone 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.

This prospectus supplement is part of a registration statement on Form S-3 that we filed with the SEC. That registration statement contains more information than this prospectus supplement 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 or incorporated by reference in this prospectus supplement and the accompanying base prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus supplement, the accompanying base prospectus or any free writing prospectus is accurate as of any date other than the date on the front cover of the applicable documents.**

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**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.**

**JUNE 28, 2010**

**PROSPECTUS**

# $100,000,000

**Common Stock**

**Preferred Stock**

**Debt Securities**

**Convertible Debt Securities**

**Warrants**

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

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

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

**Investing in our securities involves risk. You should carefully review the risks and uncertainties described under the heading "Risk Factors" beginning on page 5 and in the documents which are incorporated by reference herein, and contained in the applicable prospectus supplement and any related free writing prospectus.**

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

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

The date of this prospectus is June 28, 2010.

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## ABOUT THIS PROSPECTUS

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

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

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

## SUMMARY

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

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**About International Isotopes Inc.**

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

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

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

**The Securities We May Offer**

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

designation or classification;

aggregate principal amount or aggregate offering price;

maturity, if applicable;

original issue discount, if any;

rates and times of payment of interest or dividends, if any;

redemption, conversion, exchange or sinking fund terms, if any;

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conversion or exchange prices or rates, if any, and, if applicable, any provisions for changes to or adjustments in the conversion or exchange prices or rates and in the securities or other property receivable upon conversion or exchange;

ranking;

restrictive covenants, if any;

voting or other rights, if any; and

important United States federal income tax considerations.

designation or classification;

aggregate principal amount or aggregate offering price;

maturity, if applicable;

original issue discount, if any;

rates and times of payment of interest or dividends, if any;

redemption, conversion, exchange or sinking fund terms, if any;

conversion or exchange prices or rates, if any, and, if applicable, any provisions for changes to or adjustments in the conversion or exchange prices or rates and in the securities or other property receivable upon conversion or exchange;

ranking;

restrictive covenants, if any;

voting or other rights, if any; and

important United States federal income tax considerations.

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

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

**Common Stock**

We currently have authorized 500,000,000 shares of common stock, par value $0.01 per share, and we have asked our shareholders to approve an amendment to our Restated Certificate of Formation that would increase our authorized shares of common stock to 750,000,000. Our shareholders will vote on such proposal at our annual meeting of shareholders to be held on July 20, 2010. We may offer shares of our common stock either alone or underlying other registered securities convertible into or exercisable for our common stock. Holders of our common stock are entitled to such dividends as our board of directors may declare from time to time out of legally available funds, subject to the preferential rights of the holders of any shares of our preferred stock that are outstanding or that we

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may issue in the future. Currently, we do not pay any dividends. Each holder of our common stock is entitled to one vote per share. In this prospectus, we provide a general description of, among other things, the rights and restrictions that apply to holders of our common stock.

**Preferred Stock**

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

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

**Debt Securities**

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

**Warrants**

We may offer warrants for the purchase of shares of our common stock or preferred stock or of debt securities. We may issue the warrants by themselves or together with preferred stock, common stock or debt securities, and the warrants may be attached to or separate from any offered securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between

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us and the investors or a warrant agent. Our board of directors will determine the terms of the warrants. This prospectus contains only general terms and provisions of the warrants. The applicable prospectus supplement will describe the particular terms of the warrants being offered thereby. You should read any prospectus supplement and any free writing prospectus that we may authorize to be provided to you related to the series of warrants being offered, as well as the complete warrant agreements that contain the terms of the warrants. Specific warrant agreements will contain additional important terms and provisions and will be incorporated by reference into the registration statement of which this prospectus is a part from reports we file with the SEC.

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

## FINANCIAL RATIOS

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

## RISK FACTORS

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

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

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

## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

Our disclosure and analysis in this prospectus, in any prospectus supplement, in the documents incorporated by reference and in some of our other public statements contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended.

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This Act provides a "safe harbor" for forward-looking statements to encourage companies to provide prospective information about themselves so long as they identify these statements as forward-looking and provide meaningful cautionary statements identifying important factors that could cause actual results to differ from the projected results. In some cases, you can identify forward-looking statements by terminology such as "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "might," "plan," "potential," "predict," "should," or "will," or the negative of those terms, or comparable terminology.

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

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

## USE OF PROCEEDS

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

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

## DILUTION

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

- the net tangible book value per share of our equity securities before and after the offering;

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the amount of the increase in such net tangible book value per share attributable to the cash payments made by investors purchasing shares in the offering; and

the amount of the immediate dilution from the public offering price to such investors.

## DESCRIPTION OF SECURITIES

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

### General

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

### Common Stock

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

### Preferred Stock

Our board of directors has the authority, without further action by the shareholders, to issue up to 5,000,000 shares of preferred stock from time to time in one or more series. The board of directors also has the authority to fix the designations, voting powers, preferences, privileges and relative rights and the limitations of any series of preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. The board of directors, without shareholder approval, can issue preferred stock with voting, conversion or other rights that could adversely affect the voting power and other rights of the holders of common stock. Preferred stock could thus be issued quickly with terms that could delay or prevent a change of control of us or make removal of management more difficult.

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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 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

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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."

## PLAN OF DISTRIBUTION

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

- the name or names of any agents or underwriters;
- the purchase price of the securities being offered and the proceeds we will receive from the sale;
- any over-allotment options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;

any public offering price;

any discounts or concessions allowed or reallowed or paid to dealers; and

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any securities exchanges or markets on which such securities may be listed.

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

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

market prices prevailing at the time of sale;

prices related to such prevailing market prices; or

negotiated prices.

**Agents**

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

**Underwriters**

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

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

**Direct Sales**

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

**Trading Markets and Listing of Securities**

Unless otherwise specified in the applicable prospectus supplement, each class or series of securities will be a new issue with no established trading market, including our common stock, which is quoted on the OTC Bulletin Board® but for which there is currently no established trading market. We may elect to list any other class or series of securities on any exchange or market, but we are not obligated to do so. It is possible that one or more underwriters may make a market in a class or series

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of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the securities.

**Stabilization Activities**

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

## LEGAL MATTERS

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

## EXPERTS

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

## WHERE YOU CAN FIND MORE INFORMATION

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

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are allowed to incorporate by reference information contained in documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents and that the information in this prospectus is not complete. You should read the information incorporated by reference for more detail. We incorporate by reference in two ways. First,

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we list below certain documents that we have already filed with the SEC. The information in these documents is considered part of this prospectus. Second, the information in documents that we file in the future will update and supersede the current information in, and be incorporated by reference in, this prospectus.

We incorporate by reference into this prospectus the documents listed below, any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus is a part and prior to the effectiveness of the registration statement, and any filings we make with the SEC pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act from the date of this prospectus until the termination of this offering (in each case, except for the information furnished under Item 2.02 or Item 7.01 in any current report on Form 8-K and Form 8-K/A):

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2009, filed on March 31, 2010;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2010, filed on May 17, 2010;
- the description of the Common Stock that is contained in the Company's Registration Statement on Form 8-A dated August 1, 1997, filed pursuant to Section 12 of the Exchange Act, and all amendments thereto and reports which have been filed for the purpose of updating such description;
- our Current Reports on Form 8-K, filed with the Commission on April 20, 2010 and May 27, 2010; and
- the portions of our Definitive Proxy Statement on Schedule 14A filed with the SEC on April 29, 2010 and subsequently amended on June 7, 2010 in connection with the 2009 annual meeting of shareholders that are incorporated by reference in the Annual Report on Form 10-K for the year ended December 31, 2009.

We will provide each person, including any beneficial owner, to whom a prospectus is delivered, a copy of any or all of the information that has been incorporated by reference into this prospectus but not delivered with this prospectus upon written or oral request at no cost to the requester. Requests should be directed to Steve 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.

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

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

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**Shares**

**Common Stock**

**PROSPECTUS SUPPLEMENT**

**, 2011**