



DIVISION OF
CORPORATION FINANCE

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

Mail Stop 3030

August 26, 2009

Via U.S. Mail and Fax (208) 524-1411

Ms. Laurie McKenzie-Carter
Chief Financial Officer
International Isotopes Inc.
4137 Commerce Circle
Idaho Falls, Idaho 83401

**Re: International Isotopes Inc.
Form 10-K for the Fiscal Year Ended December 31, 2008
Filed March 26, 2009
Forms 10-Q for the Quarterly Periods Ended March 31, and
June 30, 2009
File No. 000-22923**

Dear Ms. McKenzie-Carter:

We have reviewed your filings and have the following comments. Where indicated, we think you should revise your documents in response to these comments. If you disagree, we will consider your explanation as to why our comments are inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the year ended December 31, 2008

Item 1. Business

Item 1A. Risk Factors, page 10

We are dependent upon various third parties..., page 11

1. We note you refer to dependence upon certain agreements. In future filings, in an appropriate place in the document, please provide an adequate description of the relevant contract provisions and other relevant information that will permit the reader to assess the nature and degree of risk and uncertainty presented, including the term of each agreement. Also, please tell us where you have filed, in accordance with Item 601(b)(10) of Regulation S-K, the agreements upon which you are substantially dependent.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 15

Results of Operations, page 16

Year Ended December 31, 2008 Compared to Year Ended December 31, 2007, page 16

Operating Costs and Expenses, page 17

2. We see that your operating expenses increased by approximately 32% in 2008 and approximately half of that increase is related to an increase in costs associated with the fluorine products division. Where changes in financial statement line items are the result of several factors, each significant factor should be separately quantified and discussed. Please further explain the reasons for the increase in 2008 expenses to us as part of your response and confirm you will revise your disclosure in future filings.
3. In future filings, please expand your segment discussion and analysis to include other operating factors in addition to revenues, as well as trends in those factors. For example, we note in Note 13 to the financial statements significant differences among business segments' income and capital expenditures.

Liquidity and Capital Resources, page 17

4. In future filings please discuss material cash flows from investing activities. For example, in 2008 you show a line item of \$1,011,897 for property plant and equipment but no discussion or analyses is included in your management's presentation.]

5. In your future filings please describe material capital expenditure plans by dollar amount, purpose, and expected source of funds. For example, you refer to plans to enter the new business segment of uranium de-conversion and fluorine extraction. See Item 303(a)(2)(i) of Regulation S-K.
6. In your future filings please discuss the components of your working capital that are material to an understanding of your cash management policies. For example, we note at December 31, 2008 you had inventory levels approximating one year of cost of products. We also note that some of your products have an operating cycle exceeding one year.
7. In your future filings please discuss material debt repayments and similar cash demands and how you plan to meet them. For example, we note that you had a bank debt payment of \$583,263 due in March, 2009, but that your liquidity and capital resources disclosures in your 10-K did not address how you anticipated paying that debt from existing resources.
8. In future filings please identify the nature of the long-term asset on the balance sheet referred to as "Investment," including the liquidity of the investment(s).

Financial Statements, page 26

Note 9 – Shareholders' Equity, Redeemable Convertible Preferred Stock, Options and Warrants, page 38

Private Placement, page 38

9. We see that the holders of the Class C warrants agreed to amend the terms of the Class C Warrant in order for you to call the warrants, those warrants were exercised, and you issued exchange Class E warrants. Please provide us with the terms of the amendment to the Class C warrants as well as how you accounted for the amendment and issuance of the Class E warrants.

Item 9A (T). Controls and Procedures, page 19

10. We note your disclosure that your chief executive and chief financial officer concluded that the company's disclosure controls and procedures are effective "in ensuring that information required to be disclosed by us in reports that we file or submit under the Exchange Act is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosures." In your future filings, please revise to clarify, if true, that your officers concluded that your disclosure controls and procedures are also effective to give reasonable assurance that the information required to be disclosed by the company in reports that it files under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the

SEC.” Refer to the complete definition of "disclosure controls and procedures" in Exchange Act Rule 13a-15(e). Alternatively, if true, your officers could simply conclude that your disclosure controls and procedures were effective.

Certifications, Exhibit 31.1 and 31.2

11. We note that the identification of the certifying individual at the beginning of the certification required by Exchange Act Rule 13a-14(a) also includes the title of the certifying individual. In future filings the identification of the certifying individual at the beginning of the certification should be revised so as not to include the individual's title. Refer to Item 601 (31) of Regulation S-K. This comment applies to your interim filing as well.

As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your response that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendments and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

Ms. McKenzie-Carter
International Isotopes Inc.
August 26, 2009
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You may contact Julie Sherman, Staff Accountant, at (202) 551-3640 or me at (202) 551-3603 if you have any questions regarding comments on the financial statements and related matters. Please contact Alan Morris, Staff Attorney, at (202) 551-3601 or Tim Buchmiller, Reviewing Attorney, at (202) 551-3635 if you have questions on any other comments. In this regard, do not hesitate to contact Jeff Jaramillo, Accounting Branch Chief, at (202) 551-3212.

Sincerely,

Jay Webb
Reviewing Accountant