

Mail Stop 6010

May 5, 2006

Roger Girard, CEO
IsoRay, Inc.
350 Hills Street, Suite 106
Richland, WA 99354

**Re: IsoRay, Inc.
Amendment No. 2 to Registration Statement on Form SB-2
Filed April 27, 2006
File No. 333-129646**

Dear Mr. Girard:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is 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.

Page references refer to the marked copy of the amendment furnished. Prior comment refers to our letter dated April 20, 2005.

We will need to raise additional capital, page 5

1. Please refer to prior comment 8 and prior comment 19. Please expand the appropriate section to update the status of the shares issued to Mercatus. Also,

update the table at the top of page on page 19, the last sentence of the first bullet on page 30 and the first full paragraph on page 33.

Liquidity and Capital Resources, page 16

2. Please refer to prior comment 14. Please expand the exhibit index to include the agreements, such as the agreements with Columbia River Bank. Also, tell us the status of the loans with Mr. Smith and HAEIFC. In addition, it does not appear that Exhibit 10.27 was filed. Please advise or revise.

Cs-131 Manufacturing Process, page 30

3. Please refer to prior comment 11. Please expand the disclosure to discuss sections 2.5 and 2.6 of the agreement. Also, tell us the status of the agreement referred to in section 2.4.

Customers, page 36

4. Please refer to prior comment 21. Please quantify the percentage of your revenues from each of the customers.

Directors, Executive Officers, page 40

5. Please refer to prior comment 23. As to the description of Strategic Financial Services, please provide a more definitive quantification of revenues than “under \$500,000.”
6. With regard to Ms. Mayfield:
 - Clarify her business experience between August 2004 and December 2005
 - explain the term “MD&D;”
 - resolve the inconsistencies as to her dates of employment with Johnson&Johnson and as a “consultant.”
7. With respect to Mr. Smith, clarify in which business employment capacity he “managed a national sales force of over five hundred people.”

Executive Compensation, page 45

8. Please refer to prior comments 25 and 26. Please revise the table of options exercised and outstanding to disclose outstanding options under the IsoRay Medical, Inc. plan(s) at June 30, 2005 that were assumed, continued or replaced, as disclosed under *Equity Compensation Plans* at page 46.

Selling Shareholders, page 50

9. Please refer to prior comment 29. As previously requested, please provide us with a copy of the requested table.
10. Please refer to prior comment 31. Please revise to disclose each selling stockholder who is an affiliate of a broker-dealer purchased the shares being registered for resale in the ordinary course of business, and at the time of the purchase, the selling stockholder had no agreements or understandings, directly or indirectly, with any person to distribute the securities. In addition, please tell us which affiliates were not able to make such a representation.

Description of Securities, page 67

11. Please tell us where you responded to the second sentence of prior comment 32. Also, discuss the warrants to purchase common stock for \$6.00 per share.
12. Please refer to prior comment 34. Please tell us the status of any preliminary plans or agreements to acquire IsoRay at the time of the reverse stock split. If there were no such preliminary plans or agreements to acquire IsoRay, then please tell us the reasons for the reverse stock split. Also, tell us how fractional shares were treated in the reverse stock split.
13. Please provide us with a legal analysis as to how the rights and preferences of the shareholders were not adversely affected. Also, tell us the basis for your statement that the statute clearly permits the board to act without shareholder approval. For example, could the board act without shareholder approval with a planned acquisition that would dilute the interests of present investors by 82%?
14. Please provide us with a legal analysis as to the exemption from registration relied upon concerning the issuance of shares in connection with the July 2005 merger. Also, tell us why Item 26 does not include the issuance of shares in the July merger.

Warrants, page 68

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15. It appears the information in the second and third paragraphs is no longer applicable since you have eliminated registration of warrants. Please revise or advise.

IsoRay, Inc. Financial Statements, page F-1

General

16. Please refer to our prior comment 38. We will be in a position to clear or reissue this comment once you have filed any revised periodic reports necessary based on our comments, including Form's 8-K, Form 10-KSB and Form 10-QSB, and we have reviewed them.

Note G – Related Party Transactions, page F-11

17. Please refer to our prior comment 41. We will be in a position to clear or reissue this comment once you have filed an Item 4.02 Form 8-K and we have reviewed it. Please be advised that Item 4.02 requires the company to file a Form 8-K when the board of directors, a committee of the board of directors or an authorized officer if board action is not required, concludes that any of the company's previously issued financial statements should no longer be relied upon because of an error in such financial statements. Upon such determination the company is to file a Form 8-K within 4 business days of the triggering event. Please advise us as to when the company plans to file the Form 8-K. We refer you to SEC Release 33-8400.

IsoRay, Inc. Financial Statements for the three and six months ended December 31, 2005, page F-20

IsoRay, Inc Consolidated Balance Sheets, page F-21

18. Please refer to our prior comment 42. It appears to us the June 30, 2005 amounts on page F-21 are those of the former IsoRay (see page F-3) but should be those of former Medical (see page F-32). Tell us why the comparative June 30, 2005 balance sheet currently at page F-21 is appropriate or revise the financial statement to agree with the June 30, 2005 balance sheet presented at page F-32. We may have further comments on this matter after reviewing your response and revisions, if any, to your filings.

Revenue Recognition, page F-26

19. Please refer to our prior comment 43. We noted your response, but continue to believe that your disclosure in the note to the financial statements is too vague. Please revise your disclosure to enhance your discussion to confirm that you recognize revenue in accordance with SAB 104 and a discussion of any allowances for returns, warranties and any other significant terms maintained with customers. Please be advised that it is preferred that you include disclosure that is specific to the company's revenue recognition policies and procedures, rather than general statements such as "*in general*, the company recognizes revenue related to product sales when persuasive evidence of an arrangement exists, shipment has occurred, the fee is fixed or determinable and collectibility is reasonably ensured." If you do include this disclosure, also discuss those instances when you recognize revenue that is outside these parameters.

Item 27. Exhibits

20. Please be advised that comments on the confidential treatment request regarding Exhibit 10.26 will be issued in a separate letter. Also, revise the exhibit index to clarify that you have requested confidential treatment for Exhibit 10.22. Please be advised that we may have comments on the application for Exhibit 1.22. The confidential treatment requests will need to be resolved prior to effectiveness of the registration statement.

Item 28. Undertakings

21. Please refer to prior comment 47. Please include the undertaking required by Regulation S-B Item 512(a)(4) and Item 512(g).

Form 10-QSB for the quarter ended December 30, 2005

Item 3. Controls and Procedures, page 14

22. Please refer to our prior comment 48. We will be in a position to clear or reissue this comment once you have filed any revised periodic reports necessary based on our comments, including, Form 10-KSB and Form 10-QSB, and we have reviewed them.

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment 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 amendment and responses to our comments.

Roger Girard, CEO
IsoRay, Inc.
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You may contact Julie Sherman at (202) 551-3640 or Jay Webb at (202) 551-3603 if you have questions regarding comments on the financial statements and related matters. Please contact Alan Morris at (202) 551-3601 or me at (202) 551-3602 with any other questions.

Sincerely,

Thomas A. Jones
Senior Counsel

cc. Stephen R. Boatwright
via FAX at (602) 248-2822