



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-4631

August 10, 2011

Via U.S. Mail

Mr. Johan M. (Thijs) Spoor
Chief Executive Officer
FluoroPharma Medical, Inc.
500 Boylston Street, Suite 1600
Boston, MA 02116

**Re: FluoroPharma Medical, Inc.
Registration Statement on Form S-1
Filed July 18, 2011
File No. 333-175647**

Dear Mr. Spoor:

We have limited our review of your registration statement to those issues that we have addressed in our comments. In some of our comments, we may ask you to provide us information so that we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. Where you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information that you provide in response to these comments, we may have additional comments.

General

1. We note that FluoroPharma Medical, Inc. or FPM, is registering up to 10,264,092 shares of common stock for resale by the selling stockholders named in the prospectus. We note also that FPM is proposing to register the resale offering on a delayed or continuous basis under Rule 415. Given the size of the resale offering relative to the number of outstanding shares held by non-affiliates, we believe that this transaction may be a primary offering. Because FPM does not appear to be eligible to conduct a primary offering on Form S-3, FPM is ineligible to conduct a primary at the market offering under Rule 415(a)(4). If you disagree with our analysis, please tell us why you believe that FPM can rely on Rule 415(a)(1)(i) for this transaction. In your analysis, address these factors:

- The number and nature of the selling stockholders and the percentage of the overall offering made by each stockholder.
- The date on which and the circumstances under which each selling stockholder received its securities.
- The relationship of each selling stockholder to FPM, including an analysis of whether the selling stockholder is an affiliate of FPM.
- Any relationships among the selling stockholders.
- Whether any of the selling stockholders is in the business of buying and selling securities.

For guidance, refer to Question 612.09 in the Securities Act Rules section of our “Compliance and Disclosure Interpretations” on the Commission’s website.

Registration Statement’s Facing Page

2. The EDGAR system indicates that FPM’s primary standard industrial classification or SIC code number is 4950 rather than 2835. Please revise.

About This Offering, page 1; Summary of the Shares offered by the Selling Stockholder, page 2

3. Disclosure that the selling stockholders are offering up to 10,221,941 shares of common stock is inconsistent with disclosure on the prospectus’ front cover page and elsewhere that the selling stockholders are offering up to 10,264,092 shares of common stock. Please reconcile the disclosures.

Risk Factors, page 3

4. We note the statement “Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business.” Since FPM must disclose all risks that it believes are material at this time, please delete the statement.

Selling Security Holders, page 19

5. Identify the transactions in which the selling stockholders received the securities being registered for resale.

Mr. Johan M. (Thijs) Spoor
FluoroPharma Medical, Inc.
August 10, 2011
Page 3

6. Indicate the nature of any position, office, or other material relationship which any selling stockholder has had within the past three years with FPM or any of its predecessors or affiliates. See Item 507 of Regulation S-K.
7. For selling stockholders whose surnames are the same, disclose their relationship, if any. For example, refer to Matthew Balk, David Balk, Daniel Balk, and Marilyn Balk. Similarly, refer to Michael Kooper, Luke Kooper, Sophie Kooper, and Jayk Kooper.

Plan of Distribution, page 26

8. Disclose the requirements of Regulation M applicable to the offering. See Item 508(k) of Regulation S-K.

Security Ownership of Certain Beneficial Owners and Management, page 56

9. Identify the natural person or persons who exercise voting or investment control or both for the shares of common stock held by Platinum Long Term Growth VII LLC. Refer to Question 140.02 in the Regulation S-K section of our “Compliance and Disclosure Interpretations” available on the Commission’s website.

Additional Information, page 58

10. We assume that the reference to the website of Red Metal Resources Ltd. as FPM’s website in the second paragraph is inadvertent. Please revise.

Undertakings, page II-4

11. Since the undertakings under paragraphs 5(i)(A) and 5(i)(B) are inapplicable to the offering, please delete them.

Exhibit 5.1

12. Include the full registration number of 333-175647 in the first paragraph.
13. We note the phrase “when issued” in the second paragraph. Revise to reflect that 5,461,521 shares being offered for resale are already issued.
14. For equity securities, counsel must opine on the corporate laws of the jurisdiction of incorporation of FPM. Please revise.

Mr. Johan M. (Thijs) Spoor
FluoroPharma Medical, Inc.
August 10, 2011
Page 4

Closing

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 the information that the Securities Act and all applicable Securities Act rules require. 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 that they have made.

Notwithstanding our comments, if you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- Should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing.
- The action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing.
- The company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their responsibilities under the Securities Act and the Securities Exchange Act as they relate to the proposed public offering of the registered securities.

You may contact Edward M. Kelly, Senior Counsel, at (202) 551-3728 or me at (202) 551-3765 with any questions.

Very truly yours,

/s/ Pamela A. Long

Pamela A. Long
Assistant Director

Mr. Johan M. (Thijs) Spoor
FluoroPharma Medical, Inc.
August 10, 2011
Page 5

cc: Via facsimile
Marc J. Ross, Esq.
Sichenzia Ross Friedman Ference LLP
61 Broadway, 32nd Floor
New York, NY 10006