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

DIVISION OF
CORPORATION FINANCE

August 2, 2016

William Rosellini
Chief Executive Officer
Nexeon MedSystems Inc.
1708 Jaggie Fox Way
Lexington, Kentucky 40511

**Re: Nexeon MedSystems Inc.**
**Registration Statement on Form 10-12G**
**Filed July 6, 2016**
**File No. 000-55655**

Dear Mr. Rosellini:

We have reviewed your filing and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to these comments within ten business days by providing the requested information or advise us as soon as possible when you will respond. Please note that this filing will become effective automatically 60 days after the date you initially filed it. If this filing was made voluntarily, you should consider withdrawing it prior to the effective date if comments remain outstanding. You could then refile when you are prepared to resolve the comments. Please file your request for withdrawal before the automatic effectiveness date.

If you do not believe our comments apply to your facts and circumstances, please tell us why in your response. After reviewing your response and any amendment you may file in response to these comments, we may have further comments.

1. It appears that you qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act. If so, please disclose that fact in your filing.

Business Overview, page 5

2. Given your disclosure in the penultimate paragraph on page 5 that you are developing the device, please revise throughout to remove claims about you and the benefits of your device, or revise to indicate that they represent management's belief. Examples include the disclosure in the last paragraph on page 5 about the "unique synergies" and the disclosure in the first paragraph on page 11 that the "processes will be readily transferable."

3. We note the disclosure in the last sentence on page 5 that you are "not contemplating any such acquisitions, other than as described herein." Please tell us why you do not discuss in this section your acquisition of patents from NeuroTek Medical mentioned in the April 21, 2016 press release on your website. Also, tell us why you do not discuss in this section the option to purchase the common stock or interests in the entities mentioned in the last sentence of the first paragraph on page F-40. In addition, tell us with specificity the provision in the agreement that refers to the option to purchase the common stock or interests.

4. We note the disclosure on page 6 that the chart "provides a broad overview" of your "general strategy for developing and commercializing medical technology." Please explain the information in the chart so that it is understandable to investors. For example, include clarification of what you mean by the phrases "Summary Value Economics," "In-source synergistic functions" and "Synergistic Reinvestments" that are mentioned in the chart. Also, your disclosure should describe the "existing networks in 4 countries" mentioned in the third column of the chart and identify the countries. In addition, describe the current status of your relationships with the universities and research labs mentioned in the third column.

5. Please disclose the material hurdles that remain until you can sell your device commercially.

Pulsus Medical, LLC, page 7

6. Regarding the various entities discussed under the caption "Portfolio" on your website, it appears that Pulsus Medical is the only entity that you discuss in any detail in your filing. Tell us why you have not discussed the other entities in your filing.

Funding & Development, page 8

**7.** We note your disclosure that your technology was developed using government funds. Please disclose any rights the government has to your technology and patents.

8. Please expand the disclosure in this section to disclose the material terms and conditions of the grants. Also, expand the disclosure to explain what you mean by the references to "Phase I" and "Phase II" of the grants. In addition, identify the "Federal and State Agencies" mentioned in this section.

Advantages of our Approach, page 9

9. If you are aware of disadvantages of your approach, please revise your disclosure so that the information you present is balanced.

Intellectual Property, page 10

10. Please expand the disclosure about the patents mentioned in this section to identify which have patent applications that are pending, which patents have been granted and the duration of the patents.

Regulatory Plan, page 11

11. Where you elect to refer to a directive, standard or exemption, such as the references on page 11 to the system "must be in accordance with Annex II or V of the Medical Devices Directive" and "complies with MDD93/42EEC" and the reference on page 12 to an "Investigational Device Exemption," include a sufficient explanation so that your disclosure is meaningful to investors who may not be experts in your industry.

12. Please expand the disclosure on pages 11-12 to more fully disclose the EU approval process and the FDA approval process and the nature of regulatory oversight. For example, include in your disclosure the duration of the process, post-market reporting and record keeping requirements and remedies for noncompliance. Also, disclose why you expect the FDA will consider your system to be a Class II device.

References, page 12

13. Please tell us why you have included this section in your filing. It does not appear that you refer elsewhere in your filing to the references mentioned in this section or if you are attributing the publication of these references to the company.

Liquidity and Capital Resources, page 16

14. Please revise this section to include a discussion of any material changes in your financial condition during the latest interim period presented in the filing. In particular, address any business combinations and investments made. Refer to Regulation S-K Item 303(b)(1).

Item 4. Security Ownership of Certain Beneficial Owners and Management, page 19

15. Please ensure that your table includes shares that the holder has the right to acquire within 60 days. We note in this regard the reference to granting 7,000 options on a monthly basis to Mr. Bates in section 2.2 of the agreement dated May 1, 2016 filed as exhibit 10.06.

Item 5. Directors and Executive Officers, page 20

16. Please state the dates during which your officers and directors served in the disclosed roles. From your revised disclosure, it should be clear that you have provided all information for the full five-year period that Regulation S-K Item 401(e) requires you to provide.

17. We note your disclosure that Dr. Bates raised "$30 million from publicly traded medical device companies and private investors" and sold the "embolization procedure to Boston Scientific for $70 million." Please ensure that the background information that you highlight in this section is balanced, with equally prominent explanation of the experience of your officers and directors with unsuccessful transactions.

18. Please disclose Marathon Patent Group's principal business. Please ensure that you provide this information with sufficient clarity so that investors can evaluate the extent to which its activities conflict with the registrant's activities. For example, if Marathon's business also is to acquire intellectual property, it is unclear how future opportunities to acquire intellectual property will be allocated between you and Marathon. We also note your disclosure that Mr. Rosellini is your CEO and the chairman of Rosellini Scientific, Inc. and that he is the CEO of Nuviant Medical, Inc. Please also address any conflicts of interest from these relationships.

19. Please tell us what consideration you gave to expanding your discussion of Mr. Conquest's experience to disclose that WindGen Energy has not filed any Exchange Act reports since February 4, 2014 and that FTM Media's registration was revoked on July 9, 2012.

20. Please ensure that you have provided disclosure that led to your conclusion that each of your directors should serve as director in light of your business and structure. See Regulation S-K Item 401(e).

21. Please tell us why you have not identified Dr. McWade as an executive officer given the definition of "executive officer" in Rule 405. We note in this regard your disclosure in the third paragraph on page 26 that Dr. McWade is your vice president of Emerging Technologies.

Summary Executive Compensation, page 23

22. Regarding the two tables on page 23, provide one table in the tabular format specified in Regulation S-K Item 402(n) concerning the executive compensation of the named executive officers for your last completed fiscal year.

Equity Incentive Plan, page 24

23. Please clarify the disclosure in the second paragraph of this section that the options to purchase a total of 250,000 shares "vest in monthly increments of 6, for three years." Also tell us where in this section you discuss the stock options issued to Dr. McWade mentioned in section 6(a) of the agreement filed as exhibit 10.05.

Shares Available under the 2016 Omnibus Incentive Plan, page 25

24. Please reconcile the reference to the maximum shares available for issuance under the plan are 3 million in the first paragraph on page 25 with the reference to the maximum number of shares available under the plan are 2.5 million in section 4(a) of your incentive plan agreement filed as exhibit 4.01.

Item 7. Certain Relationships and Related Transactions, page 26

25. Regarding the transactions with Elizabeth Rosellini and Rosellini Scientific mentioned in the seventh and eighth paragraphs on page 27, please disclose the principle followed in determining the amount at which the assets were acquired from the related person, and identify the persons making the determination. If the assets were acquired by the related person within two years prior to their transfer to the registrant, state the cost of the assets to the related person.

26. Please tell us why you do not disclose in this section the notes payable to stockholders mentioned on pages F-27 and F-32. Please see Regulation S-K Item 404(a)(5).

Item 10. Recent Sales of Unregistered Securities, page 30

27. Please expand the disclosure in the third paragraph on page 30 to briefly indicate the facts relied upon in claiming the exemption from registration used in connection with the issuance of 1,659,946 shares of your common stock.

28. Please revise the disclosure in the fifth paragraph on page 31 to provide more specific information about the services provided by Sheneka Rains.

29. Please show us how you reconcile the information in this section about the issuance of shares of common stock with your disclosure on page 32 regarding 20,242,265 shares of common stock outstanding.

Market for Our Shares of Common Stock, page 33

30. Please expand your disclosure regarding the OTCBB in the second paragraph of this section to clarify, if true, that you are referring to the OTCQB marketplace. We note in this regard the reference to the OTCQB in section 1.b of exhibit 10.02.

March 31, 2016 Financial Statements of Nexeon MedSystems Inc., a Nevada corporation

Consolidated Statement of Cash Flows, page F-34

31. Please disclose the non-cash activity with regard to shares issued for any notes and accrued interest related to the NXDE acquisition, as discussed on page 27. Refer to ASC 230-10-50-3 through 50-6.

Notes to Financial Statements, page F-35

32. Please revise your filing to include disclosure of changes in the components of shareholders' equity as a separate statement or in the footnotes to these financial statements. Refer to ASC 505-10-50-2.

Note 4 – Acquisition, page F-36

33. In connection with your February 16, 2016 acquisition of Nexeon MedSystems Inc., a Delaware company, please address the following:

- Provide us with your analysis of how you determined the Nevada Corporation Nexeon MedSystems Inc. was the accounting acquirer. Refer to ASC 805-10-55-10 through 55-15.
- Provide us with your analysis of the guidance at ASC 805-40. Tell us your consideration as to whether the February transaction represented a recapitalization rather than a merger.
- Tell us and revise the filing to disclose how the aggregate fair market value of the consideration issued was determined. Refer to ASC 805-30-50-1(b)(4).

34. Please revise this footnote to provide the disclosures required by ASC 805-10-50. In particular, please address the primary reasons for the acquisition as required by ASC 805-10-50-2.d.

Note 7 – Equity, page F-39

35. Please revise your equity footnotes to explain, in summary form, the pertinent rights and privileges of all warrants issued and outstanding at the end of each annual and interim reporting period presented. Refer to ASC 505-10-50-3.

Note 8 – Related Party Transactions, page F-40

36. We note the disclosures with regard to your executive officers on pages 19 through 28. Please explain to us whether all common shares or warrants issued to them in transactions, other than compensation arrangements, as described in Item 7 on page 26, are disclosed in this note and revise the note as necessary to include all disclosures required by ASC 850-10-50-1. Also refer to ASC 850-10-20.

Exhibit 10.01

37. Please file the exhibits missing from exhibit 10.01.

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 the Securities Exchange Act of 1934 and all applicable Exchange 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 they have made.

In responding to our comments, please provide a written 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.

You may contact Gary Newberry at (202) 551-3761 or Jay Webb, Senior Accountant, at (202) 551-3603 if you have questions on the financial statements and related matters. Please contact Tom Jones at (202) 551-3602 or Tim Buchmiller, Senior Attorney, at (202) 551-3635 with any other questions.

Sincerely,

/s/ Tim Buchmiller for

Amanda Ravitz
Assistant Director
Office of Electronics and Machinery