
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 12b-25

Notification of Late Filing

SEC File Number: 1-16467
CUSIP Number: 761227305

(Check one):

Form 10-K Form 20-F Form 11-K Form 10-Q
 Form 10-D Form N-CEN Form N-CSR

For Period Ended: March 31, 2021

Transition Report on Form 10-K Transition Report on Form 20-F
 Transition Report on Form 11-K Transition Report on Form 10-Q

For the Transition Period Ended:

**Nothing in this form shall be construed to imply that the
Commission has verified any information contained herein.**

If the notification relates to a portion of the filing checked above, identify the Item(s) to which the notification relates: Not applicable.

PART I - REGISTRANT INFORMATION

RESPIRERX PHARMACEUTICALS INC.

Full Name of Registrant

126 Valley Road, Suite C

Address of Principal Executive Office (*Street and Number*)

Glen Rock, New Jersey 07452
(City, State and Zip Code)

PART II - RULES 12b-25(b) AND (c)

If the subject report could not be filed without unreasonable effort or expense and the registrant seeks relief pursuant to Rule 12b-25(b), the following should be completed. (Check box if appropriate) [X]

- (a) The reason described in reasonable detail in Part III of this form could not be eliminated without unreasonable effort or expense;
- (b) The subject annual report, semi-annual report, transition report on Form 10-K, Form 20-F, Form 11-K, Form N-CEN or Form N-CSR, or portion thereof, will be filed on or before the fifteenth calendar day following the prescribed due date; or the subject quarterly report or transition report on Form 10-Q or subject distribution report on Form 10-D, or portion thereof, will be filed on or before the fifth calendar day following the prescribed due date; and
- (c) The accountant's statement or other exhibit required by Rule 12b-25(c) has been attached if applicable.

PART III - NARRATIVE

State below in reasonable detail why Forms 10-K, 20-F, 11-K, 10-Q, 10-D, N-CEN, N-CSR, or the transition report or portion thereof, could not be filed within the prescribed time period.

RespireRx Pharmaceuticals Inc. (the "Registrant") was unable, without unreasonable effort or expense, to file its Quarterly Report on Form 10-Q for the period ended March 31, 2021 (the "Quarterly Report") by the May 17, 2021 filing date applicable to smaller reporting companies due to additional time needed for the Board of Directors (acting as the Audit Committee) of the Registrant to complete its review of the Quarterly Report with the Registrant's independent registered accounting firm. This delay resulted, in part, from the Registrant's focus on completing financing transactions on May 3, 2021 and May 10, 2021. Accordingly, the Registrant is still in the process of preparing disclosure and accumulating validating information needed to complete the Quarterly Report and requires additional time for its completion. The Registrant intends to file a complete Quarterly Report as soon as practicable within the extension period of five calendar days provided under Rule 12b-25 of the Securities Exchange Act of 1934, as amended.

PART IV - OTHER INFORMATION

Name and telephone number of person to contact in regard to this notification:

Jeff E. Margolis
(Name)

(201)
(Area Code)

444-4947
(Telephone Number)

Have all other periodic reports required under Section 13 or 15(d) of the Securities Exchange Act of 1934 or Section 30 of the Investment Company Act of 1940 during the preceding 12 months or for such shorter period that the registrant was required to file such report(s) been filed? If answer is no, identify report(s).

[X] Yes [] No

Is it anticipated that any significant change in results of operations from the corresponding period for the last fiscal year will be reflected by the earnings statements to be included in the subject report or portion thereof?

[] Yes [X] No

If so, attach an explanation of the anticipated change, both narratively and quantitatively, and, if appropriate, state the reasons why a reasonable estimate of the results cannot be made.

RespireRx Pharmaceuticals Inc. has caused this notification to be signed on its behalf by the undersigned hereunto duly authorized.

Date: May 17, 2021

RespireRx Pharmaceuticals Inc.

By: /s/ Jeff E. Margolis

Jeff E. Margolis
Senior Vice President, Chief Financial Officer,
Treasurer and Secretary
