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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): August 22, 2017

ACELRX PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

DELAWARE

(State of incorporation)

001-35068 (Commission File No.)

41-2193603 (IRS Employer Identification No.)

351 Galveston Drive

Redwood City, CA 94063 (Address of principal executive offices and zip code)

Registrant's telephone number, including area code: (650) 216-3500

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

□ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

□ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

□ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company \Box

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 1.01. Entry into a Material Definitive Agreement.

On August 22, 2017, AcelRx Pharmaceuticals, Inc. (the "Company") entered into the second amendment to the Manufacturing Services Agreement (the "MSA") effective as of August 4, 2017, with Patheon Pharmaceuticals, Inc. ("Patheon"), related to the manufacture of sufentanil sublingual tablets for use with Company's product candidate, DSUVIA[™] (known as ARX-04 outside the United States) (the "Product"). Under the terms of the MSA, Patheon will manufacture, supply, and provide certain validation and stability services for the Product intended for marketing and sale in United States of America, Canada and Mexico, and their respective territories, the European Union, Switzerland, Liechtenstein, Norway, Iceland and Australia (the "Territory"). Additionally, the Company has the right to purchase the Product in Bulk Tablet Packaging from Patheon and to have a third party package the Product into Finished Product Packaging for distribution or sale outside of the Territory and Patheon has agreed to perform release and stability testing of the Finished Packaged Product, provided by such third party packager managed by the Company. All other terms and conditions remain unchanged.

The foregoing summary of the amendment is not complete and is qualified in its entirety by reference to the second amendment to the MSA, a copy of which will be filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: August 23, 2017

ACELRX PHARMACEUTICALS, INC.

By: /s/ Jane Wright-Mitchell

Jane Wright-Mitchell Chief Legal Officer