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September 26, 2022

VIA EDGAR AND KITEWORKS

U.S. Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, D.C. 20549

Attn: Ibolya Ignat and Kevin Kuhar
Conlon Danberg and Christopher Edwards
Division of Corporation Finance
Office of Life Sciences

Re: ASP Isotopes Inc.
Registration Statement on Form S-1 (File No. 333-267392)
CIK No. 0001921865

Ladies and Gentlemen:

On behalf of ASP Isotopes Inc. (the "Company"), and in connection with the above-referenced Registration Statement on Form S-1 of the Company (File No. 333-267392), the Company respectfully submits the following information in response to the comment letter (Comment 15) dated June 7, 2022 from the staff of the Division of Corporation Finance (the "Staff") of the U.S. Securities and Exchange Commission.

The purposes of this letter are (i) to provide an update to the Staff regarding timing considerations for the Company's planned initial public offering (the "IPO"), and (ii) in order to facilitate the Staff's review of the Company's stock-based compensation expense, to inform the Staff that the Company, in consultation with the representative of the underwriters in the IPO, determined that the price range for the Company's common stock is expected to be within a range between \$5.00 to \$7.00 per share (the "Indicative Price Range"). The actual price range to be included in the preliminary prospectus will not be determined until shortly before the printing and filing of the preliminary prospectus for the commencement of the roadshow for the Company's IPO and will be based on market and other conditions at that time. The Indicative Price Range is subject to further revision based on changes in the Company's performance and prospects and market conditions, including the trading price of companies deemed comparable to the Company, the performance of their IPOs, and market conditions and investor demand more generally. Given the potential for volatility and uncertainty in the market, such revisions could be significant.

Timing Considerations

As noted above, the actual bona fide price range to be included in the "red herring" preliminary prospectus in a subsequent amendment to the Registration Statement has not yet been determined and remains subject to adjustment based on factors outside of the Company's control. However, the Company advises the Staff that, upon completion of the Staff's review of the Company's stock-based compensation expense, and subject to any revision based on changes in the Company's performance and prospects and market conditions, the Company plans to promptly file an amendment to the Registration Statement that includes the preliminary prospectus with a bona fide preliminary price range that will be the same range as the Indicative Price Range. The Company further advises the Staff that it anticipates commencing its road show as soon as practicable thereafter.



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Stock-Based Compensation Expense Information

Recently Granted Options

The Company issued options exercisable for shares of its common stock in 2021 and 2022. Options were granted on (i) 10/4/2021 with an exercise price of \$0.25 per share and (ii) each of 1/28/2022, 4/4/2022, 4/30/2022, 5/1/2022, 6/10/2022 and 7/7/2022 with an exercise price of \$2.00. For all periods prior to the IPO, the fair values of the shares of the Company's common stock underlying the Company's share-based compensation were estimated on each grant date by the Company's board of directors, with input from management, and recent third-party financings consummated by the Company. As disclosed in the Registration Statement, (i) in late September 2021, the Company sold and issued an aggregate of 8,300,000 shares of common stock to investors at a purchase price of \$0.25 per share, for an aggregate purchase price of \$2,075,000, and (ii) between November 2021 through April 2022, the Company sold and issued an aggregate of 3,012,280 shares of common stock to investors at a purchase price of \$2.00 per share, for an aggregate purchase price of \$6,024,560. Revere Securities LLC acted as placement agent in connection with offering of shares of the Company's common stock at \$2.00 per share and in connection therewith we agreed to pay to Revere Securities LLC (i) a cash fee equal to 8.0% of the aggregate gross proceeds raised in such offering and (ii) shares of the Company's common stock equal to 4.0% of the aggregate number of shares of common stock sold in such offering.

Given the absence of a public trading market for the Company's common stock, the Company's board of directors exercised reasonable judgment and considered a number of objective and subjective factors to determine the best estimate of the fair value of the Company's common stock, including: the Company's stage of development and material risks related to the Company's business; the progress of the Company's research and development programs; the Company's business conditions and projections; the Company's financial position and the Company's historical and forecasted performance and operating results; the lack of an active public market for the Company's common stock; the prices of the Company's common stock sold to or exchanged between outside investors in arm's length transactions; the analysis of initial public offerings and the market performance of similar companies in the isotopes industry; the likelihood of achieving a liquidity event, such as an initial public offering or sale of the company in light of prevailing market conditions; the hiring of key personnel and the experience of management; trends and developments in the isotopes industry; and external market conditions and trends affecting the isotopes industry.

Estimated IPO Price Range

As is typical in initial public offerings, the Indicative Price Range was not derived using a formal determination of fair value, but was determined by the Company based, in part, on input received from the Underwriter including discussions with executives of the Company. Along with the input from the Underwriter, among the factors considered in setting the Indicative Price Range were the following:

- the general conditions of the securities market and the recent market prices of, and the demand for, publicly traded common stock of comparable companies;
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- the Company's financial condition and prospects;
- progress and stage of development of the Aerodynamic Separation Process technology;
- estimates of business potential and earnings prospects for the Company;
- comparable valuations metrics for and recent performance of initial public offerings of companies in the isotopes industry;
- an assumption that there would be a receptive public trading market for isotopes companies such as the Company; and
- an assumption that there would be sufficient demand for the Company's common stock to support an offering of the size contemplated by the Company.

Differences Between Prior Valuation and Indicative Price Range

The Company believes the difference between the fair value of its common stock as of 7/7/2022 and the Indicative Price Range, as recommended by the underwriter as of September 23, 2022, is the result of the following valuation methodology-specific factors and company-specific factors:

- The methodology for determining valuation as of 7/7/2022 incorporated IPO and non-IPO scenarios, while the Indicative Price Range assumes, with 100% probability, that the Company completes an IPO.
 - The Indicative Price Range represents a future price for shares of the common stock that, if issued in the IPO, will be immediately, freely tradable in a public market; whereas the 7/7/2022 valuation represents a contemporaneous estimate of the fair value of shares that were then illiquid and might have never become liquid, and were subject to a discount for the lack of marketability as indicated above.
 - ASP Isotopes UK Ltd (the Company's UK subsidiary), as licensee, entered into a license agreement with Klydon, as licensor, pursuant to which ASP Isotopes UK Ltd acquired from Klydon an exclusive license to use, develop, modify, improve, subcontract and sublicense certain intellectual property rights relating to the ASP technology for the production, distribution, marketing and sale of all isotopes produced using the ASP technology (the "Klydon license agreement"). Previously, the Company had specific licenses for just Molybdenum and Uranium (which were superseded and replaced by the new "omnibus" license agreement).
 - Progress made on the procurement and construction of the Mo-100 enrichment facility.
 - Completed construction of the first segment of the Mo-100 enrichment plant (consisting of 6 SEAs).
 - Progress on discussions with potential customers for the output from the Mo-100 enrichment facility.
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- Acquired a silicon enrichment facility capable of producing kilogram quantities of enriched silicon. Completed a strategy and basic design that will enable us to repurpose the Silicon plant into a Carbon plant.

Based on the above discussion, the Company believes that the fair values determined by the Board for the common stock applicable to each stock option are appropriate and demonstrate the good faith efforts of the Board to consider all relevant factors in determining fair value at each valuation date.

Please direct your questions or comments regarding this letter to the undersigned by telephone to (858) 677-1470 or by email to donald.ainscow@us.dlapiper.com.

We and the Company appreciate the Staff's attention to this matter.

Very truly yours,

/s/ Donald Ainscow

Donald Ainscow

cc: Paul Mann
