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

# FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the year ended December 31, 2024**

**OR**

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the transition period from to**

**Commission File Number 001-41555**

# ASP Isotopes Inc.

(Exact name of registrant as specified in its charter)

| **Delaware** | **87-2618235** |
|---|---|
| (State or other jurisdiction of incorporation or organization) | (I.R.S. Employer Identification No.) |
| **601 Pennsylvania Avenue NW<br>South Building, Suite 900<br>Washington, DC** | **20004** |
| (Address of principal executive offices) | (Zip code) |

**(202) 756-2245**
(Registrant's telephone number, including area code)

**Not Applicable**
(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

| **Title of each class** | **Trading Symbol** | **Name of exchange on which registered:** |
|---|---|---|
| Common stock, par value $0.01 per share | ASPI | The Nasdaq Capital Market LLC |

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

| | | | |
|---|---|---|---|
| Large accelerated filer | ☐ | Accelerated filer | ☐ |
| Non-accelerated Filer | ☒ | Smaller reporting company | ☒ |
| | | Emerging growth company | ☒ |

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. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2024 was approximately $96.0 million.

There were 72,068,059 shares of the registrant's common stock, $0.01 par value, outstanding as of March 31, 2025.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's definitive proxy statement for its 2025 Annual Meeting of Stockholders (the "Proxy Statement"), to be filed within 120 days of the registrant's fiscal year ended December 31, 2024, are incorporated by reference in Part III of this Annual Report on Form 10-K. Except with respect to information specifically incorporated by reference in this Annual Report on Form 10-K, the Proxy Statement is not deemed to be filed as part of this Annual Report on Form 10-K.

**ASP Isotopes Inc.**
**Annual Report on Form 10-K**
**For the Year Ended December 31, 2024**

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## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact contained in this Annual Report on Form 10-K, including statements regarding our future results of operations and financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “should,” “would,” “expects,” “plans,” “anticipates,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Annual Report on Form 10-K are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this Annual Report on Form 10-K and are subject to a number of risks, uncertainties and assumptions described in the section titled “Risk Factors” and elsewhere in this Annual Report on Form 10-K. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Some of the key factors that could cause actual results to differ from our expectations include:

- our ability to achieve or sustain positive cash flows from operations or profitability;
- our ability to complete the construction of, commission and successfully operate isotope enrichment plants in a cost-effective manner;
- our ability to meet, and to continue to meet, applicable regulatory requirements for the use of the isotopes we may produce using the ASP technology or the Quantum Enrichment technology;
- our ability to obtain regulatory approvals for the production and distribution of isotopes;
- our ability to comply on an ongoing basis with the numerous regulatory requirements applicable to the ASP technology, the Quantum Enrichment technology and our enrichment facilities in South Africa;
- the introduction, market acceptance and success of Mo-100 that we may produce using ASP technology as an alternative and potentially more convenient production route for Tc-99m;
- the success or profitability of our future offtake arrangements with respect to various isotopes that we may produce using ASP technology or the Quantum Enrichment technology;
- a failure of demand for various isotopes that we may produce using ASP technology or the Quantum Enrichment technology;
- our future capital requirements and sources and uses of cash;
- our ability to obtain funding for our operations and future growth;
- the extensive costs, time and uncertainty associated with new technology development;
- our ability to implement and maintain effective internal controls;
- developments and projections relating to our competitors and industry;
- the ability to recognize the anticipated benefits of acquisitions, including our acquisition of assets of Molybdos (Pty) Limited in the “business rescue” auction, the assets and intellectual property we acquired from Klydon Proprietary Ltd, and our investment in PET Labs Pharmaceuticals;
- problems with the performance of the ASP technology or the Quantum Enrichment technology in the enrichment of isotopes;
- our dependence on a limited number of third-party suppliers for certain components;
- our inability to adapt to changing technology and diagnostic landscape, such as the emergence of new diagnostic scanners or tracers;

•our expected dependence on a limited number of key customers for isotopes that we may produce using ASP technology or the Quantum Enrichment technology;

•our inability to protect our intellectual property and the risk of claims that we have infringed on the intellectual property of others;

•our inability to compete effectively;

•risks associated with the current economic environment;

•risks associated with our international operations;

•our credit counterparty risks;

•geopolitical risk and changes in applicable laws or regulations;

•our inability to adequately protect our technology infrastructure;

•our inability to hire or retain skilled employees and the loss of any of our key personnel;

•operational risk;

•costs and other risks associated with becoming a reporting company and becoming subject to the Sarbanes-Oxley Act; and

•other factors that are described in "Risk Factors," beginning on page 22.

These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those set forth in Part I, Item 1A - "Risk Factors" below and for the reasons described elsewhere in this Annual Report on Form 10-K. Any forward-looking statement in this Annual Report on Form 10-K reflects our current view with respect to future events and is subject to these and other risks, uncertainties, and assumptions relating to our operations, results of operations, industry, and future growth. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Annual Report on Form 10-K also contains estimates, projections, and other information concerning our industry, our business, and the potential markets for certain isotopes, including data regarding the estimated size of those markets, their projected growth rates, and the incidence of certain medical conditions. Information that is based on estimates, forecasts, projections, or similar methodologies is inherently subject to uncertainties, and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained these industry, business, market, and other data from reports, research surveys, studies, and similar data prepared by third parties, industry, medical and general publications, government data, and similar sources. In some cases, we do not expressly refer to the sources from which these data are derived.

Except where the context otherwise requires, in this Annual Report on Form 10-K, "we," "us," "our," "ASP Isotopes," and the "Company" refer to ASP Isotopes Inc. and, where appropriate, its consolidated subsidiaries.

**Trademarks**

All trademarks, service marks, and trade names included in this Annual Report on Form 10-K are the property of their respective owners. Solely for convenience, the trademarks and trade names in this report may be referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

## PART I

### Item 1. Business

**Overview**

We are a development stage advanced materials company dedicated to the development of technology and processes that, if successful, will allow for the enrichment of natural isotopes into higher concentration products, which could be used in several industries. Our proprietary technologies, the Aerodynamic Separation Process ("ASP technology") and Quantum Enrichment

technology ("QE technology"), are designed to enable the production of isotopes used in several industries. Our initial focus is on the production and commercialization of enriched Carbon-14 ("C-14"), Silicon-28 ("Si-28") and Ytterbium-176 ("Yb-176").

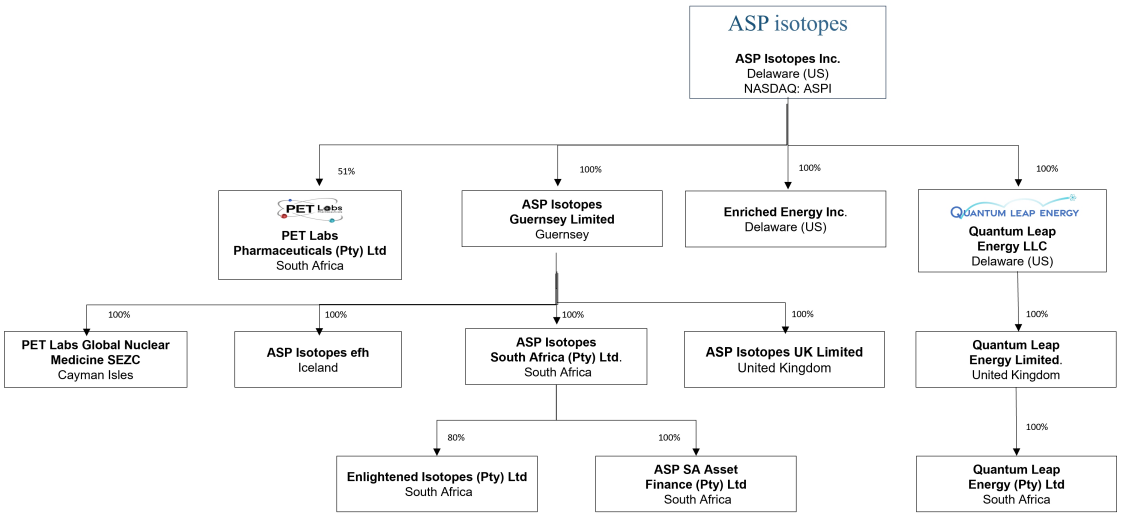
We have completed the commissioning phase and are commencing commercial production at our C-14 and Si-28 enrichment facilities in Pretoria, South Africa. We are in the process of commissioning and commencing commercial production at our Yb-176 enrichment facility in Pretoria, South Africa. Our C-14 and Si-28 enrichment facilities utilize the ASP technology and our Yb-176 enrichment facility utilizes QE technology. We expect our first three enrichment facilities to generate commercial product during 2025. In addition, we have started planning additional isotope enrichment plants both in South Africa and in other jurisdictions, including Iceland and the United States. We believe the C-14 we may produce using the ASP technology could be used in the development of new pharmaceuticals and agrochemicals. We believe the Si-28 we may produce using the ASP technology may be used to create advanced semiconductors and in quantum computing. We believe the Yb-176 we may produce using the QE technology may be used to create radiotherapeutics that treat various forms of oncology.

In addition, we are considering the future development of the ASP technology for the separation of Zinc-68 and Xenon-129/136 for potential use in the healthcare end market, Germanium 70/72/74 for potential use in the semiconductor end market, and Chlorine -37 for potential use in the nuclear energy end market. We are also considering the future development of QE technology for the separation of Nickel-64, Gadolinium-160, Ytterbium-171, Lithium 6 and Lithium7.

We are currently pursuing an initiative to apply our enrichment technologies to the enrichment of Uranium-235 ("U-235") in South Africa. We believe that the U-235 we may produce using quantum enrichment technology may be commercialized as a nuclear fuel component for use in the new generation of high-assay low-enriched uranium (HALEU)-fueled small modular reactors that are now under development for commercial and government uses. In furtherance of our uranium enrichment initiative, in October 2024, we entered into a term sheet with TerraPower, LLC which contemplates the parties entering into definitive agreements pursuant to which TerraPower would provide funding for the construction of a HALEU production facility and agree to purchase all HALEU produced at the facility over a 10-year period after the planned completion of the facility in 2027. In addition, in November 2024, we entered into a memorandum of understanding with The South African Nuclear Energy Corporation (Necsa), a South African state-owned company responsible for undertaking and promoting research and development in the field of nuclear energy and radiation sciences, to collaborate on the research, development and ultimately the commercial production of advanced nuclear fuels. Subject to the receipt of funding and all required permits and licenses to begin enrichment of U-235 in South Africa, it is anticipated that the research, development and ultimate construction of a HALEU production facility will take place at South Africa's main nuclear research center at Pelindaba in Pretoria.

We operate principally through subsidiaries. ASP Isotopes Guernsey Limited (the holding company of ASP Isotopes South Africa (Proprietary) Limited, Enlightened Isotopes (Pty) Ltd) and ASPI South Africa Asset Finance (Pty) Ltd, which will be focused on the development and commercialization of high-value, low-volume isotopes for highly specialized end markets (such as C-14, Si-28 and Yb-176). In September 2023, we formed a new subsidiary, Quantum Leap Energy LLC, which also has a subsidiary in the United Kingdom (Quantum Leap Energy Ltd), to focus on the development and commercialization of advanced nuclear fuels such as HALEU and Lithium-6. ASP Isotopes UK Ltd is the owner of our technology. In addition, we have a 51% ownership stake in PET Labs Pharmaceuticals Proprietary Limited (PET Labs), a South African radiopharmaceutical operations company focused on the production of fluorinated radioisotopes and active pharmaceutical ingredients, through which we entered the downstream medical isotope production and distribution market.

Our corporate structure and ownership of our subsidiaries is set forth in the chart below:




**Our Segments**

As of December 31, 2023, we managed our operations as a single segment, specialist isotopes and related services. Beginning in 2024, primarily as a result of the increased business activities of our subsidiary, Quantum Leap Energy LLC, we manage our operations as two operating segments: (i) nuclear fuels, and (ii) specialist isotopes and related services:

- ***Nuclear Fuels.*** This segment is focused on research and development of technologies and methods used to produce HALEU and Lithium-6 for the advanced nuclear fuels target end market.

- ***Specialist Isotopes and Related Services.*** This segment is focused on research and development of technologies and methods used to separate high-value, low-volume isotopes (such as C-14, Mo-100 and Si-28) for highly specialized target end markets other than advanced nuclear fuels, including pharmaceuticals and agrochemicals, nuclear medical imaging and semiconductors, as well as services related to these isotopes, and this segment includes PET Labs.

**Our Strategy**

***Commence commercial production at each of our enrichment facilities in Pretoria, South Africa.***

We commenced commercial production of enriched isotopes at our ASP enrichment facilities located in Pretoria, South Africa during the first quarter of 2025. Our first ASP enrichment facility is designed to enrich light isotopes, such as Carbon-14. The second ASP enrichment facility, which is substantially larger than the first, should have the potential to enrich kilogram quantities of relatively heavier isotopes, including but not limited to Silicon-28 and Molybdenum-100. We anticipate shipping the first commercial batches of enriched Carbon-14 in mid-2025 and enriched Silicon-28 during the second quarter of 2025. We are in the process of commissioning and commencing commercial production at our third enrichment facility, a QE technology facility, which will be our first laser-based enrichment plant and is expected to be able to achieve a 99.75% enrichment for Ytterbium-176. We expect to commence commercial production of Ytterbium-176 during the second quarter of 2025.

***Demonstrate the capability to produce commercial quantities of enriched C-14, Si-28 and Yb-176 using the ASP and QE technologies and capitalize on the opportunity to solve many supply chain challenges that currently exist.***

We intend to demonstrate the capability to produce C-14, Si-28 and Yb-176 at a scale that can support anticipated customer demand for all three isotopes.

Historically, Russia has been the sole supplier of C-14, which is used as a tracer in the development of new pharmaceuticals and agrochemicals. The supply chain has been inherently fragile with inconsistent service. We have received an initial supply of feedstock from our customer and have started the enrichment of C-14.

Isotopically enriched silicon is regarded as a promising material for semiconductor quantum information due to its very long coherence times and its compatibility with the readily available industrial platform. We believe that the ASP technology is ideally suited to the production of this isotope because it has the ability to enrich molecules of low molecular mass. Other electronic gasses that can likely be enriched using ASP Technology include disilane and germane.

Enriched Ytterbium-176 can be irradiated to produce Lutetium-177, which has been identified for use in oncology, particularly in targeted radionuclide therapy ("TRT"). TRT is used in the treatment of various types of cancers, including neuroendocrine tumors, prostate cancer, and bone metastases, among others. There are numerous ongoing clinical trials studying Lutetium-177 PSMA-617 in patients with metastatic castration-resistant prostate cancer. We have obtained all necessary licenses within South Africa to proceed with the commercial development of this product.

***Continue identifying potential offtake customers and strategic partners for our enriched isotopes.***

We have significant interest from potential offtake customers for the enriched isotopes that we intend to produce. In June 2023, we entered into a tolling agreement with a Canadian customer for the entire capacity of our C-14 production facility. In April and June 2024, we entered into purchase orders with a US semiconductor company and a global industrial gas company for the supply of highly enriched silicon-28. We are currently in discussions with potential customers that have an interest in entering into long-term supply agreements for kilogram quantities of Si-28 and larger quantities of Xe-129, Ge 72, Ge-74, Zn-68, and Cl-37. We intend to identify additional potential customers and strategic partners for isotopes that we may produce at our existing and planned enrichment facilities.

***Demonstrate the capability to produce high-assay low-enriched uranium (HALEU) using our enrichment technologies and meet anticipated demand for the new generation of HALEU-fueled small modular reactors and advanced reactor designs that are now under development for commercial and government uses.***

We plan to begin research and development for the enrichment of uranium to demonstrate our capability to produce HALEU using Quantum Enrichment technology. We anticipate a future demand for HALEU for the new generation of HALEU-fueled small modular reactors ("SMRs") and advanced reactor designs that are now under development for commercial and government uses. SMRs are viewed as being cheaper, safer, and more versatile than traditional large-scale nuclear reactors, and development of the new technology is receiving considerable funding from the U.S. Department of Energy, as well as from the governments of other countries. There is currently no commercial production of HALEU in the United States. We are currently conducting a feasibility study with respect to constructing an enrichment facility in South Africa, the U.S. and the United Kingdom. We are currently in discussions with nuclear regulatory authorities in multiple countries, including the UK Atomic Energy Authority, UK Office of Nuclear Regulation (ONR), Nuclear Energy Corporation of South Africa (NECSA), the South African Department of Mineral Resources and Energy (DMRE), United States Department of Energy (DOE) and the United States Nuclear Regulatory Commission (NRC), regarding the construction of a nuclear fuel plant in these countries.

We intend to progress our uranium enrichment initiative first in South Africa. In November 2024, we entered into a Memorandum of Understanding ("MOU") with The South African Nuclear Energy Corporation (Necsa) to collaborate on the research, development and ultimately the commercial production of advanced nuclear fuels. Necsa is a state-owned company established by the Republic of South Africa Nuclear Energy Act in 1999 with a mandate to undertake and promote research and development in the field of nuclear energy and radiation sciences. Necsa is also responsible for processing source material, and co-operating with other institutions on nuclear and related matters. The proposed structure under discussion for the delivery of the objectives of the MOU contemplates the formation of a new entity in South Africa with a board of directors consisting of at least two representatives from ASPI and Necsa. It is anticipated that the research, development and ultimate construction of a HALEU production facility will take place at South Africa's main nuclear research center located at Pelindaba, Pretoria.

Alongside our talks with regulators, we are currently discussing with multiple counterparties engaged in the development of SMR reactors to produce HALEU to further their research efforts and future commercial endeavors. We have entered into two MOUs with US-based SMR companies for the supply of HALEU. For example, our term sheet with TerraPower, LLC which contemplates the parties entering into definitive agreements pursuant to which TerraPower would provide funding for the construction of a HALEU production facility and agree to purchase all HALEU produced at the facility over a 10-year period after the planned completion of the facility in 2027.

***Demonstrate the effectiveness and value in the use of stable isotopes in the downstream radiopharmacy market, after acquiring 51% ownership interest in PET Labs, the leading radiopharmacy in South Africa. This investment will address the radioisotope needs of South Africa as well as certain neighboring countries.***

Under the terms of a Share Purchase Agreement, dated October 30, 2023, we acquired 51% of the issued share capital of PET Labs Pharmaceuticals Proprietary Limited, a company incorporated in the Republic of South Africa ("PET Labs"). PET Labs is a South African radiopharmaceutical operations company, dedicated to nuclear medicine and the science of radiopharmaceutical

production. As a result of this transaction, we entered into the downstream radiopharmacy market that we intend to service in the future. This transaction will help provide the market with adequate proof of concept of the value of utilizing Mo-100 in downstream SPECT imaging procedures while providing supply chain stability to the region of South Africa and neighboring countries. We intend to expand PET Labs' existing operations by adding two new cyclotrons to its service footprint, enabling the company to properly expand its other revenue generation mediums, which is anticipated to drive free cash flow to the company.

**Our Strengths**

***ASP technology initially developed by Klydon and further developed by ASP Isotopes Inc..***

The aerodynamic separation technique has its origins in the South African uranium enrichment program in the 1980s, and the ASP technology had been developed during the last two decades by the scientists at Klydon. The scientists at Klydon had constructed two ASP plants for the enrichment of oxygen-18 and silicon-28 in Pretoria, South Africa, which were commissioned in October 2015 and July 2018, respectively. While the technology has not yet been used to enrich either Uranium or heavier isotopes, we believe the success of the enrichment process for oxygen-18 and silicon-28 has demonstrated the efficacy and commercial scalability of the ASP technology. If our research and development is successful (and subject to obtaining applicable regulatory approvals and appropriate licenses), we plan to commercialize many different isotopes produced using the ASP technology. To date, we have not produced commercial quantities of any enriched isotopes and we have not demonstrated the ability to produce any enriched isotopes in commercial quantities using ASP technology.

***Extensive Research and Development Experience in Aerodynamic Separation Technology and Processes.***

Subject to successful research and development, our ASP technology has the potential to produce many different types of isotopes. Klydon had spent the last two decades and tens of millions of dollars developing the aerodynamic separation technique used in the ASP technology, generating critical trade secrets. We believe our competitors lag behind us in terms of the technical expertise of our senior management and the know-how contained in the aerodynamic separation technique and will be unable to replicate the expected results of the ASP technology, even as we expect to continue to improve the existing technology and processes. Additionally, the high capital costs of development of proprietary technologies, significant lead times required to construct new enrichment facilities, as well as stringent regulatory and operating requirements applicable to enrichment facilities, adds to the significant barriers to entry for smaller competing market participants.

***ASP technology is a flexible platform with the potential to produce many different isotopes that could serve large addressable markets.***

ASP technology is a flexible platform, compact in size and weight, and could be easily scaled to an industrial level with number of separation devices added in parallel. The ASP technology also has few moving parts, with low capital and operating costs in comparison to alternatives. The technology is particularly efficient at enriching isotopes of low atomic mass. We believe that, assuming receipt of required regulatory approvals and governmental permits, the ASP technology can be deployed quickly and with a relatively minimal capital cost, to enrich many different isotopes that we believe consumers require both today and in the future in end markets such as healthcare, technology and energy.

The ASP technology is designed to be scalable, low cost, low energy, and environmentally friendly, with no radioactive waste or hazardous materials produced in the process and planned arrangements to reuse chemical by-products.

***QE technology has the potential to produce many different enriched isotopes that cannot be enriched using ASP Technology.***

Our QE technology is potentially a highly efficacious enrichment technology with the greatest enrichment factor of any enrichment process. In laboratory tests our scientists have achieved enrichment factors of up to 678 which compares to enrichment factors of less than 50 for AVLIS and 1.15 for a traditional centrifuge. QE can also be used to enrich elements where there is no known gaseous form of that element. We have completed the construction of our first QE enrichment facility in Pretoria, South Africa where we intend to produce 99.75% enriched Ytterbium-176.

***Experienced team***

Our board of directors and advisers have specialized expertise in isotope enrichment, research and development, technology, plant development, and manufacturing. Dr Hendrik Strydom, our chief technology officer and one of our directors, previously co-founded Klydon and has over 40 years of experience in isotope enrichment and laser design and manufacture. The scientific team that joined our company from Klydon combined has decades of experience in research and development of isotope enrichment and amassed deep knowledge in the field.

Our board of directors and our management team also have broad experience and successful track records in fusion technology and fusion materials, biopharmaceutical research, chemicals, manufacturing and commercialization, as well as in business, operations, and finance. Our board of directors' and management team's experience was gained at leading companies and financial institutions that include, Bear Stearns, Deutsche Bank, Highbridge Capital, Investec Bank, Morgan Stanley and Soros Fund Management.

**Technical Background**

***What are Isotopes?***

Isotopes are two or more types of atoms that have the same atomic number (number of protons in their nuclei) and position in the periodic table (and hence belong to the same chemical element), and that differ in nucleon numbers (mass numbers) due to different numbers of neutrons in their nuclei. While all isotopes of a given element have almost the same chemical properties, they have different atomic masses and physical properties.

The number of protons within the atom's nucleus is called atomic number and is equal to the number of electrons in the neutral (non-ionized) atom. Each atomic number identifies a specific element, but not the isotope; an atom of a given element may have a wide range in its number of neutrons. The number of nucleons (both protons and neutrons) in the nucleus is the atom's mass number, and each isotope of a given element has a different mass number. For example, carbon-12, carbon-13, and carbon-14 are three isotopes of the element carbon with mass numbers 12, 13, and 14, respectively. The atomic number of carbon is 6, which means that every carbon atom has 6 protons so that the neutron numbers of these isotopes are 6, 7, and 8 respectively.

There are 23 isotopes of Silicon, all of which have 14 protons and between 8 and 30 neutrons. The table below shows a selection of those isotopes. Three isotopes are stable which have mass numbers of 28, 29 and 30 which have 14, 15 and 16 neutrons respectively. The other 20 isotopes are radioactive and decay with short half-lives and are therefore do not typically exist in naturally occurring silicon. In naturally occurring silicon, the isotope with atomic mass of 28 is usually the most abundant, typically accounting for approximately 92.22% of the material. The isotope with atomic mass of 29 typically accounts for 4.69% of the material and the isotope with atomic mass of 30 typically accounts for 3.09% of the material.

Molybdenum has 33 known isotopes, ranging in atomic mass from 83 to 115, as well as four metastable nuclear isomers. Seven isotopes occur naturally, with atomic masses of 92, 94, 95, 96, 97, 98, and 100. All unstable isotopes of molybdenum decay into isotopes of zirconium, niobium, technetium, and ruthenium.

Uranium is a naturally occurring radioactive element that has no stable isotope. It has two primordial isotopes, uranium-238 and uranium-235, which have long half-lives and are found in appreciable quantity in the Earth's crust. The decay product, uranium-234 is also found. Other isotopes such as uranium-233 have been produced in breeder reactors. In addition to isotopes found in nature or nuclear reactors, many isotopes with far shorter half-lives have been produced, ranging from U-214 to U-242 (with the exception of U-220 and U-241). The standard atomic weight of natural uranium is 238.02891 with 99.27% of naturally occurring uranium being the isotope with an atomic mass of 238.

| Selected isotopes of Silicon | | | | | | Selected isotopes of Molybdenum | | | | | | Selected isotopes of Uranium | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclide | Protons | Neutrons | Isotopic Mass | Half Life | Natural abundance | Nuclide | Protons | Neutrons | Isotopic Mass | Half Life | Natural abundance | Nuclide | Protons | Neutrons | Isotopic Mass | Half Life | Natural abundance |
| 22 | 14 | 8 | 22.036 | 29 ms | | 91 | 42 | 49 | 90.912 | 15.49 min | | 225 | 92 | 133 | 225.029 | 62 ms | |
| 23 | 14 | 9 | 23.025 | 42.3 ms | | 92 | 42 | 50 | 91.907 | Stable | 14.65% | 226 | 92 | 134 | 226.029 | 269 ms | |
| 24 | 14 | 10 | 24.012 | 140 ms | | 93 | 42 | 51 | 92.907 | 4000 y | | 227 | 92 | 135 | 227.031 | 1.1 m | |
| 25 | 14 | 11 | 25.004 | 220 ms | | 94 | 42 | 52 | 93.905 | Stable | 9.19% | 228 | 92 | 136 | 228.031 | 9.1 m | |
| 26 | 14 | 12 | 25.992 | 2.245 s | | 95 | 42 | 53 | 94.906 | Stable | 15.87% | 229 | 92 | 137 | 229.034 | 57.8 m | |
| 27 | 14 | 13 | 26.987 | 4.15 s | | 96 | 42 | 54 | 95.905 | Stable | 16.67% | 230 | 92 | 138 | 230.034 | 20.23 d | |
| 28 | 14 | 14 | 27.977 | Stable | 92.22% | 97 | 42 | 55 | 96.906 | Stable | 9.58% | 231 | 92 | 139 | 231.036 | 4.2 d | |
| 29 | 14 | 15 | 28.977 | Stable | 4.69% | 98 | 42 | 56 | 97.905 | Stable | 24.29% | 232 | 92 | 140 | 232.037 | 68.9 y | |
| 30 | 14 | 16 | 29.974 | Stable | 3.09% | 99 | 42 | 57 | 98.908 | 2.75 d | | 233 | 92 | 141 | 233.04 | 1.592 e5 y | Trace |
| 31 | 14 | 17 | 30.975 | 157.36 min | | 100 | 42 | 58 | 99.907 | Stable | 9.74% | 234 | 92 | 142 | 234.041 | 2.455 e5 y | Trace |
| 32 | 14 | 18 | 31.974 | 153 y | trace | 101 | 42 | 59 | 100.910 | 14.61 m | | 235 | 92 | 143 | 235.044 | 7.038 e8 y | 0.72% |
| 33 | 14 | 19 | 32.978 | 6.18 s | | 102 | 42 | 60 | 101.910 | 11.3 m | | 236 | 92 | 144 | 236.046 | 2.342 e7 y | Trace |
| 34 | 14 | 20 | 33.979 | 2.77 s | | 103 | 42 | 61 | 102.913 | 67.5 s | | 237 | 92 | 145 | 237.049 | 6.752 d | Trace |
| 35 | 14 | 21 | 34.985 | 780 ms | | 104 | 42 | 62 | 103.914 | 60 s | | 238 | 92 | 146 | 238.051 | 4.468 e9 y | 99.27% |
| 36 | 14 | 22 | 35.987 | 450 ms | | 105 | 42 | 63 | 104.917 | 35.6 s | | 239 | 92 | 147 | 239.054 | 23.45 m | |
| 37 | 14 | 23 | 36.993 | 90 ms | | 106 | 42 | 64 | 105.918 | 8.73 s | | 240 | 92 | 148 | 240.057 | 14.1 h | Trace |
| 38 | 14 | 24 | 37.996 | 90 ms | | 107 | 42 | 65 | 106.922 | 3.5 s | | 242 | 92 | 150 | 242.063 | 16.8 m | |

***Methods of Separation and Enrichment of Isotopes***

Isotope enrichment is the process of concentrating specific isotopes of a chemical element by removing other isotopes. During the last century, a number of different methods have been developed to separate and enrich isotopes. The current separation or

enrichment processes are based either on the atomic weight of the isotope, small differences in chemical reaction rates produced by different atomic weights or are based on properties not directly connected to atomic weight such as nuclear resonances.

*Diffusion*

Often performed on gases, but also on liquids, the diffusion method relies on the fact that in thermal equilibrium, two isotopes with the same energy will have different average velocities. The lighter atoms (or the molecules containing them) will travel more quickly and be more likely to diffuse through a membrane. The difference in speeds is proportional to the square root of the mass ratio, so the amount of separation is small, and many cascaded stages are needed to obtain high purity. This method is expensive due to the work needed to push gas through a membrane and the many stages necessary.

*Centrifugal*

Centrifugal methods rapidly rotate the material allowing the heavier isotopes to go closer to an outer radial wall. This too is often done in gaseous form using a Zippe-type centrifuge.

A Zippe-type centrifuge relies on the force resulting from centripetal acceleration to separate molecules according to their mass, and can be applied to most fluids. The dense (heavier) molecules move towards the wall and the lighter ones remain close to the center. The centrifuge consists of a rigid body rotor rotating at high speed. Concentric gas tubes located on the axis of the rotor are used to introduce feed gas into the rotor and extract the heavier and lighter separated streams. For U-235 production, the heavier stream is the waste stream and the lighter stream is the product stream. Modern Zippe-type centrifuges are tall cylinders spinning on a vertical axis, with a vertical temperature gradient applied to create a convective circulation rising in the center and descending at the periphery of the centrifuge. Diffusion between these opposing flows increases the separation by the principle of countercurrent multiplication.

In practice, since there are limits to how tall a single centrifuge can be made, several such centrifuges are connected in series. Each centrifuge receives one input and produces two output lines, corresponding to light and heavy fractions. The input of each centrifuge is the output (light) of the previous centrifuge and the input of the following stage. This produces an almost pure light fraction from the output (light) of the last centrifuge and an almost pure heavy fraction from the output (heavy) of the first centrifuge.

*Electromagnetic*

Electromagnetic separation is mass spectrometry on a large scale, so it is sometimes referred to as mass spectrometry. It uses the fact that charged particles are deflected in a magnetic field and the amount of deflection depends upon the particle’s mass. It is very expensive for the quantity produced, as it has an extremely low throughput, but it can allow very high purities to be achieved. This method is often used for processing small amounts of pure isotopes for research or specific use (such as isotopic tracers), but is impractical for industrial use.

*Laser*

In this method, a laser is tuned to a wavelength which excites only one isotope of the material and ionizes those atoms preferentially. The resonant absorption of light for an isotope is dependent upon its mass and certain hyperfine interactions between electrons and the nucleus, allowing finely tuned lasers to interact with only one isotope. After the atom is ionized it can be removed from the sample by applying an electric field. This method is often abbreviated as AVLIS (atomic vapor laser isotope separation). This method has only recently been developed as laser technology has improved, and is currently not used extensively.

*Chemical Methods*

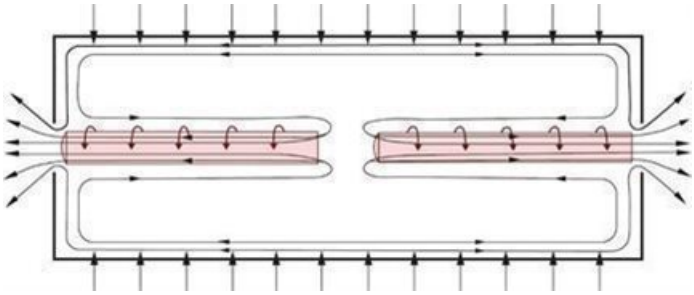
Although isotopes of a single element are normally described as having the same chemical properties, this is not strictly true. In particular, reaction rates are very slightly affected by atomic mass. Techniques using this are most effective for light atoms such as hydrogen. Lighter isotopes tend to react or evaporate more quickly than heavy isotopes, allowing them to be separated. This is how heavy water is produced commercially.

*Gravity*

Isotopes of carbon, oxygen, and nitrogen can be purified by chilling these gases or compounds nearly to their liquefaction temperature in very tall (200 to 700 feet (61 to 213 m)) columns. The heavier isotopes sink and the lighter isotopes rise, where they are easily collected.

**The Aerodynamic Separation Process ("ASP") Technology**

ASP technology is proprietary technology originally licensed from Klydon which succeeds earlier work, first detailed in the scientific media in the mid-1970s, relating to an industrial scale enrichment plant for uranium that was constructed utilizing the so-called “stationary-wall centrifuge”. The original technology was highly energy consuming and was not able to compete on an economic basis with other methods of isotope separation. The innovative development of the ASP technology over the past two decades has culminated in a more advanced separation device that we believe can compete on a commercial scale with other methods of isotope separation. The ASP separation device separates both gas species and isotopes in a volatile state via an approximate flow pattern as shown below.



The ASP enrichment process uses an aerodynamic technique similar to a stationary wall centrifuge. The isotope material in raw gas form enters the stationary tube at high speed by tangential injection through finely placed and sized openings in the surface of the tube. The gas then follows a flow pattern that results in two gas vortexes occurring around the geometrical axis of the separator. The isotope material becomes separated in the radial dimension as a result of the spin speed of the isotope material reaching several hundred meters per second. An axial mass flow component in each tube feeds isotope material to the respective ends of the separator where the collection of the portions of isotope material is accomplished.

The advantages of ASP technology are as follows:

•No moving parts, with low capital and operating costs in comparison to alternatives.

•Compact in size and weight.

•Easily scaled to industrial level with number of separation devices added in parallel.

•The separation process occurs inside a closed cylindrical container and is a volume technology, i.e., the process efficiency is not affected by poisoning of surface contaminates as is the case for surface separation processes.

•ASP operates very efficiently at molecular masses below 100 atomic mass units, unlike other separation processes which are more efficient at higher masses, which ASP can achieve equally well or to a superior degree.

•ASP easily separates hydrogen gas from other gas components, e.g., harvesting hydrogen gas from carbon monoxide and carbon dioxide and altering the ratio of syngas mixture.

•With the right material choice ASP can handle even the most corrosive gases.

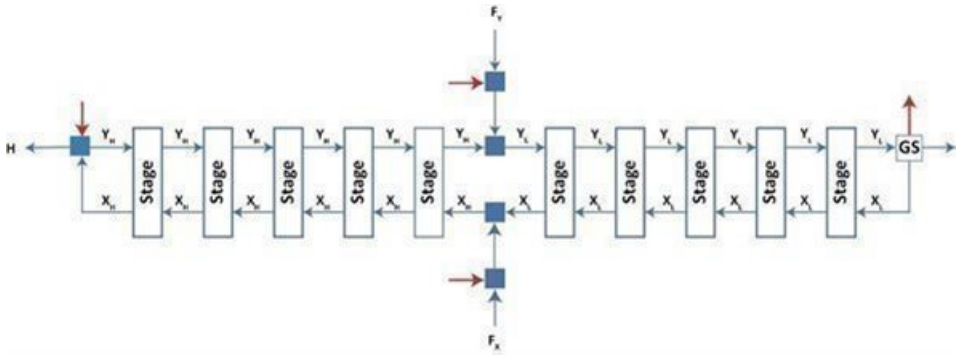
•ASP can separate any isotopes that have a gaseous or volatile chemical compound.

•Most of the subsystems are procured from off-the-shelf components.

•An ASP plant can be constructed in any country that adheres to the International Atomic Energy Agency (IAEA) protocols for the protection of dual use technology.

**ASP Plant Configuration**

The figure below shows a schematic of an ASP cascade in operation. The cascade consists of several enrichment stages, connected in a 1-up-1-down cascade configuration. The stages can be grouped into segments. (This method of organizing stages is not reflected in the figure)




The bold blue arrows represent flows of the element into and out of the cascade:

•H is the product, enriched in the isotope.

•L is the tails, stripped of the isotope.

•F = FX + FY is the feed stream at natural isotopic composition.

•FX is the feed into the product stream of an adjoining stage.

•FY is the feed into the tails stream of an adjoining stage.

Each stage in the cascade is operated in one of two configurations:

(1)A net backward flow of the isotope: Xi > Yi. These stages are referred to as “product”, situated in the so-called “product cascade section”, and their flows are marked with an “H” subscript.

(2)A net forward flow of isotope: Xi < Yi. These stages are referred to as “tails”, situated in the so-called “tails cascade section”, and their flows are marked with an “L” subscript.

The red arrows represent the addition or extraction of carrier gas from the process. The arrows have been added for clarity and orientation, but the mass flows of the carrier gas will be ignored in the rest of the discussion as it pertains to the isotope mass flows only (as represented by the blue arrows). The carrier gas mass flows can be superimposed on any isotope mass balance using the molar mass characteristics of the ASP stages (see below).

The block marked “GS” represents the gas separator: a piece of equipment used to separate the carrier gas from the element of interest to the degree necessary to provide a suitable reflux stream to the tails cascade section.

The blue squares are simply suitable areas where streams can be split or mixed.

An ASP stage is characterized by functions of Y, the flow of isotope in its tails stream. The characteristics of interest are:

•α(Y): the separation factor between the tails and product streams.

•MY(Y): the molar mass of the tails stream.

•MX(Y): the molar mass of the product stream.

•P(Y): the stage’s power usage.

•X(θ,Y): the flow of Zinc in the product stream, where θ = Y/(X+Y) is the cut defined in terms of isotope flows.

Note the following:

•α is the ratio of the tails and product stream abundance ratios.

•Y, X(θ,Y) and α(Y) describe the stage's behaviour with regards to Zinc, while MY(Y) and MX(Y) defines its behaviour with regards to the carrier gas.

•P, the stage's power usage, depends on the ASP separator, but also on factors such as compressor efficiency, friction losses etc. It is therefore a partial function of stage design.

•It is possible to define Pmin, the theoretical minimum energy usage of a stage, by assuming 100% efficient compressors and no losses in the stage. Pmin is a function of the ASP separator only. In practice P is a more useful metric, as the contribution of compressor inefficiencies to power consumption is significant.

•Except for X, the stage's characteristics are not defined in terms of the cut θ, as they are simply not sensitive to it above a certain lower limit θmin. In practice θmin is small enough that it has no influence on the normal operating envelope of the stage.

•X is per definition a function of Y via θ as indicated.

The cut of an ASP stage can be dynamically adjusted to any value larger than θmin, allowing its operating point to be changed online during production.

All stages in the product cascade section are operated at the same point < XH,YH >, where XH > YH, ensuring that a net backward flow of the process element, H = XH — YH is achieved. This corresponds to a cut of less than 50% and ensures a positive flow of enriched product.

All stages in the tails cascade section are operated at the same point < XL,YL >, where XL < YL, ensuring that a net backward flow of the process element, L = XL — YL is achieved. This corresponds to a cut of more than 50% and ensures a positive flow of stripped tails.

Depending on the production requirements of the cascade the product and tails section operation points can be moved relative to each other during production, obtaining different combinations of H and L (and therefore different feeds F = H + L). The smaller H (or L) is chosen, the closer the product (or tails) section cut moves to 50%. If all stages are operated at a cut of 50%, the cascade is operated at full reflux, no product, tails, or feed streams are present, and the maximum process element concentration gradient will exist.

**ASP Technology In Use**

The scientists at Klydon had constructed two ASP plants for the enrichment of oxygen-18 and silicon-28 in Pretoria, South Africa, which were commissioned in October 2015 and July 2018, respectively. We believe the success of the enrichment of oxygen-18 and silicon-28 has demonstrated the efficacy and commercial scalability of the ASP technology. We have completed the commissioning phase and are commencing commercial production at our Carbon-14 enrichment facility and our "multi-isotope" enrichment plant, which has its initial production run designated for enriched Silicon-28. We anticipate shipping the first commercial batches of enriched Carbon-14 in mid-2025 and enriched Silicon-28 during the second quarter of 2025.

**Quantum Enrichment Technology**

Isotopes of every element have unique spectroscopic "signatures" defined by the electromagnetic radiation or "light" absorbed by their atoms from electron transitions. QE separates two isotopes by taking advantage of the slight differences in the transition energy between two isotopes. This method is described as a "quantum mechanics" method. In principle, Quantum Enrichment can separate isotopes of most elements, achieving desired enrichment in a single step.

The atomic vapor laser isotope separation method ("AVLIS"), which is the forerunner of the QE technology, proposed by Letokhov et al. (1977)], has been in progress during the last 45 years. The main efforts during these years were devoted to attempts to get a nuclear fuel for industrial nuclear reactors.

Laser based isotope selective excitation followed by ionization and collection using electro-magnetic fields offers one of the most efficient techniques for isotope enrichment/denaturing. In the laser isotope separation (LIS) process, atoms of the target isotope in vapor stream get ionized after interaction with a tuned laser beam. Ionized atoms are separated from the main vapor stream by electrostatic field. In our Quantum Enrichment facility, a resistive heating system has been designed to evaporate Ytterbium by sublimation at temperature in the range of 500 oC to 700 oC to provide adequate Yb vapor atoms for laser interaction.

During the process, the vapor jet comes out from the source to reach sonic speed at the exit plane, then it expands supersonically into vacuum. A thickness monitor reading gives average arrival rate of atomic vapor in terms of thickness per unit time (A/sec).

At the heart of laser-based isotope enrichment lies a proficient multi-step isotope selective photoionization scheme giving optimum selectivity and product yield. Yb has two valence electrons and very few transitions originating from its ground level. Its ionization potential is 6.254eV. This necessitates selection of a three-step photoionization scheme for selective photoionization of its isotopes using the available laser infrastructure supporting visible range of spectrum.

Dye lasers offer the best suitable choice for enrichment process as they suffice to all the requirements of the process like wavelength tunability, high power generation at high repetition rates.

Diode Pumped Solid State Green Lasers (DPSSGLs) with ~3GHz line width in multi-mode operation are used to pump the dye lasers.

The temporal delays between the pulses from the three lasers were arranged to ensure their sequential arrival in the interaction region with delay of several ns.

We believe Quantum Enrichment technology is superior to AVLIS with optimized spectroscopy utilization and superior laser beam shaping.

The key advantages include:

•high selectivity,

•suitability for vaporized metals,

•relatively low capital cost, and

•modular design which limits scalability risk.

**Nuclear Medicine**

Nuclear medicine is a medical specialty that utilizes radioactive isotopes, referred to as radionuclides, to diagnose and treat disease. These radionuclides are incorporated into radiopharmaceuticals and introduced into the body by injection, swallowing, or inhalation. Physiologic/metabolic processes in the body concentrate the tracers in specific tissues and organs; the radioactive emissions from the tracers can be used to noninvasively image these processes or kill cells in regions where radionuclides have concentrated.

Other types of noninvasive diagnostic procedures — for example, computed tomography (“CT”) and magnetic resonance imaging (MRI) — can detect anatomical changes in tissues and organs as the result of disease. Nuclear medicine procedures can often detect the physiological and metabolic changes associated with disease before any anatomical changes occur. Such procedures can be used to identify disease at early stages and evaluate patients’ early responses to therapeutic interventions.

Single Photon Emission Computed Tomography (“SPECT”) generates three-dimensional (“3D”) images of tissues and organs using radionuclides that emit gamma rays; the most used radionuclide is Technitium-99m (“Tc-99m”), often referred to as the ‘work-horse’ of nuclear medicine. Individual gamma rays emitted from the decay of these radionuclides (i.e., single photon emissions) are detected using a gamma camera. This camera technology is used to obtain two-dimensional (“2D”) images; 3D SPECT images are computer generated from many 2D images recorded at different angles.

Positron Emission Tomography (PET) generates 3D images of tissues and organs using tracers that emit positrons (i.e., positive electrons): for example, fluorine-18 (F-18). Annihilation reactions between the positrons from these radionuclides and electrons present in tissues and organs produce photons. (Two photons are emitted simultaneously for each annihilation reaction and essentially travel in opposite directions.) The photon pairs are detected with a camera having a ring of very fast detectors and electronics. PET images generally have a higher contrast and spatial resolution than do SPECT images. However, PET equipment is more expensive and therefore not as widely available as SPECT equipment. Additionally, most PET tracers have short half-lives (e.g., nitrogen-13 (N-13): 10 minutes, carbon-11 (C-11): 20 minutes, and F-18: 110 minutes), so they must be produced close to their point of use.

Radionuclide therapy can be used to treat conditions such as hyperthyroidism, thyroid cancer, prostate cancer, skin cancer and blood disorders. In nuclear medicine therapy, the radiation treatment dose is administered internally (e.g. intravenous or oral routes) or externally direct above the area to treat in form of a compound (e.g. in case of skin cancer). The radiopharmaceuticals used in nuclear medicine therapy emit ionizing radiation that travels only a short distance, thereby minimizing unwanted side effects and damage to noninvolved organs or nearby structures. Most nuclear medicine therapies can be performed as outpatient procedures since there are few side effects from the treatment and the radiation exposure to the general public can be kept within a safe limit.

**ASP Technology for Carbon-14 Enrichment**

C-14 is a radioactive isotope of carbon with a half-life of 5,700 years that has a natural abundance of 1 part per trillion. The different isotopes of carbon do not differ appreciably in their chemical properties. This resemblance is used in chemical and biological research, in a technique called carbon labelling: carbon-14 atoms can be used to replace nonradioactive carbon, in order to trace chemical and biochemical reactions involving carbon atoms from any given organic compound.

Carbon-14 could be obtained from waste by-products in certain nuclear reactors. In June 2023, we entered into a multi-year supply agreement with a Canadian Customer for the supply of Carbon-14, which will be produced from our facility that was completed in March 2023. The customer agreed to supply carbon-14 in the form of carbon-dioxide gas as feedstock. We will then convert the carbon dioxide gas into methane under a chemical converting contract entered in June 2023. We will then enrich the methane to greater than 85% C-14 under a tolling agreement, also entered in June 2023. Finally, we will convert the enriched methane back into enriched carbon dioxide under a chemical converting contract. We have received an initial supply of feedstock from our customer and have started the enrichment of C-14. The tolling agreement has a minimum “take or pay” amount of approximately $2.5 million per year, supported by a bank letter of guarantee. In September 2023, we entered into a Memorandum of Understanding (MOU) with the same customer to separate Deuterium and Tritium currently stored at nuclear sites within Canada. The timing and commercial implications of this MOU are subject to future agreement between the parties.

**ASP Technology for Silicon-28 Enrichment**

Si-28 is a stable isotope of silicon. Isotopically enriched Si-28 is regarded as an ideal host material for semiconducting quantum computing due to the lack of Si-29 nuclear spins. The presence of Si-29 in concentrations above 500 parts per million (ppm) (0.05%) prevents effective performance. The lower the concentration of Si-29, the better a silicon quantum processor will perform in terms of computational power, accuracy and reliability. Unlike traditional centrifuges, which are suited to enriching gases with a high molecular mass, ASP Technology is highly suited to of enriching gases with a low molecular mass such as silane (SiH4), a gaseous compound that contains silicon.

Quantum computers are expected to be thousands or millions of times more powerful than the most advanced of today’s conventional computers, opening new frontiers and opportunities in many industries, including medicine, artificial intelligence, cybersecurity, global logistics and global financial systems.

We have entered into two purchase agreements for highly enriched Silicon-28. The first is with a U.S. semiconductor company. The second is with a global industrial gas company.

**Quantum Enrichment Technology for Ytterbium-176 Enrichment**

Ytterbium-176 (“Yb-176”) is a stable isotope of ytterbium, that is commonly used to produce Lutetium-177 (“Lu-177”). Lu-177 is a medical isotope used in targeted radionuclide therapy for treating neuroendocrine tumors and prostate cancer. Lu-177 is a medium energy beta emitter ($E\beta = 0.149$ keV). It is quite damaging, but only deposits its energy within a short range, decreasing collateral damaging effects to normal tissues. It has a half-life of 6.7 days and is compatible with various targeting agents, ranging from short peptides to large biomolecules. The half-life also allows for transport over longer distances and on-site preparation of pharmaceuticals.

Lu-177 can be produced in two ways, either directly by irradiation of lutetium-176 (“Lu-176”) or indirectly by irradiation of ytterbium-176 (“Yb-176”). The irradiation of Lu-176 leads directly to Lu-177, while irradiation of Yb-176 will lead to the production of the short-lived intermediate radioisotope ytterbium-177 (“Yb-177”), which decays to Lu-177.

Using the direct method in which Lu-176 is irradiated, the Lu-177 is produced in a matrix (‘carrier’) of Lu-176, because only part of the Lu-176 is converted to Lu-177. This form of Lu-177 is called carried added. Also, the direct method leads to small amounts of the radioactive impurity Lu-177m. This lowers the radionuclide purity of Lu-177 and complicates the radiation protection and disposal of Lu-177 waste in hospitals.

The advantage of the direct production route is that it can create Lu-177 in high quantities by irradiating as little as 1 mg of Lu-176. On the other hand, the desired Lu-177 cannot be chemically isolated from the target material Lu-176, as they are isotopes of the same element. This is problematic as the lutetium administered to the patient should preferably only contain the ‘useful’ Lu-177. If it contains largely ‘useless’ Lu-176, the effectiveness of the treatment will diminish.

The indirect method, where ytterbium-176 is irradiated, does not generate this extra isotope. The Lu-177 is produced in a matrix of ytterbium, which is separated from the lutetium by a chemical process after irradiation. Therefore, it leads to Lu-177 no carrier added. In the indirect production route, Lu-177 differs from the target material Yb-176 and can be isolated chemically in no carrier added (“n.c.a.”) form.

**Quantum Enrichment Technology for Uranium Enrichment**

We believe our Quantum Enrichment technology is capable of enriching Uranium, which we may be able to commercialize as a nuclear fuel component for use in the new generation of HALEU-fueled small modular reactors that are now under development for commercial and government uses.

Uranium is a naturally occurring element and is mined from deposits located in Kazakhstan, Canada, Australia, and several other countries including the United States. According to the World Nuclear Association (“WNA”), there are adequate measured resources of natural uranium to fuel nuclear power at current usage rates for about 90 years. In its natural state, uranium is principally comprised of two isotopes: uranium-235 (“U-235”) and uranium-238 (“U-238”). The concentration of U-235 in natural uranium is only 0.711% by weight. Most commercial nuclear power reactors require Low Enriched Uranium (“LEU”) fuel which has a U-235 concentration greater than natural uranium and up to 5% by weight. Future reactor designs currently under development will likely require higher U-235 concentration levels of greater than 5% and below 20% (referred to as HALEU – High Assay Low Enriched Uranium). Uranium enrichment is the process by which the concentration of U-235 is increased (see discussion on HALEU demand below).

Separative work units(“SWU”) is  a standard unit of measurement that represents the effort required to transform a given amount of natural uranium into two components: enriched uranium having a higher percentage of U-235 and depleted uranium having a lower percentage of U-235. The SWU contained in LEU is calculated using an industry standard formula based on the physics of enrichment. The amount of enrichment deemed to be contained in LEU under this formula is commonly referred to as its SWU component and the quantity of natural uranium deemed to be contained in LEU under this formula is referred to as its uranium or “feed” component. Currently, it is fairly common practice to purchase both the SWU and uranium components of LEU from the enrichment company. Therefore, LEU prices typically consist of three components: SWU, Conversion and uranium ore concentrate.

The following outlines the steps for converting natural uranium into LEU fuel, commonly known as the nuclear fuel cycle:

•***Mining and Milling***. Natural, or unenriched, uranium is removed from the earth in the form of ore and then crushed and concentrated.

•***Conversion***. Uranium ore concentrates (“UO”) are combined with fluorine gas to produce uranium hexafluoride (“UF”), a solid at room temperature and a gas when heated. UF is shipped to an enrichment plant.

•***Enrichment***. UF is enriched in a process that increases the concentration of the U isotope in the UF from its natural state of 0.711% up to 5%, or LEU, which is usable as a fuel for current light water commercial nuclear power reactors. Future commercial reactor designs may use uranium enriched up to 20% U-235, or HALEU.

•***Fuel Fabrication***. LEU is then converted to uranium oxide and formed into small ceramic pellets by fabricators. The pellets are loaded into metal tubes that form fuel assemblies, which are shipped to nuclear power plants. As the advanced reactor market develops, HALEU may be converted to uranium oxide, metal, chloride or fluoride salts, or other forms and loaded into a variety of fuel assembly types optimized for the specific reactor design.

•***Nuclear Power Plant***. The fuel assemblies are loaded into nuclear reactors to create energy from a controlled chain reaction. Nuclear power plants generate approximately 20% of U.S. electricity and 10% of the world's electricity.

•***Used Fuel Storage***. After the nuclear fuel has been in a reactor for several years, its efficiency is reduced and the assembly is removed from the reactor's core. The used fuel is warm and radioactive and is kept in a deep pool of water for several years. Many utilities have elected to then move the used fuel into steel or concrete and steel casks for interim storage.

**The World is Transitioning to Newer Smaller Reactors**

As the world transitions to a decarbonized electric grid, society is gradually decreasing its reliance on fossil fuels and increasing its reliance on "clean energy". There appears to be bipartisan support for the growth of nuclear energy. Nuclear power, through the operating light water reactor fleet and the deployment of advanced reactors, is poised to be an increasing contributor to carbon free energy in the U.S. and internationally. The United States leads the world in technology innovation with more developers of advanced reactors than any other country.

SMRs are advanced nuclear reactors that have a power capacity of up to 300 MW(e) per unit, which is about one-third of the generating capacity of traditional nuclear power reactors. SMRs, which can produce a large amount of low-carbon electricity, are:

•***Small*** — physically a fraction of the size of a conventional nuclear power reactor.

•***Modular*** — making it possible for systems and components to be factory-assembled and transported as a unit to a location for installation.

•***Reactors*** — harnessing nuclear fission to generate heat to produce energy.

Many of the benefits of SMRs are inherently linked to the nature of their design — small and modular. Given their smaller footprint, SMRs can be sited on locations not suitable for larger nuclear power plants. Prefabricated units of SMRs can be manufactured and then shipped and installed on site, making them more affordable to build than large power reactors, which are often custom designed for a particular location, sometimes leading to construction delays. SMRs offer savings in cost and construction time, and they can be deployed incrementally to match increasing energy demand.

In comparison to existing reactors, proposed SMR designs are generally simpler, and the safety concept for SMRs often relies more on passive systems and inherent safety characteristics of the reactor, such as low power and operating pressure. This means that in such cases no human intervention or external power or force is required to shut down systems, because passive systems rely on physical phenomena, such as natural circulation, convection, gravity and self-pressurization. These increased safety margins, in some cases, eliminate or significantly lower the potential for unsafe releases of radioactivity to the environment and the public in case of an accident.

SMRs have reduced fuel requirements. Power plants based on SMRs may require less frequent refueling, every 3 to 7 years, in comparison to between 1 and 2 years for conventional plants. Some SMRs are designed to operate for up to 30 years without refueling. SMRs are under construction or in the licensing stage in many countries including Argentina, Canada, China, Russia, South Korea and the United States of America.

Within the last five years significant legislation supporting the development and deployment of advanced reactors has been enacted: the Nuclear Innovation and Modernization Act, the Nuclear Energy Innovation and Capabilities Act, the Energy Act of 2020 and the Infrastructure Investment and Jobs Act. In addition, Congress established and funded the Advanced Reactor Demonstration Program which now supports two advanced reactor demonstrations to be deployed within seven years and eight other advanced reactor projects.

**SMRs will require a different grade of enriched Uranium**

Many advanced reactors, including the majority of the Advanced Reactor Demonstration Program awardees, will require HALEU, and fuel forms very different from those manufactured for the current Light Water Reactors (LWRs). For example, the current generation of LWRs uses fuel enriched to less than 5% uranium-235. In contrast, many advanced non-LWR designs require enrichments between 5% and 20% with most above 10%.

Currently it is not possible to purchase HALEU between 10% and 20% from a commercial enricher in the United States. In the U.S., the infrastructure for the front-end of the fuel cycle for the utilization of low enriched uranium up to 5% U-235 is well defined. The U.S. has mining, conversion, enrichment, fabrication, and transportation capability. However, the infrastructure for

producing and utilizing HALEU, in particular enrichments above 10%, is not established in the U.S. The mining and conversion infrastructure are common to all enrichment levels.

In 2020, the DOE selected two companies for awards under the Advanced Reactor Demonstration Program (ARDP) Pathway 1: Advanced Reactor Demonstrations. Both reactor designs require HALEU and can be operational in about seven years. Today, it is estimated that the companies selected for the demonstration pathway will require HALEU for their reactors beginning in the late 2020's to support fuel fabrication ahead of reactor startup. In addition, one of the companies under Pathway 2: Risk Reduction for Future Demonstrations will require HALEU in the 2026-2027 timeframe and other companies in Pathway 2 and 3 of the ARDP will also require HALEU. Privately funded companies are also working to deploy HALEU fueled reactors by the mid-2020s.

The Nuclear Energy Institute (NEI) believes that it is virtually impossible for HALEU to be provided to these companies in the needed quantities and timeframes from DOE inventories or commercial enrichers located in the U.S or Western Europe. Therefore, acquiring HALEU from other international suppliers will be required in the near term to support the larger goal of deploying advanced reactors in the U.S. in a timely manner. Deploying these reactors before 2030 will support climate goals and position the U.S. to be a strong exporter of advanced reactor technology. Per the recent NEI white paper, a robust domestic HALEU infrastructure is necessary to support both the domestic deployment of advanced reactors and the export of U.S. advanced reactor technologies requiring HALEU.

In a letter to the DOE captioned “Updated Need for High-Assay Low Enriched Uranium” dated December 20, 2021, the NEI provided an estimate of what U.S. HALEU demand may be during the next 15 years by companies denoted A to J:

**Estimated Annual Requirements for High Assay Low Enriched Uranium to 2035 (MTU/yr)**

| Company | A | B | C | D | E | F | G | H | I | J | Total | Cumulative |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | | | | | | | | | | | | |
| 2022 | 0.1 | 0.4 | | | | | 0.2 | | 1.1 | 0.0 | 1.8 | 1.8 |
| 2023 | 0.1 | 3.1 | | | | | | | 4.4 | 0.1 | 7.7 | 9.5 |
| 2024 | 1.0 | 5.6 | 0.2 | 3.0 | | | 1.5 | | 6.6 | 0.1 | 18.0 | 27.5 |
| 2025 | 1.0 | 3.8 | 0.4 | 3.0 | | 5.0 | | | 11.0 | 1.6 | 25.8 | 53.3 |
| 2026 | 1.0 | 15.1 | | 4.9 | | 10.0 | 2.0 | 24.2 | 13.2 | 1.7 | 72.1 | 125.4 |
| 2027 | 1.0 | 26.5 | | 7.9 | | | 4.0 | 24.2 | 13.2 | 1.9 | 78.7 | 204.1 |
| 2028 | 1.0 | 37.8 | | 16.6 | | 13.0 | 23.0 | 24.2 | 13.2 | 2.0 | 130.8 | 334.9 |
| 2029 | 1.0 | 26.3 | 1.8 | 30.5 | 17.0 | 18.0 | 14.0 | 24.2 | 16.5 | 2.4 | 151.7 | 486.6 |
| 2030 | 1.0 | 34.4 | 1.8 | 40.4 | 46.0 | 18.0 | 30.0 | 24.2 | 16.5 | 2.7 | 215.0 | 701.6 |
| 2031 | 23.0 | 42.5 | 6.2 | 53.0 | 29.0 | 22.0 | 33.0 | 24.2 | 16.5 | 2.9 | 252.3 | 954.0 |
| 2032 | 35.0 | 52.9 | 12.5 | 67.6 | 46.0 | 40.0 | 50.0 | 48.4 | 19.8 | 3.1 | 375.3 | 1,329.2 |
| 2033 | 47.0 | 63.5 | 32.2 | 82.1 | 46.0 | 32.0 | 80.0 | 48.4 | 19.8 | 3.2 | 454.2 | 1,783.4 |
| 2034 | 58.0 | 76.1 | 62.4 | 96.7 | 46.0 | 36.0 | 80.0 | 48.4 | 19.8 | 3.7 | 527.1 | 2,310.5 |
| 2035 | 70.0 | 90.9 | 96. | 112.4 | 91.0 | 29.0 | 50.0 | 48.4 | 22.0 | 4.1 | 613.8 | 2,924.3 |

Notes:

- The material needs listed above are in metric tons of uranium per year and are a small amount compared to the approximately 2000 MTU used annually by the existing fleet of reactors.
- The material needs listed above include enrichments between 10.9% and 19.75% U-235.
- The year the material is needed is for fuel fabrication. Insertion in the reactor and reactor operations will occur in a later year.
- The material needs that are less than 1 MTU/year are for irradiation samples, lead test rods and lead test fuel assemblies.
- The material needs represent a few scenarios
    - The deployment of an advanced fuel design for the existing fleet of light-water reactors.
    - The deployment of multiple reactors of the same design that will not require refueling for many years.
    - The deployment of reactors that have annual refueling requirements.
- These reactors include a range of sizes from a few Megawatt electric to 100s of Megawatt electric.
- The data above does not include utilities that are considering enrichment between 5% and 10%.

**Quantum Enrichment Technology is ideally suited to the production of HALEU**

We believe that we are in a very different position to many of the entrenched domestic and international enrichers. Our innovative isotope enrichment process has a number of advantages over traditional gas centrifuges and other novel approaches currently being explored by other companies: cheaper in capital expenditures, faster in construction, more flexible in design and location.

We estimate that the capital cost of constructing a Quantum Enrichment technology plant for uranium enrichment is approximately 75% cheaper than that of a traditional gas centrifuge enrichment facility. Our manufacturing plants are modular, so our construction time is likely faster and more flexible than competing technologies. Our enrichment facilities are smaller than traditional gas centrifuges which means we can place them near fuel fabrication facilities for enhanced security of production and transportation. Our operating costs of enriching uranium to 15.5% - 19.75% U-235 should be comparable to or cheaper than costs for other methods of uranium enrichment.

The table below represents management's estimated comparison of the Quantum Enrichment technology with a traditional gas centrifuge.

| | **Quantum Enrichment Technology Plant** | **Gas Centrifuge** |
|---|---|---|
| Separation mechanism | Enhanced resonant multiphoton ionization | Differential diffusion |
| Capital Cost per plant | <$100 million | >$800 million |
| Energy use (kWh) per SWU | <40 | 50-240 |
| Construction time | 2-3 years | 2-3 years |
| Levelized cost per SWU* | <$50 | $140 |

* for enrichment from 0.71% U235 to 5% U235

We are in the process of commissioning and commencing commercial production at our Ytterbium-176 enrichment facility using the Quantum Enrichment technology in Pretoria, South Africa. We received a manufacturing permit for this facility from the South African DMRE during 3Q 2023. The construction of this plant will provide us with valuable experience in the construction of Quantum Enrichment technology facilities in the future. Many of the control systems, compressors, lasers and hardware used in a uranium enrichment facility would be similar to parts used in this ytterbium-176 enrichment facility.

We expect the construction of a Uranium Enrichment facility would take approximately 30 months and the production volume would gradually ramp up to the final capacity of 20 metric tons per year. Importantly, subject to licensure, we believe we can produce commercial quantities of HALEU by 2027 to meet the anticipated demand from the advanced reactors currently in development. We believe that we can supply HALEU at a price lower than the HALEU currently imported from international enrichers and considerably lower than any potential domestic supply that may evolve.

**Intellectual Property**

Our business will depend on our proprietary ASP technology and QE technology. Enrichment is among the most sensitive nuclear technologies because it can produce weapons-grade materials, and our technology is highly controlled and subject to limitations on public disclosure or export. We believe patent protection in the United States for such sensitive nuclear technology developed in South Africa would be unusual, if even possible. To date, we have relied exclusively on trade secrets and other intellectual property laws, non-disclosure agreements with our respective employees, consultants, vendors, potential customers and other relevant persons and other measures to protect our intellectual property, and intend to continue to rely on these and other means. As we transition into the commercialization of isotopes, we envision our intellectual property and its security becoming more vital to our future. Pursuing patent protection remains part of the intellectual property protection philosophy and strategy and the advisability of establishing provisional patent rights is continuously assessed on a case-by-case basis in respect of both conceptual aspects and the specific applications thereof. Such assessments are made in consultation with regulatory bodies and with due consideration to the prospects of successfully obtaining patent protection in light of any disclosure constraints that are imposed by such bodies. To date, we have not determined that patent protection is appropriate or viable in light of these considerations.

**Regulatory Environment**

We are subject to a variety of laws and regulations, including but not limited to those of the United States and South Africa, that impose regulatory systems that govern many aspects of our operations, including our research and development activities involving the enrichment of isotopes in South Africa. In addition, these jurisdictions impose trade controls requirements that restrict trade to comply with applicable export controls and economic sanctions laws and requirements, and legal requirements that are intended to curtail bribery and corruption.

There are a number of regulators and treaties that govern and control our business and industry. The two principal ones that control and regulate the manufacturing of isotopes at our isotope enrichment facility in South Africa are the IAEA and the Nuclear Non-Proliferation Treaty (NPT).

The IAEA is an international organization that seeks to promote the peaceful use of nuclear energy, and to inhibit its use for any military purpose, including nuclear weapons. The IAEA was established as an autonomous organization on July 29, 1957. Though established independently of the United Nations through its own international treaty, the IAEA Statute, the IAEA reports to both the United Nations General Assembly and Security Council. The IAEA statute currently has 173 member states, including South Africa.

The IAEA is authorized to conclude agreements with member states, in terms of which agreements the agency would perform certain functions and the relevant member states would be placed under certain obligations. The IAEA has concluded an extensive suite of agreements with South Africa. These agreements can be viewed on the website of the IAEA (*https://www.iaea.org/resources/legal/country-factsheets*) and include agreements that govern the physical protection of nuclear material, the notification of nuclear accidents, assistance in the case of nuclear accidents, nuclear safety, civil liability, and technical cooperation.

The Treaty on the Non-Proliferation of Nuclear Weapons, commonly known as the Non-Proliferation Treaty or NPT, is an international treaty whose objective is to prevent the spread of nuclear weapons and weapons technology, to promote cooperation in the peaceful uses of nuclear energy, and to further the goal of achieving nuclear disarmament and general and complete disarmament. Our South African subsidiary is registered with the South African Council for the Non-Proliferation of Weapons of Mass Destruction in terms of the Non-Proliferation of Weapons of Mass Destruction Act, 1993. Representatives from the South African Council for the Non-Proliferation of Weapons of Mass Destruction regularly inspect our facility and conduct tests to monitor the activities that are taking place at our facilities.

In South Africa, government Notice 493 relates to nuclear-related dual-use equipment, materials and software and related technologies which can be used in their entirety or in part for the separation of uranium isotopes. ASP technology is classified as a dual use technology under the protocols of the IAEA and, as such, is subject to the controls that are implemented under these protocols. These controls comprise requirements that include:

- membership of the IAEA and adherence to its protocols;
- membership of the Nuclear Suppliers Group (NSG) and adherence to its protocols;
- agreement to an “additional protocol” in light of uranium enrichment capabilities;
- local laws that require permits for possession, operation and commercialization and regular reporting;
- ad hoc inspections by the IAEA on 24 hour and in some cases 2 hours pre-warning;
- requirement for proposed patent applications to be approved at ministerial level; and
- cross-border technology transfer to be handled by the respective governments and approved by IAEA.

These regulations place strict limitations on what we can and cannot do. Security measures at our production facility and our offices are stringent. Access to our manufacturing plants are highly controlled. All employees and all visitors to the manufacturing plant are pre-screened by the South African Council for the Non-Proliferation of Weapons of Mass Destruction before being allowed employment or entry into the facility. Some of our suppliers also need to be registered with the South African Council for the Non-Proliferation of Weapons of Mass Destruction. Many of our computer systems are not connected to the external internet and confidential information is secured at a controlled location.

Some of our future isotopes may be regulated by healthcare regulators such as the FDA in the USA, Health Canada in Canada, the European Medicines Agency in Europe and similar regulators in other countries.

U.S. laws restrict the ability of U.S. companies, U.S. citizens and U.S. permanent residents, or U.S. persons, from involvement in certain types of transactions with countries, businesses and individuals that have been targeted by U.S. economic sanctions. For example, U.S. persons are precluded from undertaking virtually any activity of any kind on the part of any U.S. person with regard to any potential or actual transactions involving Cuba, Iran and Sudan without the prior approval of the U.S. Department of Treasury’s Office of Foreign Assets Control, or OFAC. OFAC also administers U.S. sanctions against a lengthy list of entities and individuals, wherever they may be located, that the United States considers to be closely associated with these sanctioned countries or that are considered terrorists or traffickers in either narcotics or weapons of mass destruction. Furthermore, U.S. economic sanctions forbid U.S. persons from circumventing direct U.S. restrictions or from facilitating transactions by non-U.S. persons if

those activities are forbidden to U.S. persons. Penalties for violating provisions such as these can include significant civil and criminal fines, imprisonment and loss of tax credits or export privileges.

The Foreign Corrupt Practices Act of 1977, or the FCPA, as amended by the Omnibus Trade and Competitiveness Act of 1988 and the International Anti-Bribery and Fair Competition Act of 1998, makes it a criminal offense for a U.S. corporation or other U.S. domestic concern to make payments, gifts or give anything of value directly or indirectly to foreign officials for the purpose of obtaining or retaining business, or to obtain any other unfair or improper advantage. In addition, the FCPA imposes accounting standards and requirements on publicly traded U.S. corporations and their foreign affiliates, which are intended to prevent the diversion of corporate funds to the payment of bribes and other improper payments, and to prevent the establishment of "off books" slush funds from which such improper payments can be made. We are also subject to laws and regulations covering subject matter similar to that of the FCPA that have been enacted by countries outside of the United States. For example, the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions was signed by the members of the Organization for Economic Cooperation and Development and certain other countries in December 1997. The Convention requires each signatory to enact legislation that prohibits local persons and firms from making payments to foreign officials for the purpose of obtaining business or securing other unfair advantages from foreign governments. Failure to comply with these laws could subject us to, among other things, penalties and legal expenses, which could harm our reputation and have a material adverse effect on our business, financial condition and results of operations.

Compliance with the myriad of export control laws of the various jurisdictions in which we do business is a challenge for any company involved in export activities within the nuclear and defense end markets. We have compliance systems in our U.S. and non-U.S. subsidiaries to identify those products and technologies that are subject to export control regulatory restrictions and, where required, we obtain authorization from relevant regulatory authorities for sales to foreign buyers or for technology transfers to foreign consultants, companies, universities or foreign national employees. We also have a compliance system that is intended to proactively address potential compliance issues including those related to export control, trade sanctions and embargoes, as well as anti-bribery situations, and we are implementing this through such mechanisms as training, formalizing contracting processes, performing diligence on agents and continuing to improve our record-keeping and auditing practices with respect to third-party relationships and otherwise. Thus far, as part of our compliance system, for instance, we have developed a Code of Ethics and Conduct that informs all of our employees of their compliance obligations. Furthermore, we have developed an ethics and conduct training program that all of our employees are required to undertake, as well as other targeted compliance training relevant to their position, such as specific FCPA training for all of our worldwide senior employees. Violations of any of the various U.S. or non-U.S. export control laws can result in significant civil or criminal penalties, or even loss of export privileges, as mentioned above. We recognize that an effective compliance program can help protect the reputation and relationship of a regulated company with the regulatory agencies administering these laws and regulations. In the United States, each of the regulatory agencies administering these laws and regulations has a voluntary disclosure program that offers the possibility of significantly reduced penalties, if any are applicable, and we intend to use these programs as part of our overall compliance program, as necessary.

**Employees**

As of December 31, 2024, we employed 136 people on a full-time basis. Of the total employees, 14 employees are in research and development, 63 employees are in engineering, construction and manufacturing, 32 employees are in plant operations and 27 employees are in general management. None of our employees are subject to collective bargaining agreements. We consider our relationship with our employees to be good.

**Facilities**

We lease five facilities in Pretoria, South Africa for production, research and development and offices. One lease is under automatic monthly extensions and the other four leases have terms that expire between February 28, 2026 and December 31, 2030. We believe that our existing facilities are adequate to meet our current needs.

**Legal Proceedings**

Except as described herein, we are currently not party to, and our property is not currently the subject of any material pending legal matters or claims.

On December 4, 2024, a purported stockholder of the Company filed a putative securities class action on behalf of purchasers of the Company's securities between October 30, 2024 through November 26, 2024 against ASP Isotopes Inc. and certain of its executive officers in the United States District Court for the Southern District of New York (*Corredor v. ASP Isotopes Inc., et al.*, Case No. 1:24-cv-09253 (S.D.N.Y)) (the "Securities Class Action"). The Securities Class Action alleges that the Company, its chief executive officer and chief financial officer ("Defendants") made materially misleading or false statements or omissions regarding

the Company's business and asserts purported claims under §§ 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 promulgated thereunder. The complaint seeks unspecified compensatory damages, attorney's fees and costs.

Defendants intend to vigorously defend against the Securities Class Action; however, we cannot be certain of the outcome and, if decided adversely to us, our business and financial condition may be adversely affected.

In addition to the matters described above, from time to time, we may become subject to arbitration, litigation or claims arising in the ordinary course of business. The results of any current or future claims or proceedings cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on us because of defense and litigation costs, diversion of management resources, reputational harm and other factors.

**Item 1A. Risk Factors**

*Investing in our common stock involves a high degree of risk. You should carefully consider the risk factors below together with the information contained elsewhere in this Annual Report on Form 10-K, including Part II, Item 8 "Financial Statements and Supplementary Data" and Part II, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and in our other public filings in evaluating our business. Before you decide to invest in our common stock, you should consider carefully the risks described below, together with the other information contained in this Annual Report, including our financial statements and the related notes. We believe the risks described below are the risks that are material to us as of the date of this Annual Report. If any of the following risks actually occur, our business, financial condition, results of operations and future growth prospects could be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and our stockholders may lose all or part of their investment.*

**Summary of the Material and Other Risks Associated with Our Business**

Our business is subject to numerous material and other risks and uncertainties that you should be aware of in evaluating our business. These risks include, but are not limited to, the following:

•We have incurred significant net losses since inception, and we expect to continue to incur significant net losses for the foreseeable future.

•We have a limited operating history, which may make it difficult to evaluate our prospects and likelihood of success.

•Our current business is tied directly to the nuclear medicine and quantum computing industries and depends on our ability to successfully introduce our medical and other specialty isotopes to changing technology and a changing medical practice landscape.

•Our business is dependent on our ability to recognize the anticipated benefits of acquisitions, including our acquisition of assets of Molybdos (Pty) Limited in the "business rescue" auction, the assets and intellectual property we acquired from Klydon Proprietary Ltd, and our investment in PET Labs Pharmaceuticals;

•We currently have no sales attributable to isotopes, but we expect to be heavily dependent on a few large customers to generate a majority of our revenues from sales of our future isotopes. Our operating results could be adversely affected by a reduction in business with our future significant customers.

•We are still conducting research and development efforts for isotopes such as Mo-100, Zinc-68, Xenon-129/136, Germanium-70/72/74 and Chlorine-37 using the ASP technology. If we are unable to advance our future isotopes in development, obtain applicable regulatory approval and ultimately commercialize our future isotopes, or experience significant delays in doing so, our business will be materially harmed.

•We are awaiting the approvals necessary to conduct early research and development efforts for isotopes such as Uranium-235 utilizing the Quantum Enrichment technology. The necessary approvals may take a significant amount of time and may never materialize. As a result, we may not be able to enter into the nuclear energy space utilizing our technology.

•Obtaining and maintaining our patent protection depends on compliance with various procedures, document submissions, fee payments and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

•Since our listing on the Nasdaq Capital Market in November 2022, there has been only a limited prior public market for our Common Stock, the stock price of our Common Stock may be volatile or may decline regardless of our operating performance and you may not be able to resell your shares quickly or at the market price if trading in shares of our common stock is not active.

•If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud. As a result, stockholders could lose confidence in our financial and other public reporting, which would harm our business and the trading price of our Common Stock.

The material and other risks summarized above should be read together with the text of the full risk factors below and in the other information set forth in this Annual Report, including our consolidated financial statements and the related notes, as well as in other documents that we file with the SEC. If any such material and other risks and uncertainties actually occur, our business, prospects, financial condition and results of operations could be materially and adversely affected. The risks summarized above or described in full below are not the only risks that we face. Additional risks and uncertainties not currently known to us, or that we currently deem to be immaterial may also materially adversely affect our business, prospects, financial condition and results of operations.

**Risks Related to Our Limited Operating History, Financial Position and Need for Additional Capital**

***We have a very limited operating history, and we have incurred losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future. We may never generate any revenue attributable to sales of enriched isotopes or become profitable or, if we achieve profitability, we may not be able to sustain it.***

We were incorporated in September 2021, and we have a very limited operating history upon which you can evaluate our business and prospects. Our operations to date have been primarily focused on acquiring assets, organizing and staffing our company, research and development activities, business planning, raising capital, and providing general and administrative support for these operations. We have not yet demonstrated the ability to produce commercial quantities of enriched isotopes using the ASP technology or Quantum Enrichment technology. We have not yet demonstrated an ability to overcome many of the risks and uncertainties frequently encountered by companies in the medical, technology and energy industries, including an ability to obtain applicable regulatory approvals, manufacture any isotopes at commercial scale, or conduct sales and marketing activities necessary for successful isotope commercialization. In addition, we have not yet sought any regulatory approval that may be necessary for application of isotopes that we may produce for the medical industry or the production of enriched U-235. Consequently, any predictions about our future performance may not be as accurate as they would be if we had a history of successfully developing and commercializing isotopes.

Investment in isotope enrichment technology is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential isotopes will fail to demonstrate adequate utility or effectiveness in the targeted application (or for medical indications, an acceptable safety profile), gain regulatory approval, if applicable, and become commercially viable. We have no products approved for commercial sale and have not generated any revenue to date attributable to isotopes (and only limited revenues attributable to PET Labs), and we continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we are not profitable and have incurred losses since our inception in September 2021. For the years ended December 31, 2024 and 2023, we reported a net loss of $32.4 million and $16.3 million, respectively. As of December 31, 2024, we had an accumulated deficit of $56.2 million.

We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we:

•continue to invest in our research and development activities;

•seek applicable regulatory approvals for any future isotopes that we may successfully develop;

•experience any delays or encounter any issues with any of the above, including but not limited to failed research and development activities, safety issues, or other regulatory challenges;

•hire additional engineering and production personnel and build our internal resources, including those related to audit, patent, other legal, regulatory and tax-related services associated with maintaining compliance with exchange listing and SEC requirements, director and officer insurance premiums and investor and public relations costs;

•obtain, expand, maintain, enforce and protect our intellectual property portfolio;

•establish a sales, marketing and distribution infrastructure and establish manufacturing capabilities, whether alone or with third parties, to commercialize future isotopes (assuming receipt of applicable regulatory approvals), if any; and

•operate as a public company.

We expect limited commercial activity for our isotopes in the United States during the next two to three years and we anticipate that most of our initial revenues from future sales of our specialty isotopes will be derived from countries in Asia and EMEA (Europe, Middle East and Africa). To become and remain profitable, we must succeed in developing and eventually commercializing enriched isotopes that generate significant revenue. This will require us to be successful in a range of challenging

activities, including completing research and development activities relating to our ASP technology, obtaining applicable regulatory approval for future isotopes, if any, and manufacturing, marketing and selling any future isotopes (assuming receipt of applicable regulatory approvals). We are only in the preliminary stages of most of these activities. We may never succeed in these activities and, even if we do, may never generate revenues that are significant enough to achieve profitability. Because of the numerous risks and uncertainties associated with chemical isotopes separation, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would depress the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our future isotopes or even continue our operations. A decline in the value of our company could also cause you to lose all or part of your investment.

***Our future prospects are tied directly to the end markets that use our isotopes including the diagnostic medical imaging industry and depend on our ability to successfully introduce our isotopes and adapt to a changing technology and medical practice landscape.***

The field of diagnostic medical imaging is dynamic, with new products, including equipment, software and products, continually being developed and existing products continually being refined. New hardware (scanners), software or agents in a given diagnostic modality may be developed that provide benefits superior to the then-dominant hardware, software and agents in that modality, resulting in commercial displacement of the existing radiotracers. For example, alternate scanners and radiotracers could be introduced. Similarly, changing perceptions about comparative efficacy and safety, as well as changing availability of supply may favor one agent over another or one modality over another. In addition, new or revised appropriate use criteria developed by professional societies, to assist physicians and other health care providers in making appropriate imaging decisions for specific clinical conditions, can and have reduced the frequency of and demand for certain imaging modalities and imaging agents. Technological obsolescence in any of the medical imaging products that would use the specialty isotopes that we plan to manufacture could have a material adverse effect on our business, results of operations, financial condition and cash flows.

***We may not realize the anticipated benefits of previous acquisitions.***

The success of the company will depend in large part on the success of our management in integrating the acquired assets into the company. In October 2021, our subsidiary in South Africa acquired the assets of Molybdos after participating in and being declared the winner of a competitive auction process under Section 45 of the *South Africa Consumer Protection Act, 2008* for ZAR 11,000,000 (which at the then current exchange rate was approximately $734,000), plus value added tax (VAT) levied by the government of South Africa at the rate of 15% and auctioneers' commission at the rate of 10%. In July 2022, we acquired assets comprising a dormant Silicon-28 aerodynamic separation processing plant from Klydon located in Pretoria, South Africa for ZAR 6,000,000 (which at the then current exchange rate was approximately $364,000). In addition, in April 2023, we perfected our interest under the Acknowledgement of Debt Agreement, under which we acquired specific intellectual property from Klydon. To date, we have completed the construction of one isotope enrichment facility, but we have not yet produced any commercial quantities of isotopes and we have not yet demonstrated the ability to produce any isotope in commercial quantities using ASP technology. We will not know whether the assets that we acquired will work according to our expectations until we have produced commercial quantities of isotopes at our enrichment facilities. Our failure to achieve the integration of the acquired assets into the company and to commercialize the assets could result in our failure to realize the anticipated benefits of those acquisitions and could impair our results of operations, profitability and financial results.

***The acquisition of a controlling interest in PET Labs Pharmaceuticals may fail to result in anticipated benefits but has involved significant investment of financial and other resources.***

In October 2023, we entered into a Share Purchase Agreement with Nucleonics Imaging Proprietary Limited, a company incorporated in South Africa, to purchase 51% of the ordinary shares (the "initial shares") in Nucleonics' wholly-owned subsidiary, PET Labs Pharmaceuticals Proprietary Limited, a company incorporated in South Africa and dedicated to nuclear medicine and the science of radiopharmaceutical production. We agreed to pay a total of $2,000,000 for the initial shares in two installments. The first installment of $500,000 was paid in November 2023. In January 2024, the Company made a partial payment of $264,750 and the balance of $1,235,250 is expected to be paid in 2025. In addition, we have an option to purchase the remaining 49% of the ordinary shares (the "option shares"). If we exercise our option to purchase the option shares (which option is exercisable until January 31, 2027, provided that the initial shares have been paid for in full), we have agreed to pay $2,200,000 for the option shares.

Acquisitions generally create risks such as (i) the need to integrate and manage the businesses and products acquired with our own business and products; (ii) additional demands on our resources, systems, procedures and controls; (iii) disruption of our ongoing business; (iv) potential unknown or unquantifiable liabilities associated with the target company; and (v) diversion of management's attention from other business concerns. Moreover, this acquisition involves substantial investment of funds. This acquisition may not be successful in generating material revenue, income or other returns, and any resources we committed will

not be available to us for other purposes. Our inability to take advantage of growth opportunities or address risks associated with this acquisition and investment may negatively affect our operating results. This acquisition may not result in its anticipated benefits, and we may not be able to properly integrate the business with our future products and operations or successfully combine personnel and cultures. Failure to do so could deprive us of the intended benefits of this acquisition.

***We currently have no sales attributable to enriched isotopes, but we expect to be heavily dependent on a few large customers to generate a majority of our revenues. Our operating results could be adversely affected by a reduction in business with our future significant customers.***

We currently have no sales attributable to enriched isotopes. However, we expect to rely on a limited number of customers to purchase any isotopes that we produce using the ASP technology or quantum enrichment under long-term contracts. Our future key customers may stop ordering our isotopes at any time or may become bankrupt or otherwise unable to pay. The loss of any of our future key customers could result in lower revenues than we anticipate and could harm our business, financial condition or results of operations.

***We will require substantial additional capital to finance our operations, which may not be available on acceptable terms, or at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate certain of our product development efforts or other operations.***

We expect our expenses to increase substantially in connection with our ongoing and planned activities, particularly as we continue our research and development activities, seek applicable regulatory approvals for any future isotopes that we may successfully develop, and expand our organization by hiring additional personnel. In addition, we expect to continue incurring significant costs associated with operating as a public company.

As of December 31, 2024, our cash was approximately $61.9 million. We believe, based on our current operating plan, that our existing cash, will be sufficient to fund our operations for at least the next 12 months from the date the financial statements are issued.

As we pursue additional research and development activities related to our ASP technology and seek applicable regulatory approval of our any future isotopes, and otherwise to support our continuing operations, we will require substantial additional capital to support our business operations. In addition, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution (assuming receipt of applicable regulatory approvals for our future isotopes). Even if we believe we have sufficient capital for our current or future operating plans, we may seek additional capital if market conditions are favorable or if we have specific strategic considerations. Any additional capital raising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our future isotopes (assuming receipt of applicable regulatory approvals).

Additionally, as a result of severely diminished liquidity and credit availability, increased interest rates, inflationary pressures, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability, the global credit and financial markets have experienced extreme volatility and disruptions, including severely diminished liquidity and credit availability. The financial markets and the global economy may also be adversely affected by the current or anticipated impact of military conflict. If the equity and credit markets deteriorate, it may make any necessary debt or equity financing more difficult, more costly or more dilutive. If we do not raise additional capital in sufficient amounts, we may be prevented from pursuing development and commercialization efforts, which will harm our business, operating results and prospects.

***We are subject to credit counterparty risk which could have a material adverse effect on our business, results of operations, financial condition and cash flows.***

The Company maintains cash balances at many financial institutions in multiple geographies. While the majority of cash balances are currently held in USD at U.S. financial institutions, our cash balances at those institutions may exceed the Federal Deposit Insurance Corporation (“FDIC”) insurance limit of $250,000 per depositor, per insured bank for each account ownership category. Our non-US banking counterparties might not have protections offered to their customers that are considered standard in the U.S. and even if such deposit insurances do exist, there is no guarantee that the insurer will honor those insurance policies. Although the Company currently believes that the financial institutions with whom it does business, will be able to fulfill their commitments to the Company, there is no assurance that those institutions will be able to continue to do so. Any credit losses that may occur could have a material adverse effect on our business, results of operations, financial condition and cash flows.

***Raising additional capital or acquiring or licensing assets by issuing equity or debt securities may cause dilution to our stockholders, and raising funds through lending and licensing arrangements may restrict our operations or require us to relinquish proprietary rights.***

We may plan to seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional capital through future collaborations, strategic alliances or third-party licensing arrangements, we may have to relinquish valuable rights to our intellectual property, future revenue streams, research programs or future isotopes, or grant licenses on terms that may not be favorable to us.

If we are unable to raise additional capital when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts, or grant rights to develop and market our future isotopes (assuming receipt of applicable regulatory approvals for our future isotopes) that we would otherwise develop and market ourselves.

**Risks Related to the Development and Commercialization of Our Future Isotopes**

***We are continuing our research and development efforts for isotopes using the ASP technology and the Quantum Enrichment technology. If we are unable to advance our future isotopes in development, obtain applicable regulatory approval and ultimately commercialize our future isotopes, or experience significant delays in doing so, our business will be materially harmed.***

We are still conducting research and development efforts using ASP technology to produce a wide array of isotopes, and have not yet produced any isotope at commercial scale. It is possible that the research and development, proof-of-concept, construction of a plant and commercialization will take longer than anticipated due to unexpected delays.

We also plan to begin researching the enrichment of uranium, which is a chemical element we believe may have application in the clean, efficient and carbon-free energy industry, using Quantum Enrichment technology. Quantum Enrichment technology has never been used to produce isotopes at a commercial scale and the research that has been conducted using this technique has never been published. The IAEA has never inspected any facility that leverages this technology and there is no proof that this technology has ever been used to enrich uranium. There are significant regulatory hurdles associated with enabling our research and development efforts to enter the nuclear energy market. Multiple regulatory agencies need to provide approvals to allow us to proceed with the research and development necessary to show proof of concept to the market. If we demonstrate proof of concept, we anticipate that there will be further approvals needed to expand to a larger footprint to support commercial demand. We may not ever obtain these approvals. If we are unable to advance our future isotopes in development, obtain applicable regulatory approval and ultimately commercialize our future isotopes (assuming receipt of applicable regulatory approvals), or experience significant delays in doing so, our business will be materially harmed.

Our ability to generate product revenues will depend heavily on the success of our research and development activities, receipt of applicable regulatory approvals, and eventual commercialization of our future isotopes (assuming receipt of applicable regulatory approvals and compliance with all applicable regulatory authorities).

The success of our business, including our ability to finance our company and generate any revenue in the future, will primarily depend on the successful development, regulatory approval and commercialization of our currently planned future isotopes, which may never occur.

We will have to be successful in a range of challenging activities, including completing research and development activities relating to our ASP technology, obtaining applicable regulatory approval for future isotopes, if any, and manufacturing, marketing and selling any future isotopes (assuming receipt of applicable regulatory approvals). We are only in the preliminary stages of most of these activities. If we are unable to succeed in these activities, we may not be able to generate sufficient revenue to continue our business.

***We rely on a limited number of suppliers to provide us components and a material interruption in supply could prevent or limit our ability to execute our strategic plan and development programs in the expected timeframe.***

We depend upon a limited number of third-party suppliers for certain components required to construct the centrifuges and other equipment for the enrichment plants that are being constructed in South Africa. To date, we have been able to obtain the required components for our centrifuges without any significant delays or interruptions, except for certain delays related to COVID-19. If we lose any of these suppliers, we may be required to find and enter into supply arrangements with one or more replacement

suppliers. Obtaining alternative sources of supply could involve significant delays and other costs, and these supply sources may not be available to us on reasonable terms or at all. Any disruption of supplies could delay completion and operations of the enrichment plants in South Africa, which could adversely affect our ability to execute our strategic plan and development programs in the expected timeframe.

***Development activities at our facility in South Africa could be disrupted for a variety of reasons, which could prevent us from completing our development activities.***

A disruption in development activities at our facility in South Africa could have a material adverse effect on our business. Disruptions could occur for many reasons, including power outages, fire, natural disasters, weather, unplanned maintenance or other manufacturing problems, public health crises, disease, strikes or other labor unrest, transportation interruption, government regulation, political unrest or terrorism. Alternative facilities with sufficient capacity or capabilities may not be available, may cost substantially more or may take a significant time to start production, each of which could negatively affect our business and financial performance. South Africa struggles with limited electricity supply and regions of the country regularly undergo load-shedding, during which electricity is not available. This uncertain supply of electricity could impact our ability to operate and produce commercial products and could negatively affect the financial position of the Company.

***Risks associated with the development of ASP technology for enrichment of isotopes could cause substantial delays in production of our future isotopes.***

Prior to October 2021, as a company, we had no involvement with or control over the research and development of the ASP technology. We relied on Klydon to have conducted such research and development in accordance with the applicable legal, regulatory and scientific standards. If the research and development processes or the results of the development programs associated with the ASP technology for development of isotopes prove to be unreliable, this could result in increased costs and delays in the development of our future isotopes, which could adversely affect any future revenue from these future isotopes (assuming receipt of applicable regulatory approvals).

***Regulatory approval for production and distribution of radiopharmaceuticals used for medical imaging and therapeutic treatments may involve a lengthy and expensive process with an uncertain outcome.***

Currently, the sale or use of many stable isotopes is not regulated by a healthcare regulator, such as the FDA, European Medicines Agency (EMA) or comparable foreign regulatory authorities. However, many products that are produced from stable isotopes in a radio pharmacy, such as Mo-99, Tc-99, Lu-177 and Ga 68 are regulated by healthcare regulators.

Our future customers who may use our stable isotopes to produce radiopharmaceuticals will likely require regulatory approval for their products. To date, only one healthcare regulator (Canada) has approved the use of Tc-99m produced from Mo-100 via a cyclotron. The regulatory approval of other products is also not standardized between different regions. Obtaining regulatory approval is expensive and can take many years to complete, and its outcome is inherently uncertain. Our customers' regulatory approval process may not be conducted as planned or completed on schedule, if at all, and failure can occur at any time during the process.

In the future, we may need to obtain approval from the FDA, EMA or comparable foreign regulatory authorities prior to the sale of stable isotopes that we may produce using our ASP technology or QE technology for use in medical imaging and therapeutic treatments. If we require FDA, EMA or other comparable foreign regulatory authorities to approve the sale of stable isotopes that we may produce using our ASP technology or QE Technology for medical imaging and therapeutic treatments, we must demonstrate the safety and utility or efficacy of our stable isotopes. Obtaining regulatory approval is expensive and can take many years to complete, and its outcome is inherently uncertain. Our regulatory approval process may not be conducted as planned or completed on schedule, if at all, and failure can occur at any time during the process.

Other isotopes that we intend to produce in the future may also require approvals from healthcare regulators such as FDA, EMA or comparable foreign regulatory authorities.

***Our success depends on our future customers' ability to successfully commercialize products that are produced from our isotopes.***

Our customers operate in a competitive environment. If our customers are unable to successfully commercialize products that they produce from our isotopes, our business will be negatively impacted. Our customers may fail for a number of reasons, including but not limited to pricing pressure from competing products and failure to gain regulatory approval for the production of their products from healthcare regulators.

***Our success depends on our ability to adapt to a rapidly changing competitive environment in the nuclear industry.***

The nuclear industry in general, and the nuclear fuel industry in particular, is in a period of significant change, which could significantly transform the competitive landscape we face. The uranium and isotope enrichment sector is competitive. Changes in the competitive landscape may adversely affect pricing trends, change customer spending patterns, or create uncertainty. To address these changes, we may seek to adjust our cost structure and efficiency of operations and evaluate opportunities to grow our business organically or through acquisitions and other strategic transactions. We are actively considering, and expect to consider from time to time in the future, potential strategic transactions, which could involve, without limitation, changes in our capital structure, acquisitions and/or dispositions of businesses or assets, joint ventures or investments in businesses, products or technologies.

In connection with any such transaction, we may seek additional debt or equity financing, contribute or dispose of assets, assume additional indebtedness, or partner with other parties to consummate a transaction. Any such transaction may not result in the intended benefits and could involve significant commitments of our financial and other resources. Legal and consulting costs incurred in connection with debt or equity financing transactions in development are deferred and subject to immediate expensing if such a transaction becomes less likely to occur. If the actions we take in response to industry changes are not successful, our business, results of operations and financial condition may be adversely affected.

***We may explore strategic collaborations that may never materialize or may fail.***

We intend to accelerate the development of our enriched uranium program by selectively collaborating with energy companies in the United States. We intend to retain significant technology, economic and commercial rights to our programs in key geographic areas that are core to our long-term strategy. As a result, we intend to periodically explore a variety of possible additional strategic collaborations in an effort to gain access to additional resources. At the current time, we cannot predict what form such a strategic collaboration might take. We are likely to face significant competition in seeking appropriate strategic collaborators, and negotiations are difficult and time-consuming. We may not be able to negotiate strategic collaborations on acceptable terms, or at all. We are unable to predict when, if ever, we will enter into any additional strategic collaborations because of the numerous risks and uncertainties associated with establishing them.

***If the market opportunities for our future enriched isotopes are smaller than we estimate (even assuming receipt of any required regulatory approval), our business may suffer.***

We are currently focused on producing enriched isotopes using our ASP technology to meet critical needs in society. We also plan to research the production of enriched uranium using Quantum Enrichment technology to meet the future needs of developers of U.S. advanced reactor technologies requiring HALEU. Our projections of the potential markets are based on estimates that have been derived from a variety of sources, including scientific literature and market research, and which may prove to be incorrect. We must be able to successfully acquire a significant market share in our potential markets to achieve profitability and growth. Customers may become difficult to gain access to, which would adversely affect our results of operations and our business.

***We face substantial competition, which may result in others discovering, developing or commercializing enriched isotopes before or more successfully than us.***

The development and commercialization of radioisotopes and chemical elements is highly competitive. We face competition with respect to all the enriched isotopes that we may produce using our ASP technology from established biotechnology and nuclear medicine technology companies and will face competition with respect to enriched uranium that we may seek to develop or commercialize in the future from innovative technology and energy companies. There are a number of large biotechnology and nuclear medicine technology companies that currently market and sell radioisotopes to radiopharmacies, hospitals, clinics and others in the medical community (Mo-99 is the active ingredient for Tc-99m-based radiopharmaceuticals used in nuclear medicine procedures). There are also a number of technology and energy companies that are currently seeking to develop HALEU. Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization.

More established companies may have a competitive advantage over us due to their greater size, resources and institutional experience. In particular, these companies have greater experience and expertise in securing reimbursement, government contracts, relationships with key opinion leaders, obtaining and maintaining regulatory approvals and distribution relationships to market products. These companies also have significantly greater research and marketing capabilities than we do. If we are not able to compete effectively against existing and potential competitors, our business and financial condition may be harmed.

As a result of these factors, our competitors may complete development of isotopes before we are able to, which may limit our ability to develop or commercialize our future isotopes. Our competitors may also develop radioisotopes or technologies that

are safer, more effective, more widely accepted and cheaper than ours, and may also be more successful than us in manufacturing and marketing their isotopes. These appreciable advantages could render our future isotopes obsolete or non-competitive before we can recover the expenses of their development and commercialization.

Mergers and acquisitions in the technology and energy industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller and other early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific, management and commercial personnel, as well as in acquiring technologies complementary to, or necessary for, our programs.

***Even if the products that we or our customers may produce using the ASP technology receives regulatory approval, it may fail to achieve market acceptance by radiopharmacies, hospitals, clinics or others in the medical community necessary for commercial success.***

Even if the isotopes that we may produce using the ASP technology for the medical industry, or the radioisotopes that we expect our future customers to produce using the stable isotopes that we plan to offer, receives regulatory approval, the isotopes may fail to gain sufficient market acceptance by radiopharmacies, hospitals, clinics and others in the medical community. If it does not achieve an adequate level of acceptance, we may not generate significant product revenue and may not become profitable. The degree of market acceptance of isotopes that we may produce using the ASP technology, or the radioisotopes that our future customers may produce, will depend on a number of factors, including but not limited to:

- the potential advantages compared to alternative radioisotopes;
- the timing of market introduction of the product as well as competitive products;
- effectiveness of sales and marketing efforts;
- the strength of our relationships with radiopharmacies, hospitals, clinics and others in the medical community;
- the cost in relation to alternative radioisotopes;
- our ability to offer isotopes that we may produce using the ASP technology for sale at competitive prices;
- the convenience and ease of use compared to alternative radioisotopes;
- the willingness of radiopharmacies, hospitals, clinics and others in the medical community to try an innovative radioisotope; and
- the strength of marketing and distribution support.

Our efforts to educate radiopharmacies, hospitals, clinics and others in the medical community on the benefits of our isotopes that we may produce using the ASP technology may require significant resources and may never be successful.

Because we expect sales of isotopes that we may produce using the ASP technology (assuming receipt of applicable regulatory approvals for commercial sale) to generate substantially all of our revenues for the foreseeable future, the failure of these isotopes that we may produce using the ASP technology (assuming receipt of applicable regulatory approvals for commercial sale) to find market acceptance would harm our business and could require us to seek additional financing.

***We currently have no marketing and sales organization for our future isotopes and have no experience as a company in commercializing products, and we may have to invest significant resources to develop these capabilities. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our products, we may not be able to generate product revenue.***

We have no internal sales, marketing or distribution capabilities for our future isotopes, nor have we commercialized any isotopes. If the isotopes that we may produce using our ASP technology gains market acceptance and our customers receive regulatory approval for the isotopes they produce, we must build a marketing and sales organization with technical expertise and supporting distribution capabilities to commercialize such product in the markets that we target, which will be expensive and time-consuming, or collaborate with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems. We currently plan to independently commercialize the isotopes that we may produce using our ASP technology (assuming receipt of applicable regulatory approvals) in the United States by establishing a focused sales force and marketing infrastructure. We may opportunistically seek additional strategic collaborations to maximize the commercial opportunities for our medical isotopes business outside of the United States. We have no prior experience as a company in the marketing, sale and distribution of isotopes and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain and

incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may not be able to enter into collaborations or hire consultants or external service providers to assist us in sales, marketing and distribution functions on acceptable financial terms, or at all. In addition, our product revenues and our profitability, if any, may be lower if we rely on third parties for these functions than if we were to market, sell and distribute any products that we develop ourselves. We likely will have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively. If we are not successful in commercializing our isotopes, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

***Obtaining regulatory approval for the stable isotopes that we may produce using the ASP technology or the QE technology, or the radioisotopes that our future customers may produce using the stable isotopes that we plan to offer, in one jurisdiction does not mean that we or they will be successful in obtaining regulatory approval of such future products in other jurisdictions.***

Currently, the production and distribution of stable isotopes does not require any regulatory licenses from healthcare regulators. Healthcare regulators frequently change such requirements, and it is possible that in the future stable isotopes may be regulated as a healthcare product. Obtaining such regulatory licenses, if required, may be a timely and costly process and could materially impact our ability to commercialize the stable isotopes that we plan to offer. Obtaining regulatory approval of the stable isotopes that we may produce using the ASP technology or QE technology in one jurisdiction does not guarantee that we will be able to obtain regulatory approval in any other jurisdiction. For example, even if the FDA grants regulatory approval of the stable isotopes that we may produce using the ASP technology or QE technology, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion and reimbursement of such future product in those countries. However, a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States.

Obtaining foreign regulatory approvals and establishing and maintaining compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of the stable isotopes that we may produce using the ASP technology or QE technology. Products such as Tc-99m, Mo-99, Lu-177 and Ga-68 that may be produced by our future customers using the stable isotopes that we plan to offer will likely require regulatory licenses in most regions. Healthcare regulators frequently change such requirements and it is unclear what each healthcare regulator will require. To date, only one region (Canada) has approved the use of Tc-99m that has been produced from stable isotopes in a cyclotron. Obtaining such regulatory licenses, if required, may be a timely and costly process and could materially impact the ability of our future customers to operate and use the Mo-100 that we plan to offer. Obtaining regulatory approval in one jurisdiction does not guarantee that we or they will be able to obtain regulatory approval in any other jurisdiction.

If we or any future collaborator fail to comply with the regulatory requirements in international markets or fail to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of the stable isotopes that we may produce using the ASP technology or QE technology will be harmed.

***Product liability lawsuits against us could cause us to incur substantial liabilities and could limit commercialization of any isotopes that we may produce.***

We face an inherent risk of product liability exposure if we commercialize any isotopes that we may produce. If we cannot successfully defend ourselves against claims that any such isotopes caused injuries, we could incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any isotopes that we may produce;
- loss of revenue;
- substantial monetary awards to patients;
- significant time and costs to defend the related litigation;
- a diversion of management's time and our resources;
- initiation of investigations by regulators;
- the inability to commercialize any isotopes that we may produce;
- injury to our reputation and significant negative media attention; and

•a decline in our share price.

Any product liability insurance coverage that we obtain and maintain may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage each time we commence a clinical trial and if we successfully commercialize any isotopes. Insurance coverage is increasingly expensive. We may not be able to obtain or maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

**Risks Related to Regulatory Compliance**

***Our business is and could become subject to a wide variety of extensive and evolving laws and regulations. Failure to comply with such laws and regulations and failure to obtain licenses, approvals and permits that may be required to execute on our strategy and develop our company's business could have a material adverse effect on our business.***

We are subject to a wide variety of laws and regulations relating to various aspects of our business, including with respect to the development of the ASP technology and our future isotopes, employment and labor, health care, tax, privacy and data security, health and safety, and environmental issues. Laws and regulations at the South African and foreign, federal, state and local levels frequently change, especially in relation to new and emerging industries, and we cannot always reasonably predict the impact of, or the ultimate cost of compliance with, current or future regulatory or administrative changes. In South Africa, our isotope enrichment facilities are heavily regulated. South Africa is a signatory to the IAEA conventions and has adopted safety standards from the IAEA. The design, construction and operation of the isotope enrichment plants are highly regulated and require government licenses, approvals and permits, and may be subject to the imposition of conditions. In some cases, these licenses, approvals and permits entail periodic review and inspections. While we and Klydon have received all licenses, approvals and permits required to build and operate our isotope enrichment facilities in South Africa, we cannot predict whether the conditions associated with such licenses, approvals and permits will be maintained. For example, each of Klydon and ASP Isotopes South Africa (Proprietary) Limited has received from the South African Council for The Non-Proliferation of Weapons of Mass Destruction (1) a registration certificate (which are valid for two years from the date of issuance) and (2) a Manufacturing and Services Permit. The permits provide that the Non-Proliferation Secretariat will conduct at least two industry visits in June and November (or as arranged) of every year. Each of the permits includes numerous conditions, including, for example, the obligation to keep the Council updated or informed on all separation projects at all times and at least through biannual declarations, which must be done through correspondence to the Council at the end of April and September every year. The permit issued to ASP Isotopes South Africa (Proprietary) Limited includes additional specific information requirements related to (i) the progress on the design and construction of the isotope separation plant, (ii) the progress on the manufacturing of isotope separation elements, and (iii) the commissioning of the plant. Each of the permits further provides that (i) any potential export of controlled goods and technology should be requested at an early stage through a Provisional Export Guidance Request, (ii) all isotope separation applications remain controlled regardless of the isotope atomic mass and will be dealt with on a case-by-case basis, and (iii) any ultimate transfer of these controlled goods and technology will be subject to the issuance of a permit by the Council as required in terms of the Non-Proliferation Act and related Government Notices and Regulations.

In addition, we cannot assure you that we will be able to obtain, on a timely basis or at all, any additional licenses, approvals and permits that may be required to execute on our strategy and develop our company's business, including any such licenses, approvals and permits that may be required to introduce isotopes produced using ASP technology into the market and to begin the enrichment of uranium to demonstrate our capability to produce HALEU using the Quantum Enrichment technology.

Changes in law or the imposition of new or additional regulations or permit requirements that impact our business could negatively impact our performance in various ways, including by limiting our ability to collaborate with partners or customers or by increasing our costs and the time necessary to obtain required authorization. We monitor new developments and devote a significant amount of management's time and external resources to compliance with these laws and regulations. We cannot assure you, however, that we are and will remain in compliance with all such requirements and, even when we believe we are in compliance, a regulatory agency may determine that we are not. In addition, we cannot assure you that we will be able to obtain all licenses, approvals and permits that may be required to execute on our strategy and develop our company's business as currently contemplated. Failure by us, our employees, affiliates, partners or others with whom we work to comply with applicable laws and regulations or to obtain or comply with necessary licenses, approvals and permits could result in administrative, civil, commercial or criminal liabilities, including suspension or debarment from government contracts or suspension of our export/import privileges. Failure by us, our employees, affiliates, partners or others with whom we work to comply with the permits issued to us by the South African Council for The Non-Proliferation of Weapons of Mass Destruction could result in disruption of our development activities at our facility in South Africa, which could prevent us from completing our development activities.

***If technology developed for the purposes of enriching isotopes can be applied to the creation or development of weapons-grade materials, then our technology may be considered "dual use" technology and be subject to limitations on public disclosure or export.***

Our research and development of isotope enrichment is dedicated not only to producing enriched isotopes for use in nuclear medical diagnostic procedures and concentrating uranium in the isotope uranium-235 for use in nuclear energy, but also to safeguarding any information with broad, dual-use potential that could be inappropriately applied. Enrichment is among the most sensitive nuclear technologies because it can produce weapon-grade materials. The ASP technology and the Quantum Enrichment technology may be considered dual use and could be subject to export control, for example, under the Wassenaar Arrangement.

**Risks Related to Our Intellectual Property**

***Our intellectual property is not protected through patents or formal copyright registration. As a result, we do not have the full benefit of patent or copyright laws to prevent others from replicating the ASP technology and Quantum Enrichment technology.***

We have not yet protected our intellectual property rights through patents or formal copyright registration, and we currently have no patent applications pending. To date, we have relied exclusively on trade secrets and other intellectual property laws, non-disclosure agreements with our respective employees, consultants, vendors, potential customers and other relevant persons and other measures to protect our intellectual property, and intend to continue to rely on these and other means. As we intend to transition into the commercialization of isotopes, we envision our intellectual property and its security becoming more vital to our future. Until we protect our intellectual property through patent, trademarks and registered copyrights, we may not be able to protect our intellectual property and trade secrets or prevent others from independently developing substantially equivalent proprietary information and techniques or from otherwise gaining access to our intellectual property or trade secrets. In such an instance, our competitors could produce products that are nearly identical to ours, resulting in us selling less products or generating less revenue from our sales.

***We may be unable to adequately protect our intellectual property and proprietary rights and prevent others from making unauthorized use of our products and technology.***

Our success and competitiveness depend, in significant part, on our ability to protect our intellectual property rights, including the ASP technology and the Quantum Enrichment technology and certain other practices, tools, technologies and technical expertise we utilize in designing, developing, implementing and maintaining processes used in the development of our future isotopes. To date, we have relied exclusively on trade secrets and other intellectual property laws, non-disclosure agreements with our respective employees, consultants, vendors, potential customers and other relevant persons and other measures to protect our intellectual property, and intend to continue to rely on these and other means.

For strategic reasons, we have not yet protected our intellectual property by filing patent applications related to our technology, inventions and improvements. Even if we filed patent applications and patents were granted, we cannot assure you we would be fully protected against third parties as those patents may not be sufficiently broad in their coverage, may not be economically significant, or may not provide us with any competitive advantage. Competitors may be able to design around any patents and develop isotope production techniques comparable or superior to the ASP technology or the Quantum Enrichment technology. Furthermore, the filing of a patent would entail the disclosure of our know-how, and breaches of patent rights related to a wrongful use of this know-how would be difficult to enforce in the international landscape. We believe that our intellectual property strategy differs significantly from the strategies of others involved in the medical isotope industry, many of whom have extensive patent portfolios and rely heavily on intellectual property registrations to enforce their intellectual property rights. As a result of this discrepancy in strategy, we may be at a competitive disadvantage with respect to the strength of our intellectual property protection. Unlike others involved in the medical isotope industry, who generally have patents providing exclusive control over their innovations, we have no recourse against any entity that independently creates the same technology as ours or legitimately reverse-engineers our technology.

We generally enter into non-disclosure agreements with our employees, consultants and other parties with whom we have strategic relationships and business alliances. We cannot, however, assure you that these agreements will be effective in controlling access to and distribution of our technology and proprietary information. Since we do not protect our intellectual property by filing patent applications, we rely on our personnel to protect our trade secrets, know-how and other proprietary information to a greater degree than we would if we had patent protection for our intellectual property. In any jurisdiction in which our research and development is not protected by similar agreements, there is no protection against the manufacture and marketing of identical or comparable research and development by third parties, who are generally free to use, independently develop, and sell our developments and technologies without paying license or royalty fees. Furthermore, our former employees may perform work for our competitors and use our know-how in performing this work. In the event we scale our business by hiring additional personnel and entering into contracts with third parties, the risks associated with breaches of non-disclosure agreements, confidentiality

agreements and other agreements pertaining to our technology and proprietary information will increase, and such breaches could have an adverse effect on our business and competitive position.

We may come to believe that third parties are infringing on, or otherwise violating, our intellectual property or other proprietary rights. To prevent infringement or unauthorized use, we may need to file infringement and/or misappropriation suits, which are expensive and time-consuming, could result in meritorious counterclaims against us and would distract management's attention. In addition, in an infringement or misappropriation proceeding, a court may decide that one or more of our intellectual property rights is invalid, unenforceable, or both, in which case third parties may be able to use our technology without paying license fees or royalties. If we are unable to protect our intellectual property and proprietary rights, we may be unable to prevent competitors from using our own inventions and intellectual property to compete against us, and our business may be harmed.

***Our ASP technology and Quantum Enrichment technology may be found to infringe third-party intellectual property rights.***

Third parties may in the future assert claims or initiate litigation related to their intellectual property rights in technology that is important to us, including the ASP technology. For example, on October 25, 2022, we received a letter (the "NMS Letter") from a law firm acting on behalf of Norsk Medisinsk Syklotronsenter AS ("NMS"), asserting, among other things, that the grant of the former license to the ASP technology to us by Klydon violated a pre-existing exclusive sub-license to the ASP technology granted to Radfarma. In November 2023, we entered into a mutual release with NMS, Radfarma, and certain board members and shareholders of Radfarma related to the claims asserted in the NMS letter and other matters, without any payment or license of any rights by any party to the release. Any future claims alleging infringement of intellectual property rights with respect to the ASP technology on which our company relies could be time-consuming, resulting in costly arbitration or litigation and diversion of technical and management personnel, or require us to develop non-infringing technology or enter into license agreements. We cannot assure you that licenses will be available on acceptable terms, if at all. Furthermore, because of the potential for significant damage awards, which are not necessarily predictable, it is not unusual to find even arguably unmeritorious claims resulting in large settlements. If any infringement or other intellectual property claim made against us by any third party is successful, or if we fail to develop non-infringing technology or license the proprietary rights on commercially reasonable terms and conditions, our business, operating results and financial condition could be materially adversely affected.

If the ASP technology infringes the proprietary rights of other parties, we could incur substantial costs, and we may have to take certain actions, including the following:

•obtain licenses, which may not be available on commercially reasonable terms, if at all;

•redesign our technology or processes to avoid infringement;

•stop using the subject matter claimed to be held by others;

•pay damages; or

•defend arbitration, litigation or administrative proceedings which may be costly whether we win or lose (and may be prohibitively expensive, particularly for a company of our size), and which could result in a substantial diversion of our financial and management resources.

In addition, in an infringement proceeding, a court or tribunal may decide that our asserted intellectual property is not valid or is unenforceable. An adverse determination in any litigation, arbitration or defense proceedings could put our intellectual property at risk of being invalidated or interpreted narrowly. If our intellectual property rights are found to be invalid or unenforceable (in whole or in part), our ability to commercialize our future isotopes would suffer and our business, results of operations and financial condition may be adversely affected.

***We may enter into collaboration agreements and strategic alliances, and we may not realize the anticipated benefits of such collaborations or alliances.***

We may wish to form collaborations in the future with respect to our future isotopes but may not be able to do so or to realize the potential benefits of such transactions, which may cause us to alter or delay our development and commercialization plans. Research and development collaborations are subject to numerous risks, which may include the following:

•collaborators have significant discretion in determining the efforts and resources that they will apply to a collaboration and may not commit sufficient efforts and resources or may misapply those efforts and resources;

•collaborators may not pursue development and commercialization of future isotopes or may elect not to continue or renew development or commercialization programs;

•collaborators may delay, provide insufficient resources to, or modify or stop development activities for future isotopes;

•collaborators could develop or acquire products outside of the collaboration that compete directly or indirectly with our future isotopes;

•collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;

•disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our future isotopes, or that result in costly litigation or arbitration that diverts management attention and resources;

•collaborations may be terminated and, if terminated, may result in a need for additional capital and personnel to pursue further development or commercialization of the applicable future isotopes; and

•collaborators may own or co-own intellectual property covering our products that results from our collaborating with them, and in such cases, we may not have the exclusive right to commercialize such intellectual property.

The development and potential commercialization of our future isotopes will require substantial additional capital to fund expenses. We may form or seek further strategic alliances, create joint ventures or collaborations, or enter into additional licensing arrangements with third parties that we believe will complement or augment our development and commercialization efforts with respect to our future isotopes, including in territories outside the United States or for certain indications. These transactions can entail numerous operational and financial risks, including exposure to unknown liabilities, disruption of our business and diversion of our management's time and attention in order to manage a collaboration or develop acquired products or technologies, incurrence of substantial debt or dilutive issuances of equity securities to pay transaction consideration or costs, higher than expected collaboration, acquisition or integration costs, write-downs of assets or goodwill or impairment charges, increased amortization expenses, difficulty and cost in facilitating the collaboration or combining the operations and personnel of any acquired business, impairment of relationships with key suppliers, manufacturers or customers of any acquired business due to changes in management and ownership and the inability to retain key employees of any acquired business. As a result, if we enter into acquisition or in-license agreements or strategic partnerships, we may not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture, or if there are materially adverse impacts on our or the counterparty's operations, which could delay our timelines or otherwise adversely affect our business. We also cannot be certain that, following a strategic transaction or license, we will achieve the revenue or specific net income that justifies such transaction or such other benefits that led us to enter into the arrangement.

In addition, we face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex. We may not be successful in our efforts to establish a strategic partnership or other alternative arrangements for our future isotopes because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view our future isotopes as having the requisite potential to demonstrate safety and efficacy. If and when we collaborate with a third-party for development and commercialization of a future isotope, we can expect to relinquish some or all of the control over the future success of that future isotope to the third-party. Our ability to reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of our technologies, future isotopes and market opportunities. The collaborator may also consider alternative isotopes or technologies for similar applications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us for our future isotope. We may also be restricted under any license agreements from entering into agreements on certain terms or at all with potential collaborators.

As a result of these risks, we may not be able to realize the benefit of our existing collaborations or any future collaborations or licensing agreements we may enter into. In addition, we may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of such future isotope, reduce or delay one or more of our other development programs, delay the potential commercialization or reduce the scope of any planned sales or marketing activities for such future isotope, or increase our expenditures and undertake development, manufacturing or commercialization activities at our own expense. If we elect to increase our expenditures to fund development, manufacturing or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our future isotopes or bring them to market and generate product revenue.

***We may be dependent on intellectual property licensed or sublicensed to us from, or for which development was funded or otherwise assisted by, government agencies, for development of our technology and future isotopes. Failure to meet our own obligations to any licensor or upstream licensors, including such government agencies, may result in the loss of our rights to such intellectual property, which could harm our business.***

Government agencies may provide funding, facilities, personnel or other assistance in connection with the development of the intellectual property rights owned by or licensed to us in the future. Such government agencies may have retained rights in such intellectual property, including the right to grant or require us to grant mandatory licenses or sublicenses to such intellectual property to third parties under certain specified circumstances, including if it is necessary to meet health and safety needs that we are not reasonably satisfying or if it is necessary to meet requirements for public use specified by federal regulations, or to manufacture products in the United States. Any exercise of such rights, including with respect to any such required sublicense of these licenses could result in the loss of significant rights and could harm our ability to commercialize licensed products.

***If we are unable to obtain patent protection for our future isotopes, or if the scope of the patent protection obtained is not sufficiently broad, we may not be able to compete effectively in our markets.***

We anticipate that we may file patent applications both in the United States and in other countries, as appropriate. However, we cannot predict:

•if and when any patents will issue;

•the degree and scope of protection any issued patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;

•whether others will apply for or obtain patents claiming aspects similar to those covered by our patents and patent applications;

•whether we will need to initiate litigation or administrative proceedings to defend our patent rights, which may be costly whether we win or lose; or

•whether the patent applications that we own or in-license will result in issued patents with claims that cover our future isotopes or uses thereof in the United States or in foreign countries.

We currently rely upon a combination of trade secret protection and confidentiality agreements to protect the intellectual property related to our isotope development techniques and future isotopes. Our success will depend in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to the ASP technology and the Quantum Enrichment technology. We may seek to protect our proprietary position by filing patent applications in the United States and abroad related to its current and future development programs and future isotopes to the extent permitted by applicable law. The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner.

It is possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our future isotopes in the United States or in foreign countries. There is no assurance that all of the potentially relevant prior art relating to our patents and patent applications has been found, which can invalidate a patent or prevent a patent from being issued from a pending patent application. Even if patents are successfully issued and even if such patents cover the ASP technology and the Quantum Enrichment technology, third parties may challenge their scope, validity, or enforceability, which may result in such patents being narrowed, invalidated, or held unenforceable. Any successful opposition to these patents or any other patents owned by or licensed to us could deprive us of rights necessary for the successful commercialization of any future isotopes using the ASP technology or the Quantum Enrichment technology. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a future isotope could be reduced.

If the patent applications we hold or have in-licensed with respect to our development programs fail to issue, if their breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for the ASP technology or the Quantum Enrichment technology, it could dissuade companies from collaborating with us, and threaten our ability to commercialize, isotopes produced using the ASP technology or the Quantum Enrichment technology. Any such outcome could have a negative effect on our business.

Even if we obtain patents covering the ASP technology or the Quantum Enrichment technology or our methods, we may still be barred from making, using and selling such technology or methods because of the patent rights of others. Others may have filed, and in the future may file, patent applications covering technology or methods that are similar or identical to ours, which could materially affect our ability to successfully develop our technology or to successfully commercialize any isotopes alone or with collaborators.

Patent applications in the United States and elsewhere are generally published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Therefore, patent applications covering our platform technologies and methods could have been filed by others without our knowledge. Additionally, pending claims in patent applications which have been published can, subject to certain limitations, be later amended in a manner that could cover our platform technologies. These patent applications may have priority over patent applications filed by us.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by government patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other government fees on patents and/or applications will be due to be paid to the United States Patent and Trademark Office ("USPTO") and various government patent agencies outside of the United States over the lifetime of our owned and licensed patents and/or applications and any patent rights we may own or license in the future. We will rely on our outside counsel, patent annuity service providers, or our licensing partners to pay these fees due to non-U.S. patent agencies. The USPTO and various non-U.S. government patent agencies require compliance with several procedural, documentary, and other similar provisions during the patent application process. We will employ reputable law firms and other professionals to help us comply. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, potential competitors might be able to enter the market and this circumstance could harm our business.

***Third parties may initiate legal proceedings alleging that we are infringing their intellectual property rights, the outcome of which would be uncertain and could have a negative impact on the success of our business.***

Our commercial success depends, in part, upon our ability and the ability of our current or future collaborators to develop, manufacture, market and sell our future isotopes and use our proprietary technologies without infringing the proprietary rights and intellectual property of third parties. The technology industry is characterized by extensive and complex litigation regarding patents and other intellectual property rights. Our future isotopes and other proprietary technologies we may develop may infringe existing or future patents owned by third parties. We may in the future become party to, or be threatened with, adversarial proceedings or litigation regarding intellectual property rights with respect to our future isotopes and technology, including interference proceedings, post-grant review and inter partes review before the USPTO. Third parties may assert infringement claims against us based on existing patents or patents that may be granted in the future, regardless of their merit. There is a risk that third parties may choose to engage in litigation with us to enforce or to otherwise assert their patent rights against us. A court of competent jurisdiction could hold that these third-party patents are valid, enforceable and infringed, which could have a negative impact on our ability to commercialize our future isotopes. In order to successfully challenge the validity of any such U.S. patent in federal court, we would need to overcome a presumption of validity. As this burden is a high one requiring us to present clear and convincing evidence as to the invalidity of any such U.S. patent claim, there is no assurance that a court of competent jurisdiction would invalidate the claims of any such U.S. patent. If we are found to infringe a third party's valid and enforceable intellectual property rights, we could be required to obtain a license from such third party to continue developing, manufacturing and marketing our future isotope(s) and technology. However, we may not be able to obtain any required license on commercially reasonable terms or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors and other third parties access to the same technologies licensed to us, and it could require us to make substantial licensing and royalty payments. We could be forced, including by court order, to cease developing, manufacturing and commercializing the infringing technology or future isotope. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees, if we are found to have willfully infringed a patent or other intellectual property right. A finding of infringement could prevent us from manufacturing and commercializing our future isotopes or force us to cease some or all of our business operations, which could materially harm our business. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business, financial condition, results of operations and prospects.

Third parties asserting their patent or other intellectual property rights against us may seek and obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize our future isotopes or force us to cease some of our business operations. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and other employee resources from our business, cause development delays, and may impact our reputation. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties, or redesign our infringing products, which may be impossible on a cost-effective basis or require substantial time and monetary expenditure. In that event, we would be unable to further develop and commercialize our future isotopes, which could harm our business significantly. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

***We may be subject to claims asserting that our employees, consultants or advisors have wrongfully used or disclosed alleged trade secrets of their current or former employers or claims asserting ownership of what we regard as our own intellectual property.***

Certain of our employees, consultants or advisors are currently, or were previously, employed at universities or other technology companies. Although we try to ensure that our employees, consultants and advisors do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these individuals or we have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such individual's current or former employer. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property.

***Reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.***

If we rely on third parties to manufacture or commercialize our future isotopes, or if we collaborate with additional third parties for the development of our future isotopes, we must, at times, share trade secrets with them. We may also conduct joint research and development programs that may require us to share trade secrets under the terms of our research and development partnerships or similar agreements. We seek to protect our proprietary technology in part by entering into confidentiality agreements and, if applicable, material transfer agreements, services agreements, consulting agreements or other similar agreements with our advisors, employees, third-party contractors and consultants prior to beginning research or disclosing proprietary information. These agreements typically limit the rights of the third parties to use or disclose our confidential information, including our trade secrets. Despite the contractual provisions employed when working with third parties, the need to share trade secrets and other confidential information increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. Given that our proprietary position is based, in part, on our know-how and trade secrets, a competitor's discovery of our trade secrets or other unauthorized use or disclosure could have an adverse effect on our business and results of operations.

In addition, these agreements typically restrict the ability of our advisors, employees, third-party contractors and consultants to publish data potentially relating to our trade secrets. Despite our efforts to protect our trade secrets, our competitors may discover our trade secrets, either through breach of our agreements with third parties, independent development or publication of information by any third-party collaborators. A competitor's discovery of our trade secrets could harm our business.

***Confidentiality agreements with employees and third parties may not prevent unauthorized disclosure of trade secrets and other proprietary information.***

In addition to the protection afforded by patents, we seek to rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce, and any other elements of our future isotopes, technology and product discovery and development processes that involve proprietary know-how, information, or technology that is not covered by patents. Any disclosure, either intentional or unintentional, by our employees, the employees of third parties with whom we share our facilities or third-party consultants and vendors that we engage, or misappropriation by third parties (such as through a cybersecurity breach) of our trade secrets or proprietary information could enable competitors to duplicate or surpass our technological achievements, thus eroding our competitive position in our market. Because we expect to rely on third parties in the development and manufacture of our future isotopes, we must, at times, share trade secrets with them. Our reliance on third parties requires us to share our trade secrets, which increases the possibility that a competitor will discover them or that our trade secrets will be misappropriated or disclosed.

Trade secrets and confidential information, however, may be difficult to protect. We seek to protect our trade secrets, know-how and confidential information, including our proprietary processes, in part, by entering into confidentiality agreements with our employees, consultants, outside scientific advisors, contractors, and collaborators. With our consultants, contractors, and outside scientific collaborators, these agreements typically include invention assignment obligations. We cannot guarantee that we have entered into such agreements with each party that may have or has had access to our trade secrets or proprietary technology and processes. Although we use reasonable efforts to protect our trade secrets, our employees, consultants, outside scientific advisors,

contractors, and collaborators might intentionally or inadvertently disclose our trade secret information to competitors. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor or other third-party, we would have no right to prevent them from using that technology or information to compete with us. Furthermore, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, or misappropriation of our intellectual property by third parties, we may not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results, and financial condition.

***If we use hazardous and chemical materials in a manner that causes injury or violates applicable law, we may be liable for damages.***

Our research and development activities and manufacturing process involve the controlled use of potentially hazardous substances, including chemical materials. We are subject to international and local laws and regulations in South Africa governing the use, manufacture, storage, handling and disposal of radioactive and hazardous materials. Although we believe that our procedures for using, handling, storing and disposing of these materials comply with legally prescribed standards, we cannot completely eliminate the risk of contamination or injury resulting from radioactive or hazardous materials. As a result of any such contamination or injury, we may incur liability or local, city, state or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources. We do not have any insurance for liabilities arising from radioactive or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development, and production efforts, which could harm our business, prospects, financial condition, or results of operations.

**Risks Related to Our Business Operations, Employee Matters and Managing Growth**

***We are highly dependent on the services of our senior management team, and if we are not able to retain these members of our management team and recruit and retain additional management, clinical and scientific personnel, our business will be harmed.***

We are highly dependent on our senior management team. The employment agreements we have with these officers do not prevent such persons from terminating their employment with us at any time. The loss of the services of any of these persons could impede the achievement of our research, development and commercialization objectives.

In addition, we will need to attract, retain and motivate highly qualified additional management and scientific personnel. If we are not able to retain our management and to attract, on acceptable terms, additional qualified personnel necessary for the continued development of our business, we may not be able to sustain our operations or grow.

We may not be able to attract or retain qualified personnel in the future due to the intense competition for qualified personnel among biotechnology, pharmaceutical and other businesses. Many of the other pharmaceutical companies that we compete against for qualified personnel and consultants have greater financial and other resources, different risk profiles and a longer history in the industry than we do. They also may provide more diverse opportunities and better chances for career advancement. Some of these characteristics may be more appealing to high-quality candidates and consultants than what we have to offer. If we are unable to continue to attract, retain and motivate high-quality personnel and consultants to accomplish our business objectives, the rate and success at which we can develop future isotopes and our business will be limited, and we may experience constraints on our development objectives.

Our future performance will also depend, in part, on our ability to successfully integrate newly hired executive officers into our management team and our ability to develop an effective working relationship among senior management. Our failure to integrate these individuals and create effective working relationships among them and other members of management could result in inefficiencies in the development and commercialization of our future isotopes, harming future regulatory approvals, sales of our future isotopes and our results of operations. Additionally, we do not currently maintain “key person” life insurance on the lives of our executives or any of our employees.

***We will need to expand our organization, and we may experience difficulties in managing this growth, which could disrupt our operations.***

As of December 31, 2024, we employed 136 people, 127 of whom are located in South Africa. We rely on service providers for certain general administrative, financial, accounting, tax, intellectual property and other legal services, and we will need to expand our organization to hire qualified personnel to perform these functions internally. Our management may need to divert significant attention and time to managing these growth activities. We may not be able to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, operational inefficiencies, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of our future isotopes. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and grow revenue could be reduced and we may not be able to implement our business strategy. Our future financial performance, our ability to commercialize future isotopes, develop a scalable infrastructure and compete effectively will depend, in part, on our ability to effectively manage any future growth.

***Our employees, consultants and commercial partners may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.***

We are exposed to the risk of fraud or other misconduct by our employees, consultants and commercial partners. Misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in other jurisdictions, provide accurate information to the FDA and other regulatory authorities, report financial information or data accurately or disclose unauthorized activities to us. It is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us and we are not successful in defending ourselves or asserting our rights, those actions could have a negative impact on our business, financial condition, results of operations and prospects, including the imposition of significant fines or other sanctions.

***We and our contractors are highly dependent on the performance of sub-contractors and other third parties.***

We and our contractors are highly dependent on the performance of sub-contractors and other third parties. If these contractors, sub-contractors and third parties are unable to deliver the results that we require, our operating results could be adversely affected and our business could be materially harmed.

***Significant disruptions of our information technology systems or data security incidents could result in significant financial, legal, regulatory, business and reputational harm to us.***

We are dependent on information technology systems and infrastructure, including mobile technologies, to operate our business. In the ordinary course of our business, we collect, store, process and transmit large amounts of sensitive information, including intellectual property, proprietary business information, personal information and other confidential information. It is critical that we do so in a secure manner to maintain the confidentiality, integrity and availability of such sensitive information. We have also outsourced elements of our operations (including elements of our information technology infrastructure) to third parties, and as a result, we manage a number of third-party vendors who may or could have access to our computer networks or our confidential information. In addition, many of those third parties, in turn, subcontract or outsource some of their responsibilities to third parties. While all information technology operations are inherently vulnerable to inadvertent or intentional security breaches, incidents, attacks and exposures, the accessibility and distributed nature of our information technology systems, and the sensitive information stored on those systems, make such systems potentially vulnerable to unintentional or malicious, internal and external attacks on our technology environment. In addition, some of our employees work remotely, which may make us more vulnerable to cyberattacks. Potential vulnerabilities can be exploited from inadvertent or intentional actions of our employees, third-party vendors, business partners, or by malicious third parties. Attacks of this nature are increasing in their frequency, levels of persistence, sophistication and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives (including, but not limited to, industrial espionage) and expertise, including organized criminal groups, “hacktivists,” nation states and others. In addition to the extraction of sensitive information, such attacks could include the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of information. In addition, the prevalent use of mobile devices increases the risk of data security incidents.

Significant disruptions of our, our third-party vendors’ and/or our business partners’ information technology systems or other similar data security incidents could adversely affect our business operations and/or result in the loss, misappropriation, and/or unauthorized access, use or disclosure of, or the prevention of access to, sensitive information, which could result in financial, legal,

regulatory, business and reputational harm to us. In addition, information technology system disruptions, whether from attacks on our technology environment or from computer viruses, natural disasters, terrorism, war and telecommunication and electrical failures, could result in a material disruption of our development programs and our business operations. Additionally, theft of our intellectual property or proprietary business information could require substantial expenditures to remedy. If we or our third-party collaborators, consultants, contractors, suppliers, or service providers were to suffer an attack or breach, for example, that resulted in the unauthorized access to or use or disclosure of personal or health information, we may have to notify consumers, partners, collaborators, government authorities, and the media, and may be subject to investigations, civil penalties, administrative and enforcement actions, and litigation, any of which could harm our business and reputation.

There is no way of knowing with certainty whether we have experienced any data security incidents that have not been discovered. While we have no reason to believe this to be the case, attackers have become very sophisticated in the way they conceal access to systems, and many companies that have been attacked are not aware that they have been attacked. Any event that leads to unauthorized access, use or disclosure of personal information, including but not limited to personal information regarding our patients or employees, could disrupt our business, harm our reputation, compel us to comply with applicable federal and/or state breach notification laws and foreign law equivalents, subject us to time-consuming, distracting and expensive litigation, regulatory investigation and oversight, mandatory corrective action, require us to verify the correctness of database contents, or otherwise subject us to liability under laws, regulations and contractual obligations, including those that protect the privacy and security of personal information. This could result in increased costs to us, and result in significant legal and financial exposure and/or reputational harm. In addition, any failure or perceived failure by us or our vendors or business partners to comply with our privacy, confidentiality or data security-related legal or other obligations to third parties, or any further security incidents or other inappropriate access events that result in the unauthorized access, release or transfer of sensitive information, which could include personally identifiable information, may result in governmental investigations, enforcement actions, regulatory fines, litigation, or public statements against us by advocacy groups or others, and could cause third parties, including clinical sites, regulators or current and potential partners, to lose trust in us or we could be subject to claims by third parties that we have breached our privacy- or confidentiality-related obligations, which could materially and adversely affect our business and prospects. Moreover, data security incidents and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above. While we have implemented security measures intended to protect our information technology systems and infrastructure, there can be no assurance that such measures will successfully prevent service interruptions or security incidents.

***Our international operations subject us to risks of doing business in foreign countries, which could adversely affect our business, financial condition and results of operations.***

Our primary operations are located outside the U.S. (primarily the construction of isotope enrichment plants in South Africa), and we plan to sell our isotopes to customers outside the U.S. Accordingly, our business is subject to risks related to the differing legal, political, social and regulatory requirements and economic conditions of non-U.S. jurisdictions. Risks inherent in international operations include the following:

- fluctuations in foreign currency exchange rates may affect product demand and may adversely affect the profitability in U.S. dollars of products and services we provide in international markets where payment for our products and services is made in the local currency;
- transportation and other shipping costs may increase, or transportation may be inhibited;
- increased cost or decreased availability of raw materials;
- changes in foreign laws and tax rates or U.S. laws and tax rates with respect to foreign income may unexpectedly increase the rate at which our income is taxed, impose new and additional taxes on remittances, repatriation or other payments by subsidiaries, or cause the loss of previously recorded tax benefits;
- foreign countries in which we do business may adopt other restrictions on foreign trade or investment, including currency exchange controls;
- trade sanctions by or against these countries could result in our losing access to customers and suppliers in those countries;
- unexpected adverse changes in foreign laws or regulatory requirements may occur;
- our agreements with counterparties in foreign countries may be difficult for us to enforce and related receivables may be difficult for us to collect;
- compliance with the variety of foreign laws and regulations may be unduly burdensome;

•compliance with anti-bribery and anti-corruption laws (such as the Foreign Corrupt Practices Act) as well as anti-money- laundering laws may be costly;

•unexpected adverse changes in export duties, quotas and tariffs and difficulties in obtaining export licenses may occur;

•general economic conditions in the countries in which we operate could have an adverse effect on our earnings from operations in those countries;

•our foreign operations may experience staffing difficulties and labor disputes;

•termination or substantial modification of international trade agreements may adversely affect our access to raw materials and to markets for our products outside the U.S.;

•foreign governments may nationalize or expropriate private enterprises;

•increased sovereign risk (such as default by or deterioration in the economies and creditworthiness of local governments) may occur; and

•political or economic repercussions from terrorist activities, including the possibility of hyperinflationary conditions and political instability, may occur in certain countries in which we do business.

Unanticipated events, such as geopolitical changes, could result in a write-down of our investment in the affected joint venture or a delay or cause cancellation of those capital projects, which could negatively impact our future growth and profitability. Our success as a global business will depend, in part, upon our ability to succeed in differing legal, regulatory, economic, social and political conditions by developing, implementing and maintaining policies and strategies that are effective in each location where we and our joint ventures do business.

Furthermore, we will be subject to rules and regulations related to anti-bribery and anti-trust prohibitions of the U.S. and other countries, as well as export controls and economic embargoes, violations of which may carry substantial penalties. For example, export control and economic embargo regulations limit the ability of our subsidiaries to market, sell, distribute or otherwise transfer their products or technology to prohibited countries or persons. Failure to comply with these regulations could subject our subsidiaries to fines, enforcement actions and/or have an adverse effect on our reputation and the value of our Common Stock.

***Our tangible assets may be subject to defects in title.***

We have investigated our rights to the assets we have purchased and developed, and, to the best of our knowledge, those rights are in good standing. However, no assurance can be given that such rights will not be revoked, or significantly altered, to our detriment. There can also be no assurance that our rights will not be challenged or impugned by third parties, including by governments and non-governmental organizations.

***We are subject to foreign currency risks.***

Our operations are subject to foreign currency fluctuations. Our current operating expenses are primarily transacted in U.S. dollars, while our current revenues and some of our cash balances and expenses are measured in other currencies. As our business expands internationally, the U.S. dollar may or may not be our primary current for operating expenses. Any strengthening or weakening of the U.S. dollar in relation to the currencies of other countries or vice versa can have a material impact on our cash flows and profitability and affect the value of our assets and shareholders' equity.

**Risks Related to Ownership of Our Common Stock**

***Short sellers of our stock may seek to drive down the market price of our Common Stock, harm our brand and reputation, and negatively impact our business, operating results and financial condition.***

Short sellers may take actions that could drive down the market price of our common stock, which could also result in related regulatory and governmental scrutiny, among other effects.

Short selling is the practice of selling securities that the seller does not own, but rather has borrowed or intends to borrow from a third party with the intention of buying identical securities at a later date to return to the lender. A short seller hopes to profit from a decline in the price of the securities between the sale of the borrowed securities and the purchase of the replacement shares, as the short seller hopes to pay less in that purchase than it received in the sale. It is therefore in the short seller's interest for the price of the stock to decline. At any time, short sellers may publish, or arrange for the publication of, their opinions or characterizations of the Company that may cause negative market reactions and declines in the price of the Company's common

stock. Issuers, like us, whose common stock has historically had limited trading history or volumes and/or have been susceptible to relatively high volatility levels can be vulnerable to such short seller publications.

In November 2024, a short seller report was published about the Company, followed by a decrease in the price of our publicly traded securities. The short seller report and ensuing stock drop was followed by a purported stockholder filing a putative securities class action in the United States District Court for the Southern District of New York. For additional information, see Item 3 of Part I, "Legal Proceedings," of this Annual Report on Form 10-K.

We may be the subject of future short seller publications which may result in the loss of customers, lawsuits and government investigations, the uncertainty and expense of which could harm our brand and reputation and negatively impact our business, operating results and financial condition. There are no assurances against future short seller publications, or claims related to our share price, which may result in the aforementioned adverse consequences.

***We do not know whether an active, liquid and orderly trading market will develop for our Common Stock or what the market price of our Common Stock will be and as a result it may be difficult for you to sell your shares of our Common Stock.***

Prior to our IPO in November of 2022, there was no public market for shares of our Common Stock. Although our Common Stock is listed on the Nasdaq Capital Market (Nasdaq), only a limited trading market for our shares has developed, and an active market may never develop or if developed be sustained in the future. You may not be able to sell your shares quickly or at the market price if trading in shares of our Common Stock is not active. Further, an inactive market may also impair our ability to raise capital by selling shares of our Common Stock and may impair our ability to enter into strategic partnerships or acquire companies or products by using our shares of Common Stock as consideration.

***The price of our stock may be volatile, and you could lose all or part of your investment.***

The trading price of our Common Stock has fluctuated significantly since our initial public offering ("IPO"), and may continue to be volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this Annual Report on Form 10-K, these factors include:

- adverse results or delays in our development activities;
- adverse regulatory decisions, including failure to receive regulatory approval for our future isotopes;
- changes in laws or regulations applicable to our future isotopes, including but not limited to requirements for approvals;
- any changes to our relationship with any manufacturers, suppliers, licensors, future collaborators or other strategic partners;
- our inability to obtain adequate product supply for any future isotope or inability to do so at acceptable prices;
- our inability to establish collaborations if needed;
- our failure to commercialize our future isotopes;
- additions or departures of key scientific or management personnel;
- unanticipated serious safety concerns related to the use of our future isotopes;
- introduction of new products or services offered by us or our competitors;
- announcements of significant acquisitions, strategic partnerships, joint ventures, or capital commitments by us or our competitors;
- our ability to effectively manage our growth;
- actual or anticipated variations in quarterly operating results;
- our cash position;
- our failure to meet the estimates and projections of the investment community or that we may otherwise provide to the public;
- publication of research reports about us or our industry or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- changes in the market valuations of similar companies;
- overall performance of the equity markets;

•issuances of debt or equity securities;

•sales of our Common Stock by us or our stockholders in the future or the perception that such sales may occur;

•trading volume of our Common Stock;

•changes in accounting practices;

•ineffectiveness of our internal controls;

•disputes or other developments relating to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our technologies;

•significant lawsuits, including patent or stockholder litigation;

•general political and economic conditions, including military conflict or the effects of pandemics; and

•other events or factors, many of which are beyond our control.

Stock markets in general and technology companies in particular have experienced volatility that has often been unrelated to the operating performance of a particular company. These broad market fluctuations could adversely affect the trading price of our common stock. These fluctuations may also cause short sellers to periodically enter the market on the belief that we may experience worse results in the future. We cannot predict the actions of market participants and, therefore, can offer no assurances that the market for our common stock will be stable or appreciate over time.

***We do not intend to pay dividends on our Common Stock, so any returns will be limited to the value of our stock.***

We have never declared or paid any cash dividend on our Common Stock. We currently anticipate that we will retain future earnings for the development, operation, and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Any return to stockholders would therefore be limited to the appreciation, if any, of their stock.

***Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.***

Our executive officers, current directors, greater than 5% holders, and their affiliates beneficially own, in the aggregate, approximately 20.5% of our Common Stock as of December 31, 2024. Therefore, these stockholders will have the ability to influence us through this ownership position. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets, or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our Common Stock that you may feel are in your best interest as one of our stockholders.

***Sales of a substantial number of shares of our Common Stock by our existing stockholders in the public market, or the perception that such sales could occur, could cause our stock price to fall.***

As of December 31, 2024, we had a total of 72,068,059 shares of Common Stock outstanding. If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our Common Stock in the public market, the trading price of our Common Stock could decline.

Of our outstanding Common Stock, the shares held by directors, executive officers, and other affiliates are subject to volume limitations under Rule 144 under the Securities Act. In addition, 4,951,535 shares of Common Stock that are either subject to outstanding options or reserved for future issuance under our employee benefit plans will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, and Rule 144 and Rule 701 under the Securities Act. If these additional shares of Common Stock are sold, or if it is perceived that they will be sold in the public market, the trading price of our Common Stock could decline. Any sales of securities by our stockholders could have a material adverse effect on the trading price of our Common Stock.

***Future sales and issuances of our Common Stock or rights to purchase Common Stock, including pursuant to our equity incentive plans, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.***

We expect that we will need significant additional capital in the future to continue our planned operations, including development activities, commercialization efforts if we are able to obtain marketing approval of future isotopes, research and

development activities, and costs associated with operating a public company. To raise capital, we may sell Common Stock, convertible securities or other equity securities in one or more transactions at prices and in a manner that we determine from time to time. If we sell Common Stock, convertible securities or other equity securities, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences and privileges senior to the holders of our Common Stock.

Pursuant to our 2022 Plan, our management is authorized to grant stock options to our employees, directors and consultants. Additionally, the number of shares of our Common Stock reserved for issuance under our 2022 Plan will automatically increase on January 1 of each year, beginning on January 1, 2023 and continuing through and including January 1, 2032, by 5% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year (determined on an as-converted to voting Common Stock basis, without regard to any limitations on the conversion of the non-voting Common Stock), or a lesser number of shares determined by our board of directors. Such issuances will result in dilution to our stockholders.

***We have broad discretion in the use of our existing cash and cash equivalents and may not use them effectively.***

Our management has broad discretion in the application of our existing cash and cash equivalents. Because of the number and variability of factors that will determine our use of our existing cash and cash equivalents, their ultimate use may vary substantially from their currently intended use. Our management might not apply our existing cash and cash equivalents in ways that ultimately increase the value of our Common Stock. The failure by our management to apply these funds effectively could harm our business. We intend to invest our existing cash and cash equivalents that are not used as described above in short- and medium-term, investment-grade, interest-bearing instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government. These investments may not yield a favorable return to our stockholders. If we do not invest or apply our existing cash and cash equivalents in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

***We are an emerging growth company and a smaller reporting company, and the reduced reporting requirements applicable to emerging growth companies and smaller reporting companies may make our Common Stock less attractive to investors.***

We are an emerging growth company, as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding nonbinding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved. We could be an emerging growth company until December 31, 2027, although circumstances could cause us to lose that status earlier, including if we become a "large accelerated filer" as defined in Rule 12b-2 under the Exchange Act or if we have total annual gross revenue of $1.235 billion or more during any fiscal year before that time, in which cases we would no longer be an emerging growth company as of the following December 31 or, if we issue more than $1.0 billion in non-convertible debt during any three year period before that time, we would cease to be an emerging growth company immediately. Even after we no longer qualify as an emerging growth company, we may still qualify as a "smaller reporting company" which would allow us to take advantage of many of the same exemptions from disclosure requirements including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. Investors may find our Common Stock less attractive because we may rely on these exemptions. If some investors find our Common Stock less attractive as a result, there may be a less active trading market for our Common Stock and our stock price may be more volatile.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This provision allows an emerging growth company to delay the adoption of accounting standards that have different effective dates for public and private companies until those standards would otherwise apply to private companies. We have elected to avail ourselves of this exemption from new or revised accounting standards, and therefore we will not be subject to the same requirements to adopt new or revised accounting standards as other public companies that are not emerging growth companies.

We are also a "smaller reporting company" as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than $250.0 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than $100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than $700.0 million measured on the last business day of our second fiscal quarter.

***Delaware law and provisions in our certificate of incorporation and bylaws, as amended, could make a merger, tender offer or proxy contest difficult, thereby depressing the trading price of our common stock.***

Provisions of certificate of incorporation and bylaws as amended may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our amended and restated certificate of incorporation and amended and restated bylaws:

- permit our board of directors to issue up to 10,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate (including the right to approve an acquisition or other change in our control);
- provide that the authorized number of directors may be changed only by resolution of the board of directors;
- provide that our board of directors or any individual director may only be removed with cause and the affirmative vote of the holders of at least 66-2/3% of the voting power of all of our then-outstanding shares of the capital stock entitled to vote generally in the election of directors, voting together as a single class;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner and also specify requirements as to the form and content of a stockholder's notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chair of our board of directors, our Chief Executive Officer or by the board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors; and
- provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for the following types of actions or proceedings under state, statutory and common law: (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders; (iii) any action asserting a claim pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or our bylaws; (iv) any action as to which the Delaware General Corporation Law confers jurisdiction to the Court of Chancery of the State of Delaware; and (v) any action governed by the internal affairs doctrine, in all cases subject to the court's having personal jurisdiction over the indispensable parties named as defendants; provided these provisions of our amended and restated certificate of incorporation and amended and restated bylaws will not apply to suits brought to enforce a duty or liability created by the Exchange Act, or any other claim for which the federal courts have exclusive jurisdiction; and provided that, unless we consent in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States of America shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act of 1933, as amended (Securities Act), including all causes of action asserted against any defendant to such complaint. For the avoidance of doubt, this provision is intended to benefit and may be enforced by us, our officers and directors, the underwriters to any offering giving rise to such complaint, and any other professional or entity whose profession gives authority to a statement made by that person or entity and who has prepared or certified any part of the documents underlying the offering.

These provisions, with the exception of the ability of our board of directors to issue shares of preferred stock and designate any rights, preferences and privileges thereto, would require approval by the holders of at least 66-2/3% of our then-outstanding common stock.

In addition, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law. These provisions may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time. A Delaware corporation may opt out of this provision by express provision in its original certificate of incorporation or by amendment to its certificate of incorporation or bylaws approved by its stockholders. However, we have not opted out of this provision.

These and other provisions in our certificate of incorporation and bylaws, as amended, and Delaware law could make it more difficult for stockholders or potential acquirors to obtain control of our board of directors or initiate actions that are opposed by our then-current board of directors, including delay or impede a merger, tender offer or proxy contest involving our company. The existence of these provisions could negatively affect the price of our common stock and limit opportunities for you to realize value in a corporate transaction.

***Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for certain disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.***

Our amended and restated certificate of incorporation provides that, subject to the court's having personal jurisdiction over the indispensable parties named as defendants, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for the following types of actions or proceedings:

•any derivative action or proceeding brought on our behalf;

•any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders;

•any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, our certificate of incorporation or bylaws;

•any action as to which the Delaware General Corporation Law confers jurisdiction to the Court of Chancery of the State of Delaware; and

•any action asserting a claim that is governed by the internal affairs doctrine.

This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act. Furthermore, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation further provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. In such instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions.

These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers and other employees. If a court were to find either exclusive forum provision in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with resolving the dispute in other jurisdictions, all of which could seriously harm our business.

***We are currently listed on The Nasdaq Capital Market. If we are unable to maintain listing of our securities on Nasdaq or any stock exchange, our stock price could be adversely affected and the liquidity of our stock and our ability to obtain financing could be impaired and it may be more difficult for our shareholders to sell their securities.***

Although our Common Stock is currently listed on The Nasdaq Capital Market, we may not be able to continue to meet the exchange's minimum listing requirements or those of any other national exchange. If we are unable to maintain listing on Nasdaq or if a liquid market for our Common Stock does not develop or is sustained, our Common Stock may remain thinly traded.

The Listing Rules of Nasdaq require listing issuers to comply with certain standards in order to remain listed on its exchange. If, for any reason, we should fail to maintain compliance with these listing standards and Nasdaq should delist our securities from trading on its exchange and we are unable to obtain listing on another national securities exchange, a reduction in some or all of the following may occur, each of which could have a material adverse effect on our shareholders:

•the liquidity of our Common Stock;

•the market price of our Common Stock;

•our ability to obtain financing for the continuation of our operations;

•the number of investors that will consider investing in our Common Stock;

•the number of market makers in our Common Stock;

•the availability of information concerning the trading prices and volume of our Common Stock; and

•the number of broker-dealers willing to execute trades in shares of our Common Stock.

**General Risk Factors**

***We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.***

We became a public company in November of 2022, and as a public company we will incur significant legal, accounting, and other expenses that we did not incur as a private company. We are subject to the reporting requirements of the Exchange Act, which require, among other things, that we file with the SEC annual, quarterly, and current reports with respect to our business and financial condition. In addition, the Sarbanes-Oxley Act, as well as rules subsequently adopted by the SEC and Nasdaq to implement provisions of the Sarbanes-Oxley Act, impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. Further, in July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) was enacted. There are significant corporate governance and executive compensation-related provisions in the Dodd-Frank Act that require the SEC to adopt additional rules and regulations in these areas such as "say on pay" and proxy access. Emerging growth companies and smaller reporting companies are exempted from certain of these requirements, but we may be required to implement these requirements sooner than budgeted or planned and thereby incur unexpected expenses. Stockholder activism, the current political environment and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate.

We expect the rules and regulations applicable to public companies to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and costly. If these requirements divert the attention of our management and personnel from other business concerns, they could have a material adverse effect on our business, financial condition, and results of operations. The increased costs will decrease our net income or increase our net loss, and may require us to reduce costs in other areas of our business or increase the prices of our products or services. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain the same or similar coverage. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

***We have identified a material weakness in our internal control over financial reporting. If our remediation of this material weakness is not effective, or if we experience material weaknesses in the future or otherwise fail to implement and maintain an effective system of internal controls in the future, we may not be able to accurately report our financial condition or results of operations which may adversely affect investor confidence in us, and as a result, the value of our Common Stock.***

Our Common Stock was listed on the Nasdaq Stock Exchange on November 10, 2022. Prior to listing, we were a privately-held company, we were not required to evaluate our internal control over financial reporting in a manner that meets the standards of publicly traded companies required by Section 404(a) of the Sarbanes-Oxley Act, or Section 404. As a public company, we are subject to significant requirements for enhanced financial reporting and internal controls. The process of designing and implementing effective internal controls is a continuous effort that requires us to anticipate and react to changes in our business and the economic and regulatory environments and to expend significant resources to maintain a system of internal controls that is adequate to satisfy our reporting obligations as a public company. In addition, we are required, pursuant to Section 404, to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting in the annual report. This assessment includes disclosure of any material weaknesses identified by our management in our internal control over financial reporting. A material weakness is a deficiency or combination of deficiencies in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of a company's annual and interim financial statements will not be detected or prevented on a timely basis.

The rules governing the standards that must be met for our management to assess our internal control over financial reporting are complex and require significant documentation, testing, and possible remediation. Testing and maintaining internal controls may divert management's attention from other matters that are important to our business. Once we are no longer an "emerging growth company," or a "smaller reporting company", our auditors will be required to issue an attestation report on the effectiveness of our internal controls on an annual basis.

In the course of preparing the financial statements that are included in this Annual Report on Form 10-K, management has determined that a material weakness exists within the internal controls over financial reporting. The material weakness identified relates to the lack of formal control documentation and consistent execution of control procedures, and the lack of a sufficient complement of personnel within the finance and accounting function with an appropriate degree of knowledge, experience and training. We also noted a material weakness related to logical security and privileged access in the area of information technology. We concluded that the material weaknesses in our internal control over financial reporting information technology occurred because, prior to our IPO, we were a private company and did not have the necessary business processes, systems, personnel, and related internal controls necessary to satisfy the accounting and financial reporting requirements of a public company.

In order to remediate the material weaknesses, we expect to enhance our formal documentation over internal control procedures and management controls infrastructure to allow for more consistent execution of control procedures and hire additional accounting, finance and information technology resources or consultants with public company experience.

We may not be able to fully remediate the identified material weakness until the steps described above have been completed and our internal controls have been operating effectively for a sufficient period of time. We believe we have already and will continue to make progress in our remediation plan but cannot assure you that we will be able to fully remediate the material weakness by such time. If the steps we take do not correct the material weakness in a timely manner, we will be unable to conclude that we maintain effective internal control over financial reporting. Accordingly, there could continue to be a reasonable possibility that a material misstatement of our financial statements would not be prevented or detected on a timely basis. We also may incur significant costs to execute various aspects of our remediation plan but cannot provide a reasonable estimate of such costs at this time.

In accordance with the provisions of the JOBS Act, we and our independent registered public accounting firm were not required to, and did not, perform an evaluation of our internal control over financial reporting as of December 31, 2024 nor any period subsequent in accordance with the provisions of the Sarbanes-Oxley Act. Accordingly, we cannot assure you that we have identified all material weaknesses. Material weaknesses may still exist when we report on the effectiveness of our internal control over financial reporting as required under Section 404 of the Sarbanes-Oxley Act.

In the future, it is possible that additional material weaknesses or significant deficiencies may be identified that we may be unable to remedy before the requisite deadline for these reports. Our ability to comply with the annual internal control reporting requirements will depend on the effectiveness of our financial reporting and data systems and controls across our company. Any weaknesses or deficiencies or any failure to implement new or improved controls, or difficulties encountered in the implementation or operation of these controls, could harm our operating results and cause us to fail to meet our financial reporting obligations, or result in material misstatements in our consolidated financial statements, which could adversely affect our business and reduce our stock price.

If we are unable to conclude on an ongoing basis that we have effective internal control over financial reporting in accordance with Section 404, our independent registered public accounting firm may not issue an unqualified opinion. If we are unable to conclude that we have effective internal control over financial reporting, investors could lose confidence in our reported financial information, which could have a material adverse effect on the trading price of our Common Stock. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

***We could be subject to securities class action litigation.***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because technology companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

***Our failure to meet Nasdaq's continued listing requirements could result in a delisting of our Common Stock.***

If we fail to satisfy the continued listing requirements of Nasdaq, such as the corporate governance requirements or the minimum closing bid price requirement, Nasdaq may take steps to delist our Common Stock. Such a delisting would likely have a negative effect on the price of our Common Stock and would impair your ability to sell or purchase our Common Stock when you wish to do so. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our Common Stock to become listed again, stabilize the market price or improve the liquidity of our Common Stock, prevent our Common Stock from dropping below the Nasdaq minimum bid price requirement or prevent future non-compliance with the listing requirements of Nasdaq.

***If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.***

The trading market for our Common Stock depends in part on the research and reports that securities or industry analysts publish about us or our business. Securities and industry analysts do not currently, and may never, publish research on our company. If no securities or industry analysts commence coverage of our company, the trading price for our stock would likely be negatively impacted. In the event securities or industry analysts initiate coverage, if one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

**Item 1B. Unresolved Staff Comments**

None.

**Item 1C. Cybersecurity**

***Cybersecurity Risk Management and Strategy***

Due to the size of our company, we have not yet developed robust policies and processes for assessing, identifying, and managing material risk from cybersecurity threats. We have implemented access controls with respect to our systems, which we monitor regularly and audit annually. Our most sensitive data is stored in offline air-gapped devices. We currently rely heavily on products and services provided by third-party suppliers to operate certain critical business systems, including without limitation, cloud-based infrastructure, encryption and authentication technology, email, and other functions. We rely on third party providers and outsourced IT services to monitor and address cybersecurity related risks, including installing software for threat protection and malware. Such third party providers are tasked with notifying management of any material risks or cybersecurity concerns that they identify, which management then assesses and may bring to our board of directors to discuss if deemed necessary or appropriate. Based on the results of our risk assessments, if deemed necessary or appropriate, we take steps to re-design, implement, and maintain reasonable safeguards to minimize identified risks; reasonably address any identified gaps in existing safeguards; and regularly monitor the effectiveness of our safeguards.

We intend to work with outside counsel and third party service providers in the near term to further develop our expertise, processes and procedures with respect to cybersecurity protection and our response plan.

To date, we have not (to our knowledge) encountered cybersecurity challenges that have materially impaired our operations or financial standing. For additional information regarding risks from cybersecurity threats, please refer to Item 1A, “Risk Factors,” in this Report.

***Governance***

Our management team is primarily responsible for assessing and managing our strategic risk exposures, including material risks from cybersecurity threats, with assistance from third-party service providers. Management oversees our cybersecurity process on a day-to-day basis, including those described under the heading “Cybersecurity Risk Management and Strategy” above.

Our audit committee is tasked with general oversight of our risk management process, including risks from cybersecurity threats. Members of management provide periodic briefings to the audit committee of our board of directors regarding our cybersecurity risks and activities, including any recent cybersecurity incidents and related responses, cybersecurity systems testing, activities of third parties, and the like. In furtherance thereof, the committee is responsible for monitoring and assessing strategic risk exposure. Our audit committee provides regular updates to the board of directors on such reports.

**Item 2. Properties**

As of December 31, 2024, we lease five facilities in Pretoria, South Africa for office, production and laboratory space.

One lease commenced in October 2021 with the initial term set to expire in December 2030. This space is used for office, production and laboratory activities.

The second lease commenced in April 2023 with the initial term expired in March 2024. Effective February 1, 2024, this lease was amended such that the new term begins on February 1, 2024 and expires in February 2026. The Company plans to remain in this space under the monthly renewal terms of the agreement. This space is used for production and laboratory activities.

The third lease commenced in November 2023 with the initial term set to expire in October 2026. This space is used for laboratory activities.

The fourth lease commenced with our acquisition of PET Labs Pharmaceuticals in October 2023 and has an initial term set to expire in March 2026 with automatic monthly extensions thereafter. This space is used for office and production activities.

The fifth lease commenced with our acquisition of PET Labs Pharmaceuticals in October 2023 and had an initial term which expired in December 2023 with automatic monthly extensions thereafter. The Company plans to remain in this space under the monthly renewal terms of the agreement. This space is used for production activities.

We believe that our current facilities are sufficient to meet our current and near-term needs and that, should it be needed, suitable additional space will be available.

**Item 3. Legal Proceedings**

Except as described herein, we are currently not party to, and our property is not currently the subject of, any material pending legal matters or claims.

On December 4, 2024, a purported stockholder of the Company filed a putative securities class action on behalf of purchasers of the Company's securities between October 30, 2024 through November 26, 2024 against ASP Isotopes Inc. and certain of its executive officers in the United States District Court for the Southern District of New York (*Corredor v. ASP Isotopes Inc., et al.*, Case No. 1:24-cv-09253 (S.D.N.Y)) (the "Securities Class Action"). The Securities Class Action alleges that the Company, its chief executive officer and chief financial officer ("Defendants") made materially misleading or false statements or omissions regarding the Company's business and asserts purported claims under §§ 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 promulgated thereunder. The complaint seeks unspecified compensatory damages, attorney's fees and costs. Defendants intend to vigorously defend against the Securities Class Action; however, we cannot be certain of the outcome and, if decided adversely to us, our business and financial condition may be adversely affected.

In addition to the matters described above, from time to time, we may become subject to arbitration, litigation or claims arising in the ordinary course of business. The results of any current or future claims or proceedings cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on us because of defense and litigation costs, diversion of management resources, reputational harm and other factors.

**Item 4. Mine Safety Disclosures**

Not applicable.

**PART II**

**Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities**

**Market Information and Holders of Record**

Our common stock is traded on the Nasdaq Global Select Market under the symbol "ASPI." Public trading of our common stock began on November 10, 2022. Prior to that, there was no public market for our common stock.

As of March 21, 2025, we had 30 registered shareholders, not including those shares held in street or nominee name.

*Dividends*

We have never declared or paid a cash dividend on our capital stock. We currently intend to retain any future earnings and do not expect to pay any dividends in the foreseeable future. Any future determinations to pay cash dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend on a number of factors, including our financial condition, results of operations, capital requirements, contractual restrictions, general business conditions, and any other factors that our board may deem relevant.

*Securities Authorized for Issuance under Equity Compensation Plans*

Information regarding the Securities Authorized for Issuance under our Equity Compensation Plans will be included in an amendment to this Annual Report in Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

*Stock Performance Graph*

As a smaller reporting company, we are not required to provide the information requested by this item pursuant to Item 201 of Regulation S-K.

**Unregistered Sales of Equity Securities and Use of Proceeds**

*Unregistered sales of equity securities*

None.

*Repurchases of equity securities by the issuer*

None.

*Rule 10b5-1 Trading Plans*

During the quarter ended December 31, 2024, our directors and/or officers (as defined in Rule 16a-1(f) under the Securities Exchange Act of 1934, as amended (Exchange Act)) adopted or terminated the contracts, instructions, or written plans for the purchase or sale of our securities set forth in the table below.

| Name and Title | Action | Adoption/ Termination Date | Rule 10b5-1 (1) | Non-Rule 10b5-1 (2) | Total Number of Shares of Common Stock to be Sold (3) | Expiration Date |
|---|---|---|---|---|---|---|
| Paul E. Mann (Chief Executive Officer and Executive Chairman) | Adoption | December 13, 2024 | X | — | Up to 1,150,000 | September 2, 2026 |
| Robert Ainscow (Chief Operating Officer) | Adoption | December 13, 2024 | X | — | Up to 275,000 | September 2, 2026 |

(1)Contract, instruction or written plan intended to satisfy the affirmative defense conditions of Rule 10b5-1(c) under the Exchange Act.

(2)"Non-Rule 10b5-1 trading arrangement" as defined in Item 408(c) of Regulation S-K under the Exchange Act.

(3)Represents the maximum number of shares that may be sold pursuant to the 10b5-1 arrangement. The number of shares sold will be dependent on the satisfaction of certain conditions as set forth in the trading plan.

(4)Rule 10b5-1 trading arrangement that is intended to provide for "eligible sell-to-cover transactions" (as described in Rule 10b5-1(c)(1)(ii)(D)(3) under the Exchange Act) to satisfy tax withholding obligations arising exclusively from vesting of restricted stock awards (RSAs) or restricted stock units (RSUs). The number of shares subject to covered RSAs or RSUs that will be sold to satisfy applicable tax withholding obligations upon vesting is not currently determinable as the number will vary based on the market price of our common stock and the extent to which vesting conditions are satisfied. This sell-to-cover arrangement provides solely for the automatic sale of shares that would otherwise be issuable in respect of a covered RSA or RSU in an amount sufficient to satisfy the applicable withholding obligation, with the proceeds of the sale delivered to us in satisfaction of the applicable withholding obligation.

**Item 6. [Reserved]**

**Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations**

*The following discussion and analysis of financial condition and results of operations is provided to enhance the understanding of, and should be read in conjunction with Part I, Item I, "Business" and Item 8, 'Financial Statements and Supplementary Data." For information on risks and uncertainties related to our business that may make past performance not indicative of future results or cause actual results to differ materially from any forward-looking statements, see "Special Note Regarding Forward-Looking Statements," and Part I, Item 1A, 'Risk Factors."*

**Overview**

We are a development stage advanced materials company dedicated to the development of technology and processes that, if successful, will allow for the enrichment of natural isotopes into higher concentration products, which could be used in several industries. Our proprietary technologies, the Aerodynamic Separation Process ("ASP technology") and Quantum Enrichment technology ("QE technology"), are designed to enable the production of isotopes used in several industries. Our initial focus is on the production and commercialization of enriched Carbon-14 ("C-14"), Silicon-28 ("Si-28") and Ytterbium-176 ("Yb-176").

We have completed the commissioning phase and are commencing commercial production at our C-14and Si-28 enrichment facilities in Pretoria, South Africa. We are in the process of commissioning and commencing commercial production at our Yb-176 enrichment facility in Pretoria, South Africa. Our C-14 and Si-28 enrichment facilities utilize the ASP technology and our Yb-176 enrichment facility utilizes QE technology. We expect our first three enrichment facilities to generate commercial product during 2025. In addition, we have started planning additional isotope enrichment plants both in South Africa and in other jurisdictions, including Iceland and the United States. We believe the C-14 we may produce using the ASP technology could be used in the development of new pharmaceuticals and agrochemicals. We believe the Si-28 we may produce using the ASP technology may be used to create advanced semiconductors and in quantum computing. We believe the Yb-176 we may produce using the QE technology may be used to create radiotherapeutics that treat various forms of oncology. We anticipate shipping the first commercial batches of enriched Carbon-14 in mid-2025 and enriched Silicon-28 during the second quarter of 2025. We expect to commence commercial production of Ytterbium-176 during the second quarter of 2025.

In addition, we are considering the future development of the ASP technology for the separation of Zinc-68 and Xenon-129/136 for potential use in the healthcare end market, Germanium 70/72/74 for potential use in the semiconductor end market, and Chlorine -37 for potential use in the nuclear energy end market. We are also considering the future development of QE technology for the separation of Nickel-64, Gadolinium-160, Ytterbium-171, Lithium 6 and Lithium7.

We are currently pursuing an initiative to apply our enrichment technologies to the enrichment of Uranium-235 ("U-235") in South Africa. We believe that the U-235 we may produce using quantum enrichment technology may be commercialized as a nuclear fuel component for use in the new generation of high-assay low-enriched uranium (HALEU)-fueled small modular reactors that are now under development for commercial and government uses. In furtherance of our uranium enrichment initiative, in October 2024, we entered into a term sheet with TerraPower, LLC which contemplates the parties entering into definitive agreements pursuant to which TerraPower would provide funding for the construction of a HALEU production facility and agree to purchase all HALEU produced at the facility over a 10-year period after the planned completion of the facility in 2027. In addition, in November 2024, we entered into a memorandum of understanding with The South African Nuclear Energy Corporation (Necsa), a South African state-owned company responsible for undertaking and promoting research and development in the field of nuclear energy and radiation sciences, to collaborate on the research, development and ultimately the commercial production of advanced nuclear fuels. Subject to the receipt of funding and all required permits and licenses to begin enrichment of U-235 in South Africa, it is anticipated that the research, development and ultimate construction of a HALEU production facility will take place at South Africa's main nuclear research center at Pelindaba in Pretoria.

***Our Subsidiaries***

We operate principally through our subsidiaries. ASP Isotopes Guernsey Limited (the holding company for subsidiaries in the Cayman Islands, South Africa, Iceland and the United Kingdom) is focused on the development and commercialization of high-value, low-volume isotopes for highly specialized end markets (such as C-14, Mo-100, and Si-28). ASP Isotopes UK Ltd is the owner of our technology.

***QLE***. In September 2023, we formed Quantum Leap Energy LLC, or "QLE," which also has subsidiaries in the United Kingdom (Quantum Leap Energy Limited) and South Africa (Quantum Leap Energy (Pty) Limited), to focus on the development and commercialization of advanced nuclear fuels such as HALEU and Lithium-6.

Although no assurance can be given, we plan to spin-out QLE as a separate public company and list the shares of QLE on a U.S. national exchange and distribute a portion of QLE's common equity to ASPI's stockholders as of a to-be-determined future record date, in each case subject to obtaining applicable approvals and consents and complying with applicable rules and regulations and public market trading and listing requirements. The regulatory landscape and supply chain for nuclear fuel production differs

significantly from that of medical isotopes, hence we and QLE have different business models and we believe that both companies would benefit if QLE is independently managed and financed.

In connection with the anticipated spin-out, in February 2024, we entered into a number of agreements with QLE, including a License Agreement, pursuant to which QLE has licensed from us the rights to technologies and methods used to separate Uranium 235 and Lithium 6 (including but not limited to the quantum enrichment and ASP technologies) in exchange for a perpetual royalty in the amount of 10% of all future QLE revenues, and an EPC Services Framework Agreement, pursuant to which we will provide services for the engineering, procurement and construction of one or more turnkey Uranium-235 and Lithium-6 enrichment facilities in locations to be identified by QLE and owned or leased by QLE, and commissioning, start-up and test services for each such facility, subject to the receipt of all applicable regulatory approvals, permits, licenses, authorizations, registrations, certificates, consents, orders, variances and similar rights. In addition, in February 2024, we assigned to QLE certain existing memoranda of understanding with U.S.-based small modular reactor companies for the use of Quantum Enrichment for the production of High-Assay Low Enriched Uranium (HALEU). The MOUs provide for substantial financial support for the development of HALEU production facilities that should be capable of supplying metric ton quantities of HALEU by 2027.

***PET Labs***. We have a 51% ownership stake in PET Labs Pharmaceuticals Proprietary Limited (PET Labs), a South African radiopharmaceutical operations company focused on the production of fluorinated radioisotopes and active pharmaceutical ingredients, through which we entered the downstream medical isotope production and distribution market. Under the terms of the Share Purchase Agreement pursuant to which we acquired the shares in PET Labs, we agreed to pay a total of $2,000,000 for the shares in two installments. The first installment of $500,000 was paid in November 2023. In January 2024, we paid $264,750 towards the balance due. The remaining balance of $1,235,250 is due upon demand any time after October 31, 2024, and is expected to be paid in 2025.

Beginning in 2024, primarily as a result of the increased business activities of QLE, we have two operating segments: (i) nuclear fuels, and (ii) specialist isotopes and related services.

***Financings***

On November 15, 2022, we completed an IPO of our common stock and issued and sold 1,250,000 shares of common stock at a public offering price of $4.00 per share, resulting in net proceeds of $3.8 million after deducting underwriting discounts and commissions and offering expenses.

In March 2023, we issued 3,164,557 shares of our common stock at a purchase price of $1.58 per share and warrants to purchase up to an aggregate of 3,164,557 shares of our common stock with an exercise price of $1.75 per share for gross proceeds of $5.0 million. We incurred $506,390 in cash issuance costs and issued warrants to purchase up to an aggregate of 221,519 shares of common stock with an exercise price of $1.975 per share to the placement agent with an initial fair value of $179,116.

In October 2023, we entered into Securities Purchase Agreements with certain institutional and other accredited investors and certain directors of ours to issue and sell an aggregate of 9,952,510 shares of our common stock, for aggregate cash consideration of $9,129,495, as follows: (i) 8,459,093 shares to investors at a purchase price per share of $0.9105, (ii) 1,190,239 shares to investors at a purchase price per share of $0.9548, and (iii) 303,178 shares to directors at a purchase price per share of $0.96. We incurred issuance costs equivalent to 5% of the gross proceeds from new investors which was settled in stock through the issuance of 472,582 shares to the placement agent and additional cash issuance costs totaling $57,083.

In March 2024, our wholly owned subsidiary Quantum Leap Energy received gross proceeds of $20,550,000 through the issuance of Convertible Promissory Notes. These convertible notes have a stated interest rate of 6% for the first year and 8% thereafter. The maturity date of these convertible promissory notes is March 7, 2029. These convertible promissory notes automatically convert into common shares upon Quantum Leap Energy's closing of an IPO or other qualifying public transaction at 80% of the share price taking into consideration a valuation cap.

In June 2024, our wholly owned subsidiary Quantum Leap Energy received gross proceeds of $5,386,228 through this issuance of additional Convertible Promissory Notes with a stated interest rate of 6% for the first year and 8% thereafter. One of the notes totaling $108,167 was issued to the placement agent in lieu of cash issuance costs. The maturity date of the Convertible Promissory Notes is March 7, 2029. The Convertible Promissory Notes automatically convert into common shares upon Quantum Leap Energy's closing of an IPO or other qualifying public transaction at 80% of the share price taking into consideration a valuation cap.

In April 2024, we received approximately $5.5 million from the issuance of 3,164,557 shares of common stock upon the exercise of warrants.

In July 2024, we issued 13,800,000 in a public offering at a public offering price of $2.50 per share resulting in net proceeds of approximately $32.3 million after deducting underwriting discounts, commissions and offering expenses.

In October 2024, a warrant to purchase 151,741 shares of common stock was exercised and the Company received gross proceeds of $299,688.

In November 2024, we issued 2,754,250 shares of common stock at a public offering price of $6.75 per share resulting in net proceeds of approximately $17.1 million after deducting underwriting discounts, commissions and offering expenses.

**TerraPower, LLC**

On April 4, 2024, we entered into an agreement with TerraPower LLC ("TerraPower") to develop a conceptual design, refined cost/schedule/financing, risk register, and term sheet for a High Assay Low Enriched Uranium (“HALEU”) facility (the “TerraPower Agreeement”). The TerraPower Agreement may be terminated for (a) breach or default, (b) our convenience or (c) TerraPower’s convenience. TerraPower is obligated to make all payments for milestones completed by us and these payments are nonrefundable.

On October 18, 2024, we signed a term sheet with TerraPower (the “TerraPower Term Sheet”) that provides for the execution of two definitive agreements: (1) an agreement pursuant to which TerraPower will provide funding for our construction of a uranium enrichment facility capable of producing HALEU using our proprietary aerodynamic separation process technology to be located in the Republic of South Africa and (2) An agreement pursuant to which we will deliver to TerraPower the full capacity of the enrichment facility.

For the year ended December 31, 2024, $200,000 has been recognized as collaboration revenue in the consolidated statements of operations and comprehensive loss.

**Other Commercial Agreements**

Below is a summary of the key terms of our other commercial agreements.

***Lease for Molybdenum Processing Plant.*** On October 12, 2021, ASP South Africa entered into an agreement of lease with the landlord of the facility located at 33 Eland Street, Koedoespoort Industrial, Pretoria where we operate our Molybdenum processing plant where gaseous Molybdenum compound will be treated (which process comprises several stages of compression and expansion during which the product is purified). The term of the lease ends on December 31, 2030.

***Lease for additional production space***. On April 1, 2023, ASP South Africa entered into an agreement of lease with the landlord of facility located in Pretoria where we plan to perform production activities. The initial term of the lease was set to end on March 31, 2024. We entered into a new agreement of lease with the landlord. The terms of the new lease ends on February 28, 2026.

***Lease for additional laboratory space.*** On November 1, 2023, ASP South Africa entered into an agreement of lease with the landlord of the facility located in Pretoria where we perform research and development activities. The term of the lease ends on October 30, 2026.

***Lease for PET Labs operations***. Commencing with our acquisition of PET Labs in October 2023, this facility has an initial term set to expire in March 2026 with automatic monthly extensions thereafter. This space is used for office and production activities.

***Lease for additional PET Labs operations***. Commencing with our acquisition of PET Labs in October 2023, this facility had an initial term which expired in December 2023 and is currently under automatic monthly extensions. This space is used for production activities.

**Components of Results of Operations**

***Revenue***

Effective with the acquisition of 51% of PET Labs Pharmaceuticals, the Company recognizes revenue from the sale of nuclear medical doses for PET scanning.

***Cost of Goods Sold***

Cost of goods sold associated with the sale of nuclear medical doses for PET scanning consist of labor, delivery and materials.

***Operating Expenses***

Our operating expenses consist of (i) research and development expenses and (ii) selling, general and administrative expenses.

***Research and Development***

Our research and development expenses consist primarily of direct and indirect costs incurred in connection with the development activities for our future isotopes.

Direct costs include:

•external research and development expenses; and

•costs related to designing the development processes of isotope production.

Indirect costs include:

•personnel-related costs, which include salaries, payroll taxes, employee benefits, and other employee-related costs, including stock-based compensation, for personnel engaged in research and development functions; and

•facilities and other various expenses.

Research and development expenses are recognized as incurred and payments made prior to the receipt of goods or services to be used in research and development are capitalized until the goods or services are received.

We expect that our research and development expenses will increase substantially for the foreseeable future as we continue the development of our future isotopes. We cannot determine with certainty the timing of initiation, the duration or the completion costs of development activities. Actual development timelines, the probability of success and development costs can differ materially from expectations.

We will need to raise substantial additional capital in the future. In addition, we cannot forecast which future isotopes may be subject to future collaborations, when such arrangements will be secured, if at all, and to what degree such arrangements would affect our development plans and capital requirements.

Our research and development expenses may vary significantly based on a variety of factors, such as:

•the scope, rate of progress, expense and results of our development activities;

•the phase of development of our future isotopes;

•the timing, receipt, and terms of any approvals from applicable regulatory authorities including the FDA and foreign regulatory authorities;

•significant and changing government regulation and regulatory guidance;

•the cost and timing of designing the development processes of isotope production;

•the extent to which we establish additional strategic collaborations or other arrangements; and

•the impact of any business interruptions to our operations or to those of the third parties with whom we work.

A change in the outcome of any of these variables with respect to the development of any of our future isotopes could significantly change the costs and timing associated with the development of that future isotope.

***Selling, General and Administrative***

Selling, general and administrative expenses consist primarily of personnel-related costs, which include salaries, payroll taxes, employee benefits, and other employee-related costs, including stock-based compensation, for personnel in executive, sales, finance and other administrative functions. Other significant costs include legal fees relating to corporate matters, professional fees for accounting and consulting services and facility-related costs.

We expect that our ongoing selling, general and administrative expenses will increase substantially for the foreseeable future to support our increased research and development activities and increased costs of operating as a public company and in building our internal resources. These increased costs will include increased expenses related to audit, legal, regulatory and tax-related

services associated with maintaining compliance with exchange listing and SEC requirements, director and officer insurance premiums and investor and public relations costs associated with operating as a public company.

***Segment Information***

As of December 31, 2023, we managed our operations as a single segment, specialist isotopes and related services. Beginning in 2024, primarily as a result of the increased business activities of our subsidiary, Quantum Leap Energy LLC, we have two operating segments: (i) nuclear fuels, and (ii) specialist isotopes and related services.

The nuclear fuels segment is focused on research and development of technologies and methods used to produce high-assay low-enriched uranium (HALEU) and Lithium-6 for the advanced nuclear fuels target end market.

The specialist isotopes and related services segment is focused on research and development of technologies and methods used to separate high-value, low-volume isotopes (such as C-14, Mo-100 and Si-28) for highly specialized target end markets other than advanced nuclear fuels, including pharmaceuticals and agrochemicals, nuclear medical imaging and semiconductors, as well as services related to these isotopes, and this segment includes PET Labs.

The financial information is regularly reviewed by the chief operating decision maker ("CODM") in deciding how to allocate resources. Our CODM is our chief executive officer.

We manage assets on a total company basis, not by operating segment, as the assets are shared or commingled. Therefore, the chief operating decision maker does not regularly review any asset information by operating segment and, accordingly, asset information is not reported on a segment basis.

Select information from the consolidated statements of operations and comprehensive loss as of the years ended December 31, 2024 and 2023 is as follows:

| Segment | Revenues Year Ended December 31, 2024 | Revenues Year Ended December 31, 2023 | Net Loss Before Allocation to Noncontrolling Interest Year Ended December 31, 2024 | Net Loss Before Allocation to Noncontrolling Interest Year Ended December 31, 2023 |
|---|---|---|---|---|
| Specialist isotopes and related services | $ 3,944,226 | $ 433,026 | $ (21,367,787) | $ (16,145,339) |
| Nuclear fuels | 200,000 | — | (10,881,084) | — |
| Corporate | — | — | (173,857) | (148,787) |
| | $ 4,144,226 | $ 433,026 | $ (32,422,728) | $ (16,294,126) |

**Results of Operations**

***Comparison of the Years Ended December 31, 2024 and 2023***

The following table summarizes our results of operations for the years ended December 31, 2024 and 2023:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2024 | 2023 | Change |
| Revenue | $ 4,144,226 | $ 433,026 | $ 3,711,200 |
| Cost of goods sold | 2,544,614 | 294,056 | 2,250,558 |
| Gross profit | 1,599,612 | 138,970 | 1,460,642 |
| Operating expenses: | | | |
| Research and development | 3,138,978 | 764,581 | 2,374,397 |
| Selling, general and administrative | 24,814,288 | 15,416,388 | 9,397,900 |
| Total operating expenses | 27,953,266 | 16,180,969 | 11,772,297 |
| Other (expense) income: | | | |
| Foreign exchange transaction gain | 69,865 | 45,753 | 24,112 |
| Change in fair value of share liability | (132,273 ) | (194,540 ) | 62,267 |
| Change in fair value of convertible notes payable | (6,875,041 ) | — | (6,875,041 ) |
| Interest income | 1,238,691 | 9,074 | 1,229,617 |
| Interest expense | (258,867 ) | (118,547 ) | (140,320 ) |
| Total other expense | (5,957,625 ) | (258,260 ) | (5,699,365 ) |
| Loss before income tax expense | $ (32,311,279 ) | $ (16,300,259 ) | $ (16,011,020 ) |

***Revenue and Cost of Goods Sold***

Effective with the acquisition of 51% of PET Labs, we have recognized revenue from the sale of nuclear medical doses for PET scanning for the two month period since the acquisition was effective on October 31, 2023 and December 31, 2023 and the year ended December 31, 2024. In addition, we have recognized the related cost of goods sold, operating expenses and other income and expenses of PET Labs for the same periods.

***Research and Development Expenses***

The following table summarizes our research and development expenses for the years ended December 31, 2024 and 2023:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2024 | 2023 | Change |
| Personnel-related costs | $ 1,171,467 | $ 495,034 | $ 676,433 |
| Consulting and professional | 655,895 | — | 655,895 |
| Facility and depreciation expenses | 766,960 | 247,663 | 519,297 |
| Other expenses | 544,656 | 21,884 | 522,772 |
| Total research and development expenses | $ 3,138,978 | $ 764,581 | $ 2,374,397 |

Research and development expenses were $3,138,978 for the year ended December 31, 2024, compared to $764,581 for the year ended December 31, 2023. The overall increase of $2,374,397 was primarily due to the following:

- an increase in personnel-related costs of $676,433 is mainly due to the increase in headcount and related costs;
- an increase in consulting and professional fees of $655,895 due to increased outsourced development activity for new specialty isotopes;
- an increase in facility and depreciation expenses of $519,297 due to an increase in space dedicated to development; and
- an increase in other expenses of $522,772 primarily related to repairs and maintenance and other general research and development expenses.

***Selling, General and Administrative Expenses***

Selling, general and administrative expenses were $24,814,288 for the year ended December 31, 2024, compared to $15,416,388 for the year ended December 31, 2023. The overall increase of $9,397,900 was primarily due to the following:

•an increase in personnel-related costs is mainly due to the increase in headcount and salaries of $1,779,619 and travel related costs of $459,644;

•an increase in professional services and legal related fees of $4,029,537 primarily due to the timing of corporate activity and an increase in legal fees associated with the current campaign of misinformation and potential shareholders class actions lawsuits;

•an increase in commissions and fees of $1,143,364 primarily due to the issuance of convertible notes in 2024;

•an increase in facility and depreciation expenses of $850,982 due to the expansion of our operations in 2024; and

•an increase in other selling, general and administrative expenses of $1,091,483, including insurance of $170,351 and franchise taxes of $191,663.

***Other Income and Expense***

Other expense for the year ended December 31, 2024 was $5,957,625, which includes a $6,875,041 change in the fair value of the convertible notes, a $132,273 change in the fair value of the share liability related to the shares issuable to a placement agent, $1,238,691 in interest income earned on our cash and cash equivalents and interest expense of $258,867.

Other expense for the year ended December 31, 2023 was $258,260, which includes a $194,540 change in the fair value of the share liability related to the shares issuable to a placement agent and other consultants and interest expense of $118,547.

**Liquidity and Capital Resources**

***Sources of Liquidity***

We have incurred net losses and negative cash flows from operations since our inception, and we expect to continue to incur significant and increasing net losses for the foreseeable future. We have principally financed our operations to date through the issuance of our common stock, including our IPO. In March and June 2024, the Company's wholly owned subsidiary Quantum Leap Energy received gross proceeds of $20,550,000 and $5,386,228, respectively, through the issuance of convertible promissory notes with a stated interest rate of 6% for the first year and 8% thereafter. The maturity date of these convertible promissory notes is March 7, 2029. These convertible promissory notes automatically convert into common shares upon Quantum Leap Energy's closing of an IPO or other qualified public transaction at 80% of the share price taking into consideration a valuation cap. On April 9, 2024, the Company received approximately $5.5 million from the issuance of 3,164,557 shares of common stock upon the exercise of warrants. In July 2024, we issued 13,800,000 shares of common stock in a public offering at a public offering price of $2.50 per share resulting in net proceeds of approximately $32.3 million after deducting underwriting discounts, commissions and offering expenses. In November 2024, we issued an additional 2,754,250 shares of common stock in a public offering at a public offering price of $6.75 per share resulting in net proceeds of approximately $17.1 million after deducting underwriting discounts, commissions and offering expenses.

As of December 31, 2024, we had cash of $61.9 million. We have not generated any revenue from the sale of our enriched isotopes, and our ability to generate product revenue from the sale of enriched isotopes sufficient to achieve profitability will depend on the successful development and eventual commercialization of one or more of our current or future enriched isotopes.

Effective with the acquisition of 51% of PET Labs Pharmaceuticals on October 31, 2023, we have begun to recognize revenue from the sale of nuclear medical doses for PET scanning in South Africa. Our ability to generate product revenue from the sale of nuclear medical doses for PET scanning sufficient to achieve profitability will depend on the successful expansion of production capabilities and commercialization of the results of that expansion.

***Future Funding Requirements***

Based on our current operating plan, we estimate that our existing cash and cash equivalents will be sufficient to fund our operating expenses and capital expenditure requirements through at least the next 12 months from the date the financial statements are issued. However, our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially. We have based this estimate on assumptions that may prove to be wrong, and we could deplete our capital resources sooner than we expect. Additionally, the process of developing isotopes is costly, and the timing of progress and expenses in these development activities is uncertain.

Our future capital requirements will depend on many factors, including:

•the type, number, scope, progress, expansions, results, costs and timing of, our development activities for our future isotopes;

•the outcome, timing and costs of regulatory review of our future isotopes;

•the costs and timing of manufacturing for our future isotopes;

•our efforts to enhance operational systems and hire additional personnel to satisfy our obligations as a public company, including enhanced internal controls over financial reporting;

•the costs associated with hiring additional personnel and consultants as our preclinical and clinical activities increase;

•the costs and timing of establishing or securing sales and marketing and distribution capabilities, whether alone or with third parties, to commercialize future isotopes for which we may obtain regulatory approval, if any;

•our ability to achieve sufficient market acceptance, coverage and adequate reimbursement from third-party payors and adequate market share and revenue for any approved products;

•the terms and timing of establishing and maintaining collaborations, licenses and other similar arrangements;

•the costs of obtaining, expanding, maintaining and enforcing our patent and other intellectual property rights; and

•costs associated with any products or technologies that we may in-license or acquire.

Developing isotopes is a time-consuming, expensive and uncertain process that takes years to complete, and we may never achieve the necessary results required or obtain applicable regulatory approval for any isotopes or generate revenue from the sale of any future isotopes (assuming applicable regulatory approval is received). In addition, our future isotopes (assuming applicable regulatory approval is received) may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of isotopes that we do not expect to be commercially available in substantial quantities until at least 2025. If we receive permits and licenses to enrich U-235 (which in itself is highly uncertain), we do not expect U-235 to be commercially available for at least several years, if ever. As a result, we may need substantial additional financing to support our continuing operations and further the development of and commercialization of our future isotopes.

Expansion of the production and distribution of nuclear medical doses for PET scanning is a time-consuming, expensive and uncertain process that may take years to complete. As a result, we may need substantial additional financing to support our continuing operations and further the development of and commercialization of future nuclear medical doses for PET scanning.

Until such time as we can generate significant revenue from sales of our future isotopes or nuclear medical doses for PET scanning, if ever, we expect to finance our cash needs through public or private equity or debt financings or other capital sources, including potential collaborations, licenses and other similar arrangements. However, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our ability to raise additional funds may be adversely impacted by potential worsening global economic conditions and the recent disruptions to, and volatility in, the credit and financial markets in the United States and worldwide resulting severely diminished liquidity and credit availability, increased interest rates, inflationary pressures, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. The financial markets and the global economy may also be adversely affected by the current or anticipated impact of military conflict. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise funds through collaborations, or other similar arrangements with third parties, we may have to relinquish valuable rights to our future isotopes, future revenue streams or research programs or may have to grant licenses on terms that may not be favorable to us and/or may reduce the value of our common stock. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market our future isotopes even if we would otherwise prefer to develop and market such isotopes ourselves.

**Cash Flows**

The following table summarizes our sources and uses of cash for each of the periods presented:

| | Year Ended December 31, | |
|---|---|---|
| | 2024 | 2023 |
| Net cash provided by (used in): | | |
| Operating activities | $ (16,695,365 ) | $ (5,412,392 ) |
| Investing activities | (11,372,399 ) | (2,453,191 ) |
| Financing activities | 82,533,640 | 13,385,491 |
| Net increase (decrease) in cash and cash equivalents | $ 54,465,876 | $ 5,519,908 |

***Operating Activities***

Net cash used in operating activities was $16,695,365 for the year ended December 31, 2024 and was primarily due to our net loss of $32.4 million, adjusted for stock-based compensation expense of $8,561,404, non-cash issuance costs for the convertible notes payable of $621,915, amortization of right-of-use asset of $473,202, depreciation expense of $471,421, issuance of common stock to consultants with a fair value of $1,314,200, change in fair values for the convertible notes payable of $6,875,041 and change in fair value of share liability of $132,273, partially offset by a $2,622,890 change in our operating assets and liabilities.

Net cash used in operating activities was $5,412,392 for the year ended December 31, 2023 and was primarily due to our net loss of $16,294,126, adjusted for stock-based compensation expense of $8,743,799, amortization of right-of-use asset of $104,528, issuance of common stock to consultants with a fair value of $669,700, change in fair value of share liability of $194,540, and a $1,159,728 change in our operating assets and liabilities.

***Investing Activities***

Net cash used in investing activities was $11,372,399 for the year ended December 31, 2024 and was comprised of the purchases of machinery and equipment, vehicles and construction in progress.

Net cash used in investing activities was $2,453,191 for the year ended December 31, 2023 and was comprised of the purchase of machinery and equipment and construction in progress totaling $2,331,343 and $121,848 for the acquisition of PET Labs net of cash acquired.

***Financing Activities***

Net cash provided by financing activities was $82,533,640 for the year ended December 31, 2024 and was comprised primarily of net proceeds of $53,091,187 from the sale and issuance of our common stock, gross proceeds of $25,936,228 from the issuance of convertible notes payable, proceeds of $5,837,663 from the issuance of common stock for a warrant exercise, contributions from noncontrolling interest in VIE of $920,336, proceeds from collection of receivable from noncontrolling interest in VIE of $706,774, partially offset by costs to issue common stock of $3,648,385, principal payments on notes payable, finance leases and bank loans of $561,176, $100,611 and $51,381, respectively, and distribution to noncontrolling interest in VIE of $97,918.

Net cash provided by financing activities was $13,385,491 for the year ended December 31, 2023 and was comprised primarily of net proceeds of $13,566,022 from the sale and issuance of our common stock.

**Contractual Obligations and Commitments**

We lease our main facility in Pretoria, South Africa under a lease with a base monthly rent payment of approximately $9,000 with a term expiring on December 31, 2030. We also lease additional space on a short term basis in Pretoria, South Africa under a lease with a base monthly rent payment of approximately $18,000 with a term expiring on February 28, 2026 and the Company is continuing to occupy that space under the monthly extensions. We also lease additional space in Pretoria, South Africa under a lease with a base monthly rent payment of approximately $2,000 with a term expiring on October 30, 2026.

PET Labs Pharmaceuticals operates in a facility in Pretoria, South Africa is under a lease with a base monthly rent payment of approximately $27,000 with a term expiring on March 30. 2026 with automatic monthly extension afterwards. PET Labs Pharmaceuticals also rents space at a local hospital in Pretoria, South Africa for which there was a lease with a base monthly rent payment of approximately $5,000 which expired on December 31, 2023 and is currently in automatic monthly extensions.

In November 2024 and 2023, the Company executed a promissory note payable with a finance company to fund its directors and officers' insurance policy for $500,923 and $526,282, respectively. During 2024, the Company entered into several loans to purchase motor vehicles and certain equipment totaling $2,020,511. These loans are secured by the underlying assets included in property and equipment. Refer to Note 6 (Notes Payable) to our consolidated financial statements included in Part II, Item 8. for information regarding interest rates and maturities.

In addition, we enter into contracts in the normal course of business with vendors for services and products for operating purposes. These contracts do not contain any minimum purchase commitments and generally provide for termination after a notice period and, therefore, are not considered long-term contractual obligations. Payments due upon cancellation consist only of payments for services provided and expenses incurred up to the date of cancellation.

**Off-balance Sheet Arrangements**

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

**Critical Accounting Policies and Significant Judgments and Estimates**

Our consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. In preparing these financial statements, management is required to make estimates and assumptions that affect the reported amount of revenues, expenses, assets, liabilities and the disclosure of contingent liabilities. Actual results may differ from these estimates. Critical accounting estimates are those estimates that involve a significant level of estimation uncertainty and could have a material impact on our financial condition or results of operations. We have critical accounting estimates in the areas of accounting for the acquisition including goodwill, loss contingencies, stock-based compensation and convertible notes payable at fair value. Refer to Note 2 (Basis of Presentation and Summary of Significant Accounting Policies) to our consolidated financial statements included in Part II, Item 8. for a summary of significant accounting policies

***Business Combinations***

Assets acquired and liabilities assumed as part of a business acquisition are generally recorded at their fair value at the date of acquisition. The excess of purchase price over the fair value of assets acquired and liabilities assumed is recorded as goodwill. Determining fair value of identifiable assets, particularly intangibles, and liabilities acquired also requires management to make estimates, which are based on all available information and in some cases assumptions with respect to the timing and amount of future revenues and expenses associated with an asset. Accounting for business acquisitions requires management to make judgments as to whether a purchase transaction is a multiple element contract, meaning that it includes other transaction components such as a settlement of a preexisting relationship. This judgment and determination affects the amount of consideration paid that is allocable to assets and liabilities acquired in the business purchase transaction.

***Goodwill***

We test goodwill for impairment annually, or more frequently if events or changes in circumstances indicate that the carrying value may not be recoverable. If it is determined that carrying values of goodwill cannot be recovered, the unrecoverable amounts are charged against current earnings. Recoverability is dependent upon assumptions and judgments regarding market conditions, or business strategies. Other assumptions used in the calculation of recoverable amounts are discount rates, future cash flows and profit margins. A material change in assumptions may significantly impact the potential impairment of goodwill.

***Loss Contingencies***

We are currently involved in various claims and legal proceedings. The outcomes of legal proceedings and claims brought against us and other loss contingencies are subject to significant uncertainty. We accrue a charge against income when our management determines that it is probable that an asset has been impaired or a liability has been incurred and the amount of loss can be reasonably estimated. In addition, we accrue for the authoritative judgments or assertions made against us by government agencies at the time of their rendering regardless of our intent to appeal. In determining the appropriate accounting for loss contingencies, we consider the likelihood of loss or impairment of an asset or the incurrence of a liability, as well as our ability to reasonably estimate the amount of loss. We regularly evaluate current information available to us to determine whether an accrual should be established or adjusted. Estimating the probability that a loss will occur and estimating the amount of a loss or a range of loss involves significant judgment.

***Stock-Based Compensation***

We account for stock-based compensation by measuring and recognizing as compensation expense the fair value of all share-based payment awards made to employees, including employee stock options and restricted stock awards, based on estimated grant date fair values. These fair values are calculated by applying a valuation model, which is in itself judgmental, and takes into account certain inherently uncertain assumptions.

***Convertible Notes Payable at Fair Value***

The fair values assigned to convertible notes payable carried at fair value are based upon available information at the time and do not necessarily represent amounts that might ultimately be paid. Because of the inherent uncertainty of valuation, these estimated fair values may differ significantly from the values that would have been used had a ready market for this debt existed, and those differences could be material.

**Item 7A. Quantitative and Qualitative Disclosures About Market Risk**

***Interest Rate Risk***

We are exposed to interest rate risk related to our outstanding debt. As of December 31, 2024 and 2023, our cash and cash equivalents consists of cash in readily available checking and interest bearing accounts. We do not hold any short-term investments. As a result, the fair value of our portfolio is relatively insensitive to interest rate changes. As of December 31, 2024 and 2023, we had $2,380,396 and 470,396, respectively, of notes payable bank outstanding primarily related to loans for motor vehicles and equipment in South Africa and financing of Directors and Officers' insurance premiums. This results in a minimal exposure to interest rate risk with respect to debt. We believe a hypothetical 100 basis point increase or decrease in interest rates during the period presented would not have had a material impact on our financial results.

***Foreign Currency Exchange Rate Risk***

Our expenses are generally denominated in U.S. dollars but our operations are currently primarily located outside the United States and we have entered into a number of contracts with vendors that are denominated in foreign currencies. We are subject to foreign currency transaction gains or losses on our contracts denominated in foreign currencies. To date, foreign currency transaction gains and losses have not been material to our financial statements, and we have not had a formal hedging program with respect to foreign currency. We believe a hypothetical 100 basis point increase or decrease in exchange rates during the period presented would not have had a material impact on our financial results.

***Effects of Inflation***

Inflation generally affects us by increasing our cost of labor and research and development costs. We do not believe that inflation and changing prices had a significant impact on our results of operations for the period presented herein.

***Credit Risk***

We are potentially subject to concentrations of credit risk in our accounts receivable. Two customers, Customer A and Customer B, represent approximately 28% ($200,000) and 20% ($144,590), respectively, of consolidated accounts receivable as of December 31, 2024. Although the Company is directly affected by the financial condition of its customers, management does not believe significant credit risks exist at December 31, 2024. Generally, we do not require collateral or other securities to support its accounts receivable.

***Major Customer***

Revenues from one customer of our specialist isotopes and related services segment represent approximately 14% or $592,000 our consolidated revenues. for the year ended December 31, 2024. For year ended December 31, 2023, there were no customers that represented more than 10% of revenues. We expect to maintain this relationship with the customer.

**Item 8. Financial Statements and Supplementary Data**

**ASP Isotopes Inc.**
**Index to Consolidated Financial Statements**

**Report of Independent Registered Public Accounting Firm**

To the Board of Directors and Stockholders of
ASP Isotopes Inc

***Opinion on the Financial Statements***

We have audited the accompanying consolidated balance sheets of ASP Isotopes Inc. and Subsidiaries (the "Company") as of December 31, 2024 and 2023, and the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for each of the years then ended, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2024 and 2023, and the consolidated results of their operations and their cash flows for each of the years then ended, in conformity with accounting principles generally accepted in the United States of America.

***Basis for Opinion***

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ EisnerAmper LLP

We have served as the Company's auditor since 2022.

EISNERAMPER LLP
Iselin, New Jersey
March 31, 2025

**ASP Isotopes Inc.**
**Consolidated Balance Sheets**

| | December 31, 2024 | December 31, 2023 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 61,890,048 | $ 7,908,181 |
| Accounts receivable | 706,925 | 216,504 |
| Inventory | 65,655 | — |
| Receivable from noncontrolling interests | 27,556 | 721,548 |
| Prepaid expenses and other current assets | 3,053,478 | 1,664,023 |
| Total current assets | 65,743,662 | 10,510,256 |
| Property and equipment, net | 22,354,377 | 10,712,839 |
| Operating lease right-of-use assets, net | 1,122,134 | 1,258,701 |
| Deferred tax assets | 31,847 | — |
| Goodwill | 3,168,101 | 3,267,103 |
| Other noncurrent assets | 1,927,867 | 1,793,014 |
| **Total assets** | **$ 94,347,988** | **$ 27,541,913** |
| | | |
| **Liabilities and stockholders' equity** | | |
| Current liabilities: | | |
| Accounts payable | $ 1,021,393 | $ 1,111,819 |
| Accrued expenses | 2,275,681 | 1,311,245 |
| Notes payable - current | 939,110 | 470,396 |
| Finance lease liabilities – current | 125,862 | 61,941 |
| Operating lease liabilities – current | 557,676 | 336,564 |
| Deferred revenue | 882,000 | 882,000 |
| Other current liabilities | 1,256,549 | 1,500,000 |
| Total current liabilities | 7,058,271 | 5,673,965 |
| Deferred tax liabilities | — | 110,578 |
| Convertible notes payable, at fair value | 33,433,184 | — |
| Notes payable - noncurrent | 1,441,286 | — |
| Finance lease liabilities – noncurrent | 560,328 | 207,092 |
| Operating lease liabilities – noncurrent | 688,479 | 1,066,647 |
| Other noncurrent liabilities | — | 1,653,000 |
| Total liabilities | 43,181,548 | 8,711,282 |
| **Commitments and contingencies (Note 8)** | | |
| **Stockholders' equity** | | |
| Preferred stock, $0.01 par value; 10,000,000 shares authorized, no shares issued and outstanding as of December 31, 2024 and 2023 | — | — |
| Common stock, $0.01 par value; 500,000,000 shares authorized, 72,068,059 and 48,923,276 shares issued and outstanding as of December 31, 2024 and 2023, respectively | 720,681 | 489,233 |
| Additional paid-in capital | 105,515,005 | 40,567,003 |
| Accumulated deficit | (56,172,881 ) | (23,839,300 ) |
| Accumulated other comprehensive loss | (2,164,313 ) | (920,982 ) |
| Total ASP Isotopes stockholders' equity | 47,898,492 | 16,295,954 |
| Noncontrolling interests | 3,267,948 | 2,534,677 |
| Total stockholders' equity | 51,166,440 | 18,830,631 |
| **Total liabilities and stockholders' equity** | **$ 94,347,988** | **$ 27,541,913** |

The accompanying notes are an integral part of these consolidated financial statements.

**ASP Isotopes Inc.**
**Consolidated Statements of Operations and Comprehensive Loss**

| | Year Ended December 31, 2024 | 2023 |
|---|---|---|
| **Revenue** | | |
| Product revenue | $ 3,944,226 | $ 433,026 |
| Collaboration revenue | 200,000 | — |
| Total revenue | 4,144,226 | 433,026 |
| Cost of goods sold | 2,544,614 | 294,056 |
| Gross profit | 1,599,612 | 138,970 |
| **Operating expenses:** | | |
| Research and development | 3,138,978 | 764,581 |
| Selling, general and administrative | 24,814,288 | 15,416,388 |
| Total operating expenses | 27,953,266 | 16,180,969 |
| **Loss from operations** | (26,353,654 ) | (16,041,999 ) |
| **Other income (expense):** | | |
| Foreign exchange transaction gain | 69,865 | 45,753 |
| Change in fair value of share liability | (132,273 ) | (194,540 ) |
| Change in fair value of convertible notes payable | (6,875,041 ) | — |
| Interest income | 1,238,691 | 9,074 |
| Interest expense | (258,867 ) | (118,547 ) |
| Total other expense | (5,957,625 ) | (258,260 ) |
| Loss before income tax expense | (32,311,279 ) | (16,300,259 ) |
| Income tax (expense) benefit | (111,449 ) | 6,133 |
| Net loss before allocation to noncontrolling interests | (32,422,728 ) | (16,294,126 ) |
| Less: Net loss attributable to noncontrolling interests | (89,147 ) | (7,892 ) |
| **Net loss attributable to ASP Isotopes Inc. shareholders before deemed dividend on inducement warrant for common stock** | **$ (32,333,581 )** | **$ (16,286,234 )** |
| Deemed dividend on inducement warrant for common stock | (2,779,659 ) | — |
| **Net loss attributable to ASP Isotopes Inc. shareholders** | **$ (35,113,240 )** | **$ (16,286,234 )** |
| **Net loss per share attributable to ASP Isotopes Inc. shareholders, basic and diluted** | **$ (0.63 )** | **$ (0.49 )** |
| **Weighted average shares of common stock outstanding, basic and diluted** | **55,671,805** | **33,066,708** |
| | | |
| **Comprehensive income (loss):** | | |
| Net loss before allocation to noncontrolling interests | $ (32,422,728 ) | $ (16,294,126 ) |
| Foreign currency translation | (1,243,331 ) | (1,176,012 ) |
| Total comprehensive loss before allocation to noncontrolling interests | (33,666,059 ) | (17,470,138 ) |
| Less: Comprehensive (loss) income attributable to noncontrolling interests | (119,417 ) | 27,255 |
| **Comprehensive loss attributable to ASP Isotopes Inc.** | **$ (33,546,642 )** | **$ (17,497,393 )** |

The accompanying notes are an integral part of these consolidated financial statements.

**ASP Isotopes Inc.**
**Consolidated Statements of Changes in Stockholders' Equity**

| | Common Stock | | Additional Paid-in Capital | Accumulated Other Comprehensive (Loss) Income | Accumulated Deficit | Noncontrolling Interests | Total Stockholders' Equity |
|---|---|---|---|---|---|---|---|
| | Shares | Amount | | | | | |
| **Balance as of December 31, 2022** | **35,907,127** | **$ 359,071** | **$ 16,756,426** | **$ 255,030** | **$ (7,553,066)** | **$ —** | **$ 9,817,461** |
| Issuance of common stock, net of issuance costs of $563,473 | 13,117,067 | 131,171 | 13,434,851 | — | — | — | 13,566,022 |
| Issuance of common stock for non-cash issuance costs | 472,582 | 4,726 | (4,726) | — | — | — | — |
| Issuance of common stock to settle share liability | 150,000 | 1,500 | 226,500 | | | | 228,000 |
| Settlement of liability with related parties | — | — | 626,223 | — | — | — | 626,223 |
| Settlement of liability with consultants | 519,750 | 5,198 | 771,497 | — | — | — | 776,695 |
| Cancellation of common stock received in exchange for issuance of convertible preferred stock in subsidiary | (3,000,000) | (30,000) | 30,000 | — | — | — | — |
| Issuance of restricted shares | 1,756,750 | 17,567 | (17,567) | — | — | — | — |
| Stock-based compensation | — | — | 8,743,799 | — | — | — | 8,743,799 |
| Noncontrolling interest in ASP Rentals | — | — | — | — | — | 721,548 | 721,548 |
| Acquisition of PET Labs | — | — | — | — | — | 1,821,021 | 1,821,021 |
| Foreign currency translation | — | — | — | (1,176,012) | — | — | (1,176,012) |
| Net loss | — | — | — | — | (16,286,234) | (7,892) | (16,294,126) |
| **Balance as of December 31, 2023** | **48,923,276** | **489,233** | **40,567,003** | **(920,982)** | **(23,839,300)** | **2,534,677** | **18,830,631** |
| Issuance of common stock, net of issuance costs of $3,648,385 | 16,554,250 | 165,542 | 49,277,260 | — | — | — | 49,442,802 |
| Issuance of common stock from warrant exercise | 3,316,298 | 33,163 | 5,804,500 | — | — | — | 5,837,663 |
| Issuance of restricted common stock | 2,523,554 | 25,236 | (25,236) | | | | — |
| Issuance of common stock to consultants | 60,000 | 600 | 183,000 | — | — | — | 183,600 |
| Issuance of common stock to board members | 670,681 | 6,707 | (6,707) | — | — | — | — |
| Retired unvested restricted shares | (325,000) | (3,250) | 3,250 | — | — | — | — |
| Settlement of liabilities with consultant | 345,000 | 3,450 | 1,151,400 | — | — | — | 1,154,850 |
| Board fee liabilities settled with shares | — | — | 240,000 | — | — | — | 240,000 |
| Commission fee liability settled with cash and common stock warrant | — | — | (1,006,763) | — | — | — | (1,006,763) |
| Settlement of commission fee liability payable in common stock warrant | — | — | 765,894 | — | — | — | 765,894 |
| Stock-based compensation expense | — | — | 8,561,404 | — | — | — | 8,561,404 |
| Contribution from noncontrolling interest in VIE | — | — | — | — | — | 920,336 | 920,336 |
| Distribution to noncontrolling interest of VIE | — | — | — | — | — | (97,918) | (97,918) |
| Foreign currency translation | — | — | — | (1,243,331) | — | — | (1,243,331) |
| Net loss | — | — | — | — | (32,333,581) | (89,147) | (32,422,728) |
| **Balance as of December 31, 2024** | **72,068,059** | **$ 720,681** | **105,515,005** | **$ (2,164,313)** | **$ (56,172,881)** | **$ 3,267,948** | **$ 51,166,440** |

The accompanying notes are an integral part of these consolidated financial statements.

**ASP Isotopes Inc.**
**Consolidated Statements of Cash Flows**

| | Year Ended December 31, 2024 | 2023 |
|---|---|---|
| **Cash flows from Operating activities** | | |
| Net loss | $ (32,422,728 ) | $ (16,294,126 ) |
| **Adjustments to reconcile net loss to cash used in operating activities:** | | |
| Foreign exchange transaction loss(gain) from intercompany | 42,407 | (44,649 ) |
| Depreciation | 471,421 | 37,433 |
| Loss on disposal of property and equipment | 1,666 | — |
| Stock-based compensation | 8,561,404 | 8,743,799 |
| Convertible note payable for non-cash issuance costs | 621,915 | — |
| Shares issued for non-cash consultant expense | 1,314,200 | 669,700 |
| Change in fair value of share liability | 132,273 | 194,540 |
| Change in fair value of convertible notes payable | 6,875,041 | — |
| Change in right-of-use lease assets | 473,202 | 104,528 |
| Change in deferred tax assets, net | (143,276 ) | 16,655 |
| **Changes in operating assets and liabilities, net of acquisition amounts:** | | |
| Accounts receivable | (505,952 ) | 237,952 |
| Inventory | (67,639 ) | — |
| Prepaid expenses and other current assets | (1,356,761 ) | (546,097 ) |
| Other noncurrent assets | (9,190 ) | (59,324 ) |
| Accounts payable | (877,468 ) | (224,598 ) |
| Accrued expenses | 909,873 | 873,705 |
| Deferred revenue | — | 882,000 |
| Operating lease liability | (427,460 ) | (85,775 ) |
| Tax liability current | — | (22,787 ) |
| Other current liabilities | (288,293 ) | 104,652 |
| **Net cash used in operating activities** | (16,695,365 ) | (5,412,392 ) |
| **Cash flows from investing activities** | | |
| Purchases of property and equipment | (9,675,127 ) | (2,331,343 ) |
| Cash advance paid for property and equipment | (1,697,272 ) | — |
| Cash paid for acquisition of business, net of cash acquired | — | (121,848 ) |
| **Net cash used in investing activities** | (11,372,399 ) | (2,453,191 ) |
| **Cash flows from financing activities** | | |
| Proceeds from issuance of common stock | 53,091,187 | 14,129,495 |
| Common stock issuance costs | (3,648,385 ) | (563,473 ) |
| Proceeds from exercise of warrants | 5,837,663 | — |
| Proceeds from noncontrolling interest in VIE | 920,336 | — |
| Proceeds from collection of receivable from noncontrolling interest in VIE | 706,774 | — |
| Distribution to noncontrolling interest in VIE | (97,918 ) | — |
| Proceeds from issuance of convertible notes payable | 25,936,228 | — |
| Proceeds from issuance of notes payable | 500,923 | 526,282 |
| Payments of notes payable | (561,176 ) | (87,713 ) |
| Payment of bank loan | (51,381 ) | (609,499 ) |
| Payment of principal portion of finance leases | (100,611 ) | (9,601 ) |
| **Net cash provided by financing activities** | 82,533,640 | 13,385,491 |
| **Net change in cash and cash equivalents** | 54,465,876 | 5,519,908 |
| Effect of exchange rate changes on cash and cash equivalents | (484,009 ) | (867 ) |
| Cash and cash equivalents– beginning of year | 7,908,181 | 2,389,140 |
| **Cash and cash equivalents– end of year** | **$ 61,890,048** | **$ 7,908,181** |
| **Supplemental disclosures of non-cash investing and financing activities:** | | |
| Issuance of common stock in lieu of commissions | $ — | $ 75,570 |
| Settlement of liabilities with related party | $ — | $ 626,223 |
| Seller financed portion of investment in PET Labs Pharmaceuticals | $ — | $ 1,500,000 |
| Purchase of property and equipment included in accounts payable | $ 795,264 | $ 453,985 |
| Right-of-use assets obtained in exchange for operating lease liability | $ 364,458 | $ 70,607 |
| Right-of-use assets obtained in exchange for financing lease liability | $ 538,768 | $ — |
| Deemed dividend on inducement warrant | $ 2,779,659 | $ — |
| Purchase of property and equipment with bank loans | $ 2,020,511 | $ — |
| Board fees settled with common stock | $ 240,000 | $ — |
| Commission fee settled with common stock warrant | $ 765,894 | $ — |

The accompanying notes are an integral part of these consolidated financial statements.

## 1. Organization

***Description of Business***

ASP Isotopes Inc. was incorporated in the state of Delaware on September 13, 2021 and has its principal operations in Washington, DC. ASP Isotopes Inc.'s subsidiary, ASP Isotopes Guernsey Limited ("ASP Guernsey"), has its principal operations in Guernsey. ASP Guernsey's subsidiary, ASP Isotopes Holdings South Africa Proprietary Limited ("ASP South Africa"), has its principal operations in South Africa. ASP Rentals Proprietary Limited ("ASP Rentals"), a variable interest entity ("VIE") of ASP South Africa, has its principal operations in South Africa. Enlightened Isotopes (Pty) Ltd ("Enlightened Isotopes"), a 80% owned subsidiary of ASP South Africa, was formed in March 2023 and began operations in January 2024. ASP Isotopes UK Ltd ("ASP UK"), a subsidiary of ASP Guernsey, was incorporated in July 2022. ASPI South Africa Asset Finance Proprietary Limited ("ASP SA Asset Finance"), a subsidiary of ASP South Africa, was incorporated in July 2024. PET Labs Global Nuclear Medicine SEZC ("PET Labs Global"), a subsidiary of ASP Guernsey, was incorporated in June 2024 in the Cayman Islands. PET Labs Pharmaceuticals Proprietary Limited ("PET Labs"), a 51% owned subsidiary of ASP Isotopes Inc. operates in South Africa. ASP Isotopes Inc.'s subsidiary, Quantum Leap Energy LLC, was formed in the state of Delaware in September 2023 and began operations in February 2024. Quantum Leap Energy LLC's subsidiary Quantum Leap Energy Proprietary Limited ("Quantum Leap Energy South Africa"), has its operations in South Africa. ASP Isotopes Inc., its subsidiaries and ASP Rentals are collectively referred to as "the Company" throughout these consolidated statements.

The Company is a development stage advanced materials company dedicated to the development of technology and processes that, if successful, will allow for the enrichment of natural isotopes into higher concentration products, which could be used in several industries. The Company's proprietary technologies, the Aerodynamic Separation Process ("ASP technology") and Quantum Enrichment technology ("QE technology"), are designed to enable the production of isotopes used in several industries. The Company's initial focus is on the production and commercialization of enriched Carbon-14 ("C-14"), Silicon-28 ("Si-28") and Ytterbium-176 ("Yb-176").

The Company has completed the commissioning phase and are commencing commercial production at the C-14 and Si-28 enrichment facilities located in Pretoria, South Africa. We are in the process of commissioning and commencing commercial production at our Yb-176 enrichment facility in Pretoria, South Africa. We expect our first three enrichment facilities to generate commercial supply during 2025. In addition, the Company has started planning additional isotope enrichment plants both in South Africa and in other jurisdictions. The Company believes the C-14 it may produce using the ASP technology may be used in the development of new pharmaceuticals and agrochemicals. The Company believes the Si-28 it may produce using the ASP technology may be used to develop advanced semiconductors and in quantum computing. The Company believes the Yb-176 we may produce using the QE technology may be used to create radiotherapeutics that treat various forms of oncology.

In addition, the Company is considering the future development of the ASP technology for the separation of Zinc-68, Xenon-129/136 for potential use in the healthcare end market, Germanium 70/72/74 for possible use in the semiconductor end market, and Chlorine-37 for potential use in the nuclear energy end market.

The Company is also considering the future development of QE technology for the separation of Nickel-64, Gadolinium-160, Lithium 6 and Lithium-7. The Company is also pursuing an initiative to apply our enrichment technologies to the enrichment of Uranium-235 ("U-235"). The Company believes the U-235 that it may produce using quantum enrichment technology may be commercialized as a nuclear fuel component for use in the new generation of high-assay low-enriched uranium (HALEU)-fueled small modular reactors that are now under development for commercial and government uses.

***Liquidity***

The Company has experienced net losses and negative cash flows from operating activities since its inception. The Company incurred net losses of $32.4 million and $16.3 million for the years ended December 31, 2024 and 2023, respectively. The Company currently expects that its cash and cash equivalents of $61.9 million as of December 31, 2024 will be sufficient to fund its operating expenses and capital requirements for more than 12 months from the date the financial statements are issued.

There can be no assurance that the Company will achieve or sustain positive cash flows from operations or profitability. The Company anticipates it will need to continue to raise capital through additional equity and/or debt financings and/or collaborative development agreements to fund its operations beyond the next year. However, such funding may not be available on a timely basis on terms acceptable to the Company, or at all. If the Company is unable to raise additional capital when required or on acceptable terms, the Company may be required to scale back or discontinue the advancement of product candidates, reduce headcount, reorganize, merge with another entity, or cease operations.

**2. Basis of Presentation and Summary of Significant Accounting Policies**

***Basis of Presentation and Use of Estimates***

The Company's consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States ("GAAP"). The preparation of the Company's consolidated financial statements requires management to make estimates and assumptions that impact the reported amounts of assets, liabilities and expenses and disclosure in the Company's consolidated financial statements and accompanying notes. The most significant estimates in the Company's consolidated financial statements relate to stock-based compensation, fair value of convertible notes, loss contingencies and the accounting for the acquisition, including goodwill. Although these estimates are based on the Company's knowledge of current events and actions it may undertake in the future, actual results may materially differ from these estimates and assumptions.

***Principles of Consolidation***

The Company's consolidated financial statements include the accounts of ASP Isotopes Inc., its wholly-owned subsidiaries, the 80% owned Enlightened Isotopes, the 51% owned PET Labs and the 42% owned VIE ASP Rentals. All intercompany balances and transactions have been eliminated in consolidation.

***Currency and Currency Translation***

The consolidated financial statements are presented in U.S. dollars, the Company's reporting currency. The functional currency of ASP Isotopes Inc. and ASP Guernsey is the U.S. dollar. The functional currency of the Company's subsidiaries ASP South Africa and Quantum Leap Energy South Africa is the South African Rand. The functional currency of the 80% owned Enlighted Isotopes, the 51% owned PET Labs and the 42% owned VIE ASP Rentals is the South African Rand. Adjustments that arise from exchange rate changes on transactions of each group entity denominated in a currency other than the functional currency are included in other income and expense in the consolidated statements of operations and comprehensive loss. Assets and liabilities of the entities with functional currency of South African Rand are recorded in South African Rand and translated into the U.S. dollar reporting currency of the Company at the exchange rate on the balance sheet date. Revenue and expenses of the entities with functional currency of South African Rand are recorded in South African Rand and translated into the U.S. dollar reporting currency of the Company at the average exchange rate prevailing during the reporting period. Resulting translation adjustments are recorded separately in stockholders' equity as a component of accumulated other comprehensive (loss) income.

***Concentration of Credit Risk and other Risks***

Cash balances are maintained at U.S. financial institutions and may exceed the Federal Deposit Insurance Corporation ("FDIC") insurance limit of $250,000 per depositor, per insured bank for each account ownership category. Although the Company currently believes that the financial institutions with whom it does business, will be able to fulfill their commitments to the Company, there is no assurance that those institutions will be able to continue to do so. The Company has not experienced any credit losses associated with its balances in such accounts for the years ended December 31, 2024 and 2023.

The Company's foreign subsidiaries held cash of approximately $1,512,000 and $1,963,000 as of December 31, 2024 and 2023, respectively, which is included in cash and cash equivalents on the consolidated balance sheets. Our strategic plan does not require the repatriation of foreign cash in order to fund our operations in the U.S., and it is our current intention to indefinitely reinvest our foreign cash outside of the U.S. If we were to repatriate foreign cash to the U.S., we would be required to accrue and pay U.S. taxes in accordance with applicable U.S. tax rules and regulations as a result of the repatriation.

The Company is potentially subject to concentrations of credit risk in accounts receivable as the following customer balances exceed 10% of accounts receivable in the consolidated balance sheet as December 31, 2024 and 2023.

| | As of December 31, 2024 | | As of December 31, 2023 | |
|---|---|---|---|---|
| | Accounts Receivable | % of Total Accounts Receivable | Accounts Receivable | % of Total Accounts Receivable |
| Customer A | $ 200,000 | 28 % | $ — | — |
| Customer B | $ 144,590 | 20 % | $ 32,683 | 15 % |
| Customer C | $ — | — | $ 27,398 | 13 % |
| Customer D | $ — | — | $ 21,682 | 10 % |

Although the Company is directly affected by the financial condition of its customers, management does not believe significant credit risks exist at December 31, 2024. Generally, we do not require collateral or other securities to support its accounts receivable.

Revenues from one customer of the Company's specialist isotopes and related services segment represents approximately 14% or $592,000 the Company's consolidated revenues. for the year ended December 31, 2024. For the year ended December 31, 2023, there were no customers representing 10% or more of revenues.

***Cash and cash equivalents***

The Company considers all highly liquid investments with original maturities at the date of purchase of three months or less to be cash equivalents. Cash and cash equivalents are stated at fair value and may include money market funds, U.S. Treasury and U.S. government-sponsored agency securities, corporate debt, commercial paper and certificates of deposit. The Company had no cash equivalents as of December 31, 2024 and 2023.

***Fair Value of Financial Instruments***

Accounting guidance defines fair value, establishes a consistent framework for measuring fair value, and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, the accounting guidance establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value as follows:

Level 1: Observable inputs such as quoted prices in active markets;

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and

Level 3: Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

The Company's share liability (Note 12) is measured at Level 1 fair value on a recurring basis. There was no share liability as of December 31, 2024 and 2023. The Company's convertible notes payable (Note 6) is measured as a Level 3 fair value on a recurring basis and was $33,433,184 as of December 31, 2024. There were no transfers among Level 1, Level 2 or Level 3 categories in the year ended December 31, 2024. The following table provides a reconciliation of the Company's liabilities measured as a Level 3 at fair value on a recurring basis using significant unobservable inputs:

| | Convertible Notes Payable |
|---|---|
| Balance as of December 31, 2023 | — |
| Fair value at issuance | 26,558,143 |
| Fair value adjustment | 6,875,041 |
| Balance as of December 31, 2024 | $ 33,433,184 |

The carrying amounts of accounts payable, accrued expenses and notes payable are considered to be representative of their respective fair values because of the short-term nature of those instruments.

***Revenue Recognition***

The Company's product revenue relates to PET Labs, in which the Company acquired 51% ownership on October 31, 2023 (Note 11). The Company recognizes revenue in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 606, Revenue from Contracts with Customers ("ASC 606"). The Company enters into transactions with radiopharmacy companies that are within the scope of ASC 606. The terms of these transactions include payment for delivery of nuclear medical doses for PET scanning in South Africa.

Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine the appropriate amount of revenue to be recognized for arrangements determined to be within the scope of ASC 606, the Company performs the following five steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation. The Company only applies the five-step model to contracts when it is probable that the entity will collect consideration it is entitled to in exchange for the goods or services it transfers to the customer.

The Company's evaluates a transaction's performance obligations to determine if promised goods or services in a contract to transfer a distinct good or service to the customer and are considered distinct when (i) the customer can benefit from the good or service on its own or together with other readily available resources and (ii) the promised good or service is separately identifiable from other promises in the contract. In assessing whether promised goods or services are distinct, the Company considers whether the goods or services are integral or dependent to other goods or services in the contract.

The Company determines the transaction price based on the agreed government rates for the promised goods in the contract. The consideration is recognized as revenue when control is transferred for the related goods.

The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition. The Company receives payments from its customers based on billing schedules established in each contract. Upfront payments and fees are recorded as deferred revenue upon receipt or when due until the Company performs its obligations under these arrangements. Amounts are recorded as accounts receivable when the Company's right to consideration is unconditional.

The Company's collaboration revenue relates to TerraPower LLC ("TerraPower") (Note 10). At contract execution, the Company analyzes its collaborative arrangements and license agreements to assess whether both parties are active participants in the activities and are exposed to significant risks and rewards and therefore are within the scope of ASC 808, Collaborative arrangements ("ASC 808"). ASC 808 does not address the recognition and measurement of payments from collaborative arrangements and instead refers companies to use other authoritative accounting literature. For collaboration arrangements within the scope of ASC 808 that contain multiple elements, the Company first determines which elements of the collaboration reflect a vendor-customer relationship and therefore are within the scope of ASC 606, Revenue from Contracts with Customers. When the Company determines elements of a collaboration agreement do not reflect a vendor-customer relationship, the Company consistently applies a reasonable and rational policy election made by analogizing to authoritative accounting literature. The Company evaluates the income statement classification for presentation of amounts due from or owed to other participants in a collaboration arrangement based on the nature of each separate activity.

***Accounts Receivable***

Accounts receivable are stated at the amount management expects to collect from outstanding balances. An allowance for expected credit losses is estimated for those accounts receivable considered to be uncollectible based upon historical experience and management's evaluation of outstanding accounts receivable.The Company assesses collectibility by reviewing accounts receivable on a collective basis where similar characteristics exist and on an individual basis when the Company identifies specific customers with known disputes or collectibility issues. In determining the amount of the allowance for credit losses, the Company considers historical collectibility based on past due status and makes judgments about the creditworthiness of customers based on ongoing credit evaluations. The Company also considers customer-specific information, current market conditions, and reasonable and supportable forecasts of future economic conditions. Bad debts are written off against the allowance when identified. At December 31, 2024 and 2023 there was no allowance for expected credit losses.

***Inventory***

The Company uses the first in, first out inventory method to account for its inventory. As of December 31, 2024, inventory consists of raw materials and is stated at the lower of cost or net realizable value. There was no inventory as of December 31, 2023.

***Property and Equipment***

Property and equipment include costs of assets constructed, purchased or leased under a finance lease, related delivery and installation costs and interest incurred on significant capital projects during their construction periods. Expenditures for renewals and betterments also are capitalized, but expenditures for normal repairs and maintenance are expensed as incurred. Costs associated with yearly planned major maintenance are generally deferred and amortized over 12 months or until the same major maintenance activities must be repeated, whichever is shorter. The cost and accumulated depreciation applicable to assets retired or sold are removed from the respective accounts, and gains or losses thereon are included in the statement of operations and comprehensive loss.

The Company assigns the useful lives of our property and equipment based upon our internal engineering estimates, which are reviewed periodically. The estimated useful lives of the Company's property and equipment range from 3 to 10 years, or the shorter of the useful life or remaining life of the lease for leasehold improvements. Depreciation is recorded using the straight-line method.

Construction in progress (Note 4) is carried at cost and consists of specifically identifiable direct and indirect development and construction costs. While under construction, costs of the property are included in construction in progress until the property is placed in service, at which time costs are transferred to the appropriate property and equipment account, including, but not limited to, leasehold improvements or other such accounts.

Property and equipment acquired in the acquisition of PET Labs was measured at fair value on October 31, 2023. The fair value forms the new basis of these assets and is depreciated over the remaining estimated useful lives of the related assets.

***Business Combination and Asset Acquisitions***

The Company evaluates acquisitions of assets and other similar transactions to assess whether or not the transaction should be accounted for as a business combination or asset acquisition by first applying a screen to determine if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets. If the screen is met, the transaction is accounted for as an asset acquisition. If the screen is not met, further determination is required as to whether or not the Company has acquired inputs and processes that have the ability to create outputs, which would meet the requirements of a business. If determined to be a business combination, the Company accounts for the transaction under the acquisition method of accounting in accordance with ASC Topic 805 Business Combinations ("ASC 805"), which requires the acquiring entity in a business combination to recognize the fair value of all assets acquired, liabilities assumed, and any non-controlling interest in the acquiree and establishes the acquisition date as the fair value measurement point. Accordingly, the Company recognizes assets acquired and liabilities assumed in business combinations, including contingent assets and liabilities, and non-controlling interest in the acquiree based on the fair value estimates as of the date of acquisition. In accordance with ASC 805, the Company recognizes and measures goodwill as of the acquisition date, as the excess of the fair value of the consideration paid over the fair value of the identified net assets acquired.

The consideration for the Company's business acquisitions may include future payments that are contingent upon the occurrence of a particular event or events. The obligations for such contingent consideration payments are recorded at fair value on the acquisition date. The contingent consideration obligations are then evaluated each reporting period. Changes in the fair value of contingent consideration, other than changes due to payments, are recognized as a gain or loss and recorded within change in the fair value of deferred and contingent consideration liabilities in the consolidated statements of comprehensive loss.

If determined to be an asset acquisition, the Company accounts for the transaction under ASC 805-50, which requires the acquiring entity in an asset acquisition to recognize assets acquired and liabilities assumed based on the cost to the acquiring entity on a relative fair value basis, which includes transaction costs in addition to consideration given. No gain or loss is recognized as of the date of acquisition unless the fair value of non-cash assets given as consideration differs from the assets' carrying amounts on the acquiring entity's books. Consideration transferred that is non-cash will be measured based on either the cost (which shall be measured based on the fair value of the consideration given) or the fair value of the assets acquired and liabilities assumed, whichever is more reliably measurable. Goodwill is not recognized in an asset acquisition and any excess consideration transferred over the fair value of the net assets acquired is allocated to the identifiable assets based on relative fair values.

Contingent consideration payments in asset acquisitions are recognized when the contingency is resolved and the consideration is paid or becomes payable (unless the contingent consideration meets the definition of a derivative, in which case the amount becomes part of the basis in the asset acquired). Upon recognition of the contingent consideration payment, the amount is included in the cost of the acquired asset or group of assets.

***Goodwill***

Goodwill represents the amount of consideration paid in excess of the fair value of net assets acquired as a result of the Company's business acquisitions accounted for using the acquisition method of accounting. Goodwill is not amortized and is subject to impairment testing at a reporting unit level on an annual basis or when a triggering event occurs that may indicate the carrying value of the goodwill is impaired. An entity is permitted to first assess qualitative factors to determine if a quantitative impairment test is necessary. Further testing is only required if the entity determines, based on the qualitative assessment, that it is more likely than not that the fair value of the reporting unit is less than its carrying amount. The Company performs its annual test for goodwill as of October 31. The result of the analysis performed as of October 31, 2024 did not indicate an impairment of goodwill.

***Variable Interest Entities***

The Company accounts for the investments it makes in certain legal entities in which equity investors do not have (1) sufficient equity at risk for the legal entity to finance its activities without additional subordinated financial support, or (2) as a group, the holders of the equity investment at risk do not have either the power, through voting or similar rights, to direct the activities of the legal entity that most significantly impact the entity's economic performance, or (3) the obligation to absorb the expected losses of the legal entity or the right to receive expected residual returns of the legal entity. These certain legal entities are referred to as "variable interest entities" or "VIEs."

The Company would consolidate the results of any such entity in which it determined that it had a controlling financial interest. The Company would have a "controlling financial interest" in such an entity if the Company had both the power to direct the activities that most significantly affect the VIE's economic performance and the obligation to absorb the losses of, or right to receive benefits from, the VIE that could be potentially significant to the VIE. On a quarterly basis, the Company will reassess whether it has a controlling financial interest in any investments it has in these certain legal entities.

***Convertible Notes Payable***

Convertible notes payable are accounted for in accordance with ASC Topic 825, Financial Instruments ("ASC 825"). Upon issuance the Company has elected the fair value option to account for the convertible notes payable. Changes in fair value during the reporting period are recognized in other income (expense) in the consolidated statement of operations and comprehensive loss.

***Leases***

The Company accounts for leases in accordance with ASC Topic 842, Leases ("ASC 842"). At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on specific facts and circumstances, the existence of an identified asset(s), if any, and the Company's control over the use of the identified asset(s), if applicable. Operating lease liabilities and their corresponding right-of-use ("ROU") assets are recorded based on the present value of future lease payments over the expected lease term. The interest rate implicit in lease contracts is typically not readily determinable. As such, the Company will utilize the incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment, and considering the region in which the ROU asset and liabilities are located.

The Company has elected to combine lease and non-lease components as a single component. Operating leases are recognized on the balance sheet as ROU lease assets, lease liabilities current and lease liabilities non-current. Fixed rents are included in the calculation of the lease balances, while variable costs paid for certain operating and pass-through costs are excluded. Lease expense is recognized over the expected term on a straight-line basis.

Finance leases are recognized on the balance sheet as property and equipment, finance lease liabilities current and finance lease liabilities non-current. Finance lease ROU assets and the related lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. The finance lease ROU assets are amortized on a straight-line basis over the lease term with the related interest expense of the lease liability payment recognized over the lease term using the effective interest method.

***Impairment of Long-lived Assets***

Long-lived assets consist primarily of property and equipment. The Company reviews long-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset is not recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the future undiscounted net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured as the amount by which the carrying amount of the asset exceeds the fair value of the assets. Fair value would be assessed using a discounted cash flows or other appropriate measures of fair value. The Company did not recognize any impairment losses for the years ended December 31, 2024 and 2023.

***Research and Development Costs***

Research and development costs consist primarily of fees paid to consultants, license fees and facilities costs. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made. All research and development costs are expensed as incurred.

***Selling, General and Administrative Costs***

Selling, general and administrative expenses consist primarily of salaries and related benefits, including stock-based compensation, related to our executive, finance, business development, legal, human resources and support functions. Other general and administrative expenses include professional fees for auditing, tax, consulting and patent-related services, rent and utilities and insurance.

***Stock-based Compensation***

The Company accounts for stock-based compensation in accordance with ASC 718, Compensation-Stock Compensation ("ASC 718"). Stock-based compensation expense represents the cost of the grant date fair value of employee stock awards recognized over the requisite service period of the awards (usually the vesting period) on a straight-line basis. The Company estimates the fair value of each stock-based award on the date of grant using the Black-Scholes option pricing model. The Black-Scholes option pricing model incorporates various assumptions, such as the value of the underlying common stock, the risk-free interest rate, expected volatility, expected dividend yield, and expected life of the options. Forfeitures are recognized as a reduction of stock-based compensation expense as they occur.

The Company also awards restricted stock to employees and directors. Restricted stock is generally subject to forfeiture if employment terminates prior to the completion of the vesting restrictions. The Company expenses the cost of the restricted stock,

which is determined to be the fair market value of the shares of common stock underlying the restricted stock at the date of grant, ratably over the period during which the vesting restrictions lapse.

Stock-based compensation expense is classified in the statement of operations and comprehensive loss in the same manner in which the award recipients' payroll costs are classified or in which the award recipients' service payments are classified.

Prior to the Company's IPO, there was no public market of the Company's common stock. The fair value of the shares of common stock underlying the Company's share-based awards was estimated on each grant date by the Company's board of directors based on then current facts and circumstances. To determine the fair value of the Company's common stock underlying option grants, the board of directors considered, among other things, input from management and recent third-party financings consummated by the Company.

***Income Taxes***

Deferred income tax assets and liabilities arise from temporary differences associated with differences between the financial statements and tax basis of assets and liabilities, as measured by the enacted tax rates, which are expected to be in effect when these differences reverse. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

Prior to the acquisition of 51% of PET Labs in October 2023, the Company had generated net losses since inception and accordingly had not recorded a provision for income taxes. Subsequent to the acquisition of 51% of PET Labs, the Company records the provision for income taxes for the activity from PET Labs operations.

The Company follows the provisions of ASC 740-10, Uncertainty in Income Taxes, (″ASC 740-10"). The Company has not recognized a liability for any uncertain tax positions. A reconciliation of the beginning and ending amount of unrecognized tax benefits has not been provided since there is no unrecognized benefit since the date of adoption. The Company has not recognized interest expense or penalties as a result of the implementation of ASC 740-10. If there were an unrecognized tax benefit, the Company would recognize interest accrued related to unrecognized tax benefits and penalties in income tax expense.

The Company has identified the United States, South Africa and Guernsey as its major tax jurisdictions. Refer to Note 15 for further details.

***Comprehensive Loss***

Comprehensive loss is defined as a change in equity during a period from transactions and other events and circumstances from non-owner sources. The Company's comprehensive loss is comprised of net loss and the effect of currency translation adjustments.

***Recently Adopted Accounting Pronouncements***

In November 2023, the Financial Accounting Standards Board (“FASB") issued Accounting Standards Update (“ASU") 2023-07, Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures ("ASU 2023-07"). ASU 2023-07 will improve reportable segment disclosure requirements, primarily through enhanced disclosures about significant segment expenses on an interim and annual basis. The ASU is effective for fiscal years beginning after December 15, 2023, and interim periods after December 15, 2024, with early adoption permitted. See Note 3 (Revenue and Segment Information) for additional disclosure.

***Recently Issued Accounting Pronouncements***

The Company has reviewed recently issued accounting pronouncements and plans to adopt those that are applicable to it. The Company does not expect the adoption of any recently issued pronouncements to have a material impact on its results of operations or financial position.

In December 2023, the FASB issued ASU 2023-09, "Income Taxes (Topic 740): Improvements to Income Tax Disclosures" ("ASU 2023-09"), which enhances the transparency and decision usefulness of income tax disclosures. Adjustments to the annual disclosure of income taxes include: (1) A tabular rate reconciliation comprised of eight specific categories, (2) Incomes taxes paid, disaggregated between significant national, state, and foreign jurisdictions, (3) Eliminates requirements to disclose the nature and estimate of reasonably possible changes to unrecognized tax benefits in the next 12 months or that an estimated range cannot be made, and (4) Adds a requirement to disclose income (or loss) from continuing operations before income tax expense (or benefit) and income tax expense (or benefit) from continuing operations disaggregated between domestic and foreign. The ASU is effective for public business entities for fiscal years beginning on or after December 15, 2024 with early adoption permitted. The amendments in ASU 2023-09 should be applied on a prospective basis and retrospective application is permitted. The Company is in the process of evaluating the impact of adoption of ASU 2023-09 on the Company's consolidated financial statements.

In November 2024, the FASB issued ASU 2024-03, Disaggregation of Income Statement Expenses (“ASU 2024-03”) and is effective for annual reporting periods beginning after December 15, 2026 and interim reporting periods beginning after December

15, 2027. ASU 2024-03 requires disclosures about specific types of expenses included in the expense captions presented on the face of the income statement as well as disclosures about selling expenses. The Company is in the process of evaluating the impact of adopting ASU 2024-03 on the Company's consolidated financial statements.

**3. Revenue and Segment Information**

In connection with our acquisition of 51% ownership of PET Labs in October 2023, the Company manufactures and sells nuclear medical doses for PET scanning in South Africa. The Company recognized product revenue of $3,944,226 and $433,026, for the years ended December 31, 2024 and 2023, respectively.

The following tables present changes in the Company's accounts receivable for the years ended December 31, 2024 and 2023:

| | Balance as of December 31, 2023 | Additions | Deductions | Balance as of December 31, 2024 |
|---|---|---|---|---|
| Accounts receivable | $ 216,504 | $ 4,144,226 | $ (3,653,805) | $ 706,925 |

| | Balance as of October 31, 2023 | Additions | Deductions | Balance as of December 31, 2023 |
|---|---|---|---|---|
| Accounts receivable | $ 460,165 | $ 433,026 | $ (676,687) | $ 216,504 |

***Segment Information***

As of December 31, 2023, the Company managed its operations as a single segment, specialist isotopes and related services. Beginning in 2024, primarily as a result of increased business activities of its subsidiary, Quantum Leap Energy LLC, the Company has two operating segments: (i) nuclear fuels, and (ii) specialist isotopes and related services.

The nuclear fuels segment is focused on research and development of technologies and methods used to produce high-assay low-enriched uranium (HALEU) and Lithium-6 for the advanced nuclear fuels target end market.

The specialist isotopes and related services segment is focused on research and development of technologies and methods used to separate high-value, low-volume isotopes (such as C-14, Mo-100 and Si-28) for highly specialized target end markets other than advanced nuclear fuels, including pharmaceuticals and agrochemicals, nuclear medical imaging and semiconductors, as well as services related to these isotopes, and this segment includes PET Labs.

The Company's chief operating decision maker ("CODM") is its chief executive officer. The segment revenue and segment net loss is regularly reviewed by the CODM in deciding how to allocate resources. The Company manages assets on a total company basis, not by operating segment, as the assets are shared or commingled. Therefore, the CODM does not regularly review any asset information by operating segment and, accordingly, asset information is not reported on a segment basis.

Select information from the consolidated statements of operations and comprehensive loss as of the years ended December 31, 2024 and 2023 is as follows:

| Segment | Revenues Year Ended December 31, 2024 | 2023 | Net Loss Before Allocation to Noncontrolling Interest Year Ended December 31, 2024 | 2023 |
|---|---|---|---|---|
| Specialist isotopes and related services | $ 3,944,226 | $ 433,026 | $ (21,367,787) | $ (16,145,339) |
| Nuclear fuels | 200,000 | — | (10,881,084) | — |
| Corporate | — | — | (173,857) | (148,787) |
| | $ 4,144,226 | $ 433,026 | $ (32,422,728) | $ (16,294,126) |

A reconciliation of total segment revenue to total consolidated revenue and of total segment gross profit and segment operating income to total consolidated income before income taxes, for the years ended December 31, 2024 and 2023, is as follows:

| | Year Ended December 31, 2024 | | | |
|---|---|---|---|---|
| | Specialist isotopes and related services | Nuclear fuels | Corporate | Total |
| Sales from external customers | $ 3,944,226 | $ — | $ — | $ 3,944,226 |
| Collaboration revenue | — | 200,000 | — | 200,000 |
| Less: cost of sales | (2,544,614) | — | — | (2,544,614) |
| Segment gross profit | 1,399,612 | 200,000 | — | 1,599,612 |
| Personnel expenses | 12,392,833 | 1,197,515 | — | 13,590,348 |
| Professional fees | 6,108,271 | 1,631,772 | — | 7,740,043 |
| Other segment expenses | 4,794,818 | 1,828,057 | — | 6,622,875 |
| Segment operating loss | (21,896,310) | (4,457,344) | — | (26,353,654) |
| Foreign exchange transaction gain | — | — | 69,865 | 69,865 |
| Change in fair value of share liability | — | — | (132,273) | (132,273) |
| Change in fair value of convertible notes payable | — | (6,875,041) | — | (6,875,041) |
| Interest income (expense), net | 528,523 | 451,301 | — | 979,824 |
| Loss before income tax expense | $ (21,367,787) | $ (10,881,084) | $ (62,408) | $ (32,311,279) |

| | Year Ended December 31, 2023 | | | |
|---|---|---|---|---|
| | Specialist isotopes and related services | Nuclear fuels | Corporate | Total |
| Sales from external customers | $ 433,026 | $ — | $ — | $ 433,026 |
| Less: cost of sales | (294,056) | — | — | (294,056) |
| Segment gross profit | 138,970 | — | — | 138,970 |
| Personnel expenses | 11,134,296 | — | — | 11,134,296 |
| Professional fees | 2,994,611 | — | — | 2,994,611 |
| Other segment expenses | 2,052,062 | — | — | 2,052,062 |
| Segment operating loss | (16,041,999) | — | — | (16,041,999) |
| Foreign exchange transaction gain | — | — | 45,753 | 45,753 |
| Change in fair value of share liability | — | — | (194,540) | (194,540) |
| Interest income (expense), net | (109,473) | — | — | (109,473) |
| Loss before income tax expense | $ (16,151,472) | $ — | $ (148,787) | $ (16,300,259) |

**4. Property and Equipment**

Property and equipment as of December 31, 2024 and 2023 consisted of the following:

| | Useful Lives (Years) | December 31, 2024 | December 31, 2023 |
|---|---|---|---|
| Construction in progress | — | $ 13,969,784 | $ 9,108,923 |
| Tools, machinery and equipment | 3 - 10 | 5,898,618 | 1,458,654 |
| Plant | 10 | 2,269,204 | — |
| Computer equipment | 3 - 4 | 145,225 | 60,447 |
| Vehicles | 5 | 292,498 | 39,849 |
| Software | 5 | 1,590 | 1,639 |
| Office furniture | 7 - 10 | 147,079 | 59,588 |
| Leasehold improvements | 5 | 115,890 | 21,446 |
| Property and equipment, at cost | | 22,839,888 | 10,750,546 |
| Less accumulated depreciation | | (485,511 ) | (37,707 ) |
| Property and equipment, net | | $ 22,354,377 | $ 10,712,839 |

The Carbon-14 plant was completed in June 2024 and depreciation began in July 2024. The Company is currently building two other plants in Pretoria, South Africa: a multi-isotope plant and a laser isotope separation plant using quantum enrichment technology. Costs incurred for the other two plants are considered construction in progress because the work is not complete as of December 31, 2024. Costs incurred for the plants as of December 31, 2024 and 2023 are considered construction in progress. There was no depreciation expense as it relates to the construction in progress for the years ended December 31, 2024 and 2023. Depreciation expense for all other asset categories was $471,421 and $37,433 for the years ended December 31, 2024 and 2023, respectively.

**5. Accrued Expenses**

Accrued expenses as of December 31, 2024 and 2023 consisted of the following:

| | December 31, 2024 | December 31, 2023 |
|---|---|---|
| Accrued professional | $ 671,314 | $ 447,295 |
| Accrued salaries and other employee costs | 1,584,273 | 845,344 |
| Accrued other | 20,094 | 18,606 |
| Total accrued expenses | $ 2,275,681 | $ 1,311,245 |

**6. Notes Payable**

Debt consisted of the following as of December 31, 2024 and 2023:

| | December 31, 2024 | December 31, 2023 |
|---|---|---|
| Promissory note | $ 409,696 | $ 470,396 |
| Motor vehicle and equipment loans | 1,970,700 | — |
| Total notes payable | 2,380,396 | 470,396 |
| less current portion of notes payable | (939,110 ) | (470,396 ) |
| Long term portion of notes payable | $ 1,441,286 | $ — |

*Promissory Note Payable*

During 2021, the Company executed a promissory note payable with an aggregate principal balance of $33,500 (25,000 GBP). The note was due after a period of two months, followed by mutually agreed upon monthly extensions, and does not bear interest. As of December 31, 2024 and 2023, the promissory note payable balance was $31,380 and $31,827, respectively, and continues to be automatically extended on a monthly basis.

In conjunction with the acquisition of 51% of PET Labs, ASP assumed a liability to a bank. Prior to December 31, 2023, the bank loan balance of $609,500 was paid off entirely.

In November 2024, the Company executed a promissory note payable with a finance company to fund its directors and officers' insurance policy for $500,923. This note bears interest at an annual rate of 8.45% with seven monthly payments beginning in December 31, 2024. In November 2023, the Company executed a promissory note payable with a finance company to fund its directors and officers' insurance policy for $526,282. This note bore interest at an annual rate of 8.74% with six monthly payments beginning in December 2023. The note was repaid in full in May 2024. For the years ended December 31, 2024 and 2023, the Company recorded interest expense of $17,872 and $2,249, respectively. As of December 31, 2024 and 2023, the promissory note payable balance was $378,316 and $438,569, respectively.

*Motor Vehicle and Equipment Loans*

During 2024, the Company entered into several loans to purchase motor vehicles and certain equipment totaling $2,020,511. These loans are secured by the underlying assets included in property and equipment. The loans have variable interest rates ranging from 10.40% to 12.25% and mature from September 2028 to December 2029. Minimum monthly payments total $40,120. Interest expense under the outstanding loans was $70,975 for the year ended December 31, 2024. As of December 31, 2024, motor vehicle and equipment loans totaled $1,970,700.

*Convertible Notes Payable*

In March 2024, the Company issued convertible notes payable ("March 2024 Convertible Notes") totaling $21,063,748 and received aggregate cash of $20,550,000. One of the notes totaling $513,748 was issued to the placement agent in lieu of cash issuance costs. Issuance costs paid in cash totaling $521,423 and the value of the note issued upon issuance to the placement agent were expensed in selling, general and administrative costs in the consolidated statement of operations and comprehensive loss for the year ended December 31, 2024.

In June 2024, the Company issued additional convertible notes payable ("June 2024 Convertible Notes") totaling $5,494,395 and received aggregate cash of $5,386,228. One of the notes totaling $108,167 was issued to the placement agent in lieu of cash issuance costs and was expensed in selling, general and administrative costs in the condensed consolidated statement of operations and comprehensive loss for the year ended December 31, 2024. Issuance costs paid in cash were negligible. The March 2024 Convertible Notes and the June 2024 Convertible Notes are collectively the "Convertible Notes".

The Convertible Notes are payable on demand in March 2029 and bear an annual interest rate of 6% through March 7, 2025 and 8% thereafter. Upon a qualified financing event the Convertible Notes convert into the shares issued in that qualified financing event at a price per share equal to 80% of the share price issued subject to a valuation cap. Upon a qualified transaction, the noteholders may elect to receive either 1.5x the principal and accrued interest balance in cash or convert into common shares.

The Convertible Notes are recorded on the consolidated balance sheet at their fair values. The fair value of the March Convertible Notes on the date of issuance was $21,063,748. The fair value of the June Convertible Notes on the date of issuance was $5,494,395. The fair value of the Convertible Notes as of December 31, 2024 has been determined to be $33,433,184 and the resultant change in fair value of $6,875,041 has been recorded in other income and expense in the consolidated statement of operations and comprehensive loss for the year ended December 31, 2024. As of December 31, 2024, the total principal and accrued interest of the Convertible Notes is $27,782,210 of which $1,224,067 is from the interest.

## 7. Deferred Revenues

In June 2023, the Company entered into a Supply Agreement with a customer for the delivery of molybdenum-100 and molybdenum-98 beginning in 2024. In conjunction with the Supply Agreement, the Company received $882,000 in September 2023, as an advance towards future revenue. The Company has recorded $882,000 as deferred revenue on the balance sheet as of December 31, 2024 and 2023. No amount of deferred revenue was recorded as of January 1, 2023.

## 8. Commitments and Contingencies

***Purchase of Cyclotron***

In November 2023, the cyclotron that the Company ordered was shipped. As of December 31, 2023, the equipment had not been delivered; however, the Company was obligated to purchase this equipment and recorded the full cost of $1,653,000 in other noncurrent assets and other noncurrent liabilities on the consolidated balance sheet as of December 31, 2023.

In March 2024, the cyclotron was received by the Company and is recorded as property and equipment. The financing company has paid the vendor. During 2024, the Company financed the cost of this equipment and is recorded in notes payable as of December 31, 2024.

***Klydon Proprietary Limited***

In November 2021, the Company entered into an agreement with Klydon Proprietary Limited ("Klydon") to design and build a plant to enrich Molybdenum in South Africa (the "Turnkey Contract"). The initial phase of the project included the building of a plant that can support the production of at least 5kgs of Mo-100. The contracted cost for this phase was $6,800,000. The second phase of the project included the production to be increased to 20kgs of Mo-100 with an additional cost of $6,000,000.

Klydon performed a portion of the services required under the Turnkey Contract; however, some services were incomplete and many of the services were not completed within the time frame required. As a result, Klydon and ASP South Africa entered into an Acknowledgement of Debt Agreement dated November 30, 2022, whereby Klydon (i) agreed to pledge its assets (the "Pledged Assets") to ASP South Africa to secure its performance of the Turnkey Contract by December 31, 2022, and (ii) acknowledged that ASP South Africa would suffer damages in the amount of $6,050,000 ("Damage Amount") should it fail to perform. Under the Acknowledgement of Debt Agreement, the Pledged Assets would serve as collateral for Klydon's obligation to pay the Damage Amount should Klydon fail to perform. In connection therewith, also on November 30, 2022, ASP South Africa and Klydon entered into a Deed of Security Agreement whereby, if Klydon failed to complete its obligations under the Turnkey Contract by December 31, 2022, all of Klydon's rights of any nature to and interests of any nature in the Pledged Assets would be transferred to ASP South Africa. Klydon failed to complete its obligations under the Turnkey Contract by December 31, 2022, however, the Company did not perfect its interests in the assets until April 4, 2023. The Company did not believe that the amounts owed by Klydon were realizable, nor did the Company know the timing of any recovery payments. Therefore, a loss recovery receivable was not recorded at any time prior to April 4, 2023.

On April 4, 2023, the Company perfected its interest under the Acknowledgement of Debt Agreement, pursuant to which the Company acquired certain intellectual property from Klydon ("Klydon Settlement"). In addition, the Company acquired Klydon's interest in four entities which are inactive and in the process of being dissolved. The Company has concluded that the Klydon Settlement is accounted for as an asset acquisition under ASC 805 since the assets acquired were concentrated in a single identifiable asset from a related party. In conjunction with the Klydon Settlement, the Company recorded an increase to additional paid-in capital for the settlement of all liabilities owed to Klydon at the time of settlement totaling $626,223.

Two individuals who were officers and board members of Klydon, one who is now an officer of ASP Isotopes Inc. and the other who was a scientific advisor of ASP Isotopes Inc., received warrants to purchase common stock of the Company and therefore are considered related parties. See Notes 10 and 12. The individual who was a scientific advisor of ASP Isotopes Inc, has resigned from that role, given his age and deteriorating health.

***Share Purchase Agreement relating to PET Labs***

On October 31, 2023, the Company entered into a Share Purchase Agreement with Nucleonics Imaging Proprietary Limited, a company incorporated in the Republic of South Africa (the "Seller"), relating to the purchase and sale of ordinary shares in the issued share capital of PET Labs. PET Labs is a South African radiopharmaceutical operations company, dedicated to nuclear medicine and the science of radiopharmaceutical production.

Under the Purchase Agreement, the Company has agreed to purchase from the Seller 51 ordinary shares in the issued share capital of PET Labs (the "Initial Sale Shares") (representing 51% of the issued share capital of PET Labs) and has an option to purchase from the Seller the remaining 49 ordinary shares in the issued share capital of PET Labs (the "Option Shares") (representing the remaining 49% of the issued share capital of PET Labs). The Company agreed to pay to the Seller an aggregate of $2,000,000 for the Initial Sale Shares, of which aggregate amount of $500,000 was payable on the completion of the sale of the Initial Sale Shares and $1,500,000 is payable on demand after one calendar year from the agreement date. In January 2024, the Company agreed to pay $264,750 to the Seller. The balance due for the Initial Sale Shares as of December 31, 2024 is $1,235,250 and is recorded in other current liabilities on the consolidated balance sheet. If the Company exercises its option to purchase the Option Shares (which option is exercisable from the agreement date until January 31, 2027, provided that the Initial Sale Shares have been paid for in full), the Company has agreed to pay $2,200,000 for the Option Shares.

***PET Labs Global***

In August 2024, PET Labs Global entered into a three-year service agreement with Cayman Enterprise City and is licensed to operate from within the Cayman Islands' Special Economic Zone ("SEZ"). The service fee includes among other things the right to use certain office space and associated facilities within the SEZ. The Company has applied the guidance in ASC 842 and determined that this agreement is not a leasing arrangement. Management has determined that based on the nature of the combined services the expense should be recognized as incurred. The Company recorded fees under this agreement totaling $26,459 for the year ended December 31, 2024.

***Contingencies***

From time to time, the Company may have certain contingent liabilities that arise in the ordinary course of its business activities. The Company accrues liabilities for such matters when future expenditures are probable and such expenditures can be reasonably estimated.

On December 4, 2024, a purported stockholder of the Company filed a putative securities class action on behalf of purchasers of the Company's securities between October 30, 2024 through November 26, 2024 against ASP Isotopes Inc. and certain of its executive officers in the United States District Court for the Southern District of New York (*Corredor v. ASP Isotopes Inc., et al.*, Case No. 1:24-cv-09253 (S.D.N.Y)) (the "Securities Class Action"). The Securities Class Action alleges that the Company, its chief executive officer and chief financial officer ("Defendants") made materially misleading or false statements or omissions regarding the Company's business and asserts purported claims under §§ 10(b) and 20(a) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 promulgated thereunder. The complaint seeks unspecified compensatory damages, attorney's fees and costs. Defendants intend to vigorously defend against the Securities Class Action; however, we cannot be certain of the outcome and, if decided adversely to us, our business and financial condition may be adversely affected.

In addition to the matters described above, from time to time, we may become subject to arbitration, litigation or claims arising in the ordinary course of business. The results of any current or future claims or proceedings cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on us because of defense and litigation costs, diversion of management resources, reputational harm and other factors.

**9. Leases**

The Company accounts for facility leases in accordance with ASC 842 (Note 2). The Company is party to five facility leases in South Africa for office, manufacturing and laboratory space.

A lease for office and laboratory space in Pretoria, South Africa commenced in October 2021 with the initial term set to expire in December 2030. The Company has applied the guidance in ASC 842 and has determined that it should be classified as an operating lease. The Company's incremental borrowing rate for this lease is 7.5% based on the remaining lease term of the applicable lease. Consequently, a ROU lease asset of $952,521 with a corresponding lease liability of $952,521 based on the present value of the minimum rental payments of such lease was recorded at the inception of the lease.

A lease for additional production space in Pretoria, South Africa commenced in April 2023 with the initial term set to expire in March 2024. Effective February 1, 2024, this lease was amended such that the new term begins on February 1, 2024 and expires in February 2026. Prior to the amendment, the Company had applied the guidance in ASC 842 and determined that this lease was a short term lease and expensed the monthly payments as incurred. The Company has applied the guidance in ASC 842 to the amended lease and has determined that it should be classified as an operating lease. The Company's incremental borrowing rate for this lease is 10.6% based on the lease term of the applicable lease. A ROU lease asset of $364,458 with a corresponding lease liability of $364,458 based on the present value of the minimum rental payments of such lease was recorded at the commencement of the amended lease.

A lease for laboratory space in Pretoria, South Africa commenced in November 2023 with the initial term set to expire in October 2026. The Company has applied the guidance in ASC 842 and has determined that it should be classified as an operating lease. The Company's incremental borrowing rate for this lease is 13.16% based on the remaining lease term of the applicable lease. Consequently, a ROU lease asset of $70,607 with a corresponding lease liability of $70,607 based on the present value of the minimum rental payments of such lease was recorded at the inception of the lease.

A lease for office and production space in Pretoria, South Africa commenced prior to October 31, 2023 with the initial term set to expire in March 2026. The Company has applied the guidance in ASC 842 and has determined that it should be classified as an operating lease effective on the date of ASP Isotopes acquisition of 51% of PET Labs. The Company's incremental borrowing rate is approximately 12.875% based on the expected remaining lease term of the applicable lease. Consequently, a ROU lease asset of $592,304 which reflects an $84,858 unfavorable adjustment based on the fair value of the lease terms and a corresponding lease liability of $677,163 based on the present value of the minimum rental payments of such lease was recorded at the date of ASP Isotopes acquisition of 51% of PET Labs. Dr. Gerdus Kemp, an officer of PET Labs and an employee of ASP UK, is the sole owner of the facility under this lease agreement.

A summary of long-term leases in the consolidated balance sheet as of December 31, 2024 is as follows:

| | ROU Asset | Operating Lease Liability - Current | Operating Lease Liability – Non-Current | Total Operating Lease Liability |
|---|---|---|---|---|
| **Lease:** | | | | |
| Office and laboratory, Pretoria, South Africa | $ 538,942 | $ 63,703 | $ 554,332 | $ 618,035 |
| Additional production, Pretoria, South Africa | 211,829 | 179,948 | 31,881 | 211,829 |
| Laboratory, Pretoria, South Africa | 45,433 | 23,653 | 23,674 | 47,327 |
| Office and production, Pretoria, South Africa | 325,930 | 290,372 | 78,592 | 368,964 |
| Total | $ 1,122,134 | $ 557,676 | $ 688,479 | $ 1,246,155 |

A summary of long-term leases in the consolidated balance sheet as of December 31, 2023 is as follows:

| | ROU Asset | Operating Lease Liability - Current | Operating Lease Liability – Non-Current | Total Operating Lease Liability |
|---|---|---|---|---|
| **Lease:** | | | | |
| Office and laboratory, Pretoria, South Africa | $ 626,548 | $ 53,504 | $ 637,348 | $ 690,852 |
| Laboratory, Pretoria, South Africa | 68,089 | 19,608 | 48,805 | 68,413 |
| Office and production, Pretoria, South Africa | 564,064 | 263,452 | 380,494 | 643,946 |
| Total | $ 1,258,701 | $ 336,564 | $ 1,066,647 | $ 1,403,211 |

A lease for additional production space in Pretoria, South Africa commenced prior to October 31, 2023 with the initial term expiring in March 2024 and the Company is maintaining the lease under the agreed upon monthly extensions. The Company has applied the guidance in ASC 842 and has determined that this lease is a short term lease effective on the date of ASP Isotopes acquisition of 51% of PET Labs and expensed the monthly payments for the years ended December 31, 2024 and 2023.

Quantitative information regarding the Company's operating lease liabilities is as follows:

| | Year Ended December 31, 2024 | 2023 |
|---|---|---|
| **Operating Lease Cost** | | |
| Operating lease cost | $ 663,662 | $ 178,610 |
| **Other Information** | | |
| Operating cash flows paid for amounts included in the measurement of lease liabilities | $ 644,793 | $ 153,988 |
| Operating lease liabilities arising from obtaining right-of-use assets | $ 364,458 | $ 70,607 |
| Weighted average remaining lease term (years) | 3.61 | 4.62 |
| Weighted average discount rate | 9.83% | 10.24% |

Future lease payments under noncancelable operating lease liabilities are as follows as of December 31, 2024:

| | Operating Leases |
|---|---|
| **Future Lease Payments** | |
| 2025 | $ 651,437 |
| 2026 | 253,779 |
| 2027 | 124,770 |
| 2028 | 134,128 |
| 2029 | 144,188 |
| Thereafter | 155,002 |
| Total lease payments | $ 1,463,304 |
| Less: imputed interest | (217,149) |
| Total operating lease liabilities | $ 1,246,155 |
| Less current portion | (557,676) |
| Operating lease liability - noncurrent | $ 688,479 |

The Company records the expense from short term leases as incurred. The Company recorded lease expense from its short term leases of $31,746 and $121,312 for the year ended December 31, 2024 and 2023, respectively.

The Company accounts for finance leases in accordance with ASC 842 (Note 2). Subsequent to the acquisition of 51% of PET Labs on October 31, 2023, the Company is party to several ongoing finance leases in South Africa for certain fixed assets. In addition, In May and October 2024, the Company entered into new finance leases for additional equipment.

Quantitative information regarding the Company's finance lease liabilities is as follows:

| | Year Ended December 31, 2024 | 2023 |
|---|---|---|
| **Finance Lease Cost** | | |
| Interest on lease liabilities | $ 68,609 | $ 5,059 |
| **Other Information** | | |
| Operating cash flows paid for amounts included in the measurement of finance lease liabilities | $ 100,611 | $ 9,601 |
| Amortization of right-of-use assets | $ 43,039 | $ 6,445 |
| Weighted average remaining lease term (years) | 4.4 | 3.9 |
| Weighted average discount rate | 13.1 % | 11.3 % |

Future lease payments under noncancelable finance lease liabilities are as follows as of December 31, 2024:

| | Finance Leases |
|---|---|
| **Future Lease Payments** | |
| 2025 | $ 208,222 |
| 2026 | 211,913 |
| 2027 | 207,117 |
| 2028 | 170,443 |
| 2029 | 66,218 |
| Thereafter | 64,914 |
| Total lease payments | $ 928,827 |
| Less: imputed interest | (242,637) |
| Total lease liabilities | $ 686,190 |
| Less current portion | (125,862) |
| Finance lease liability - noncurrent | $ 560,328 |

**10. License and Collaboration Agreements**

***Klydon Proprietary Ltd ("Klydon")***

In September 2021, ASP South Africa licensed certain intellectual property from Klydon for the development, production distribution, marketing and sale of Mo-100. The license had a term of 999 years, unless terminated earlier by either party under certain provisions. Two individuals who are officers and board members of Klydon received warrants to purchase common stock of the Company (See Note 12). Effective July 26, 2022, the parties agreed to terminate the Mo-100 license, which was superseded and replaced by a new license agreement (described below).

In January 2022, ASP South Africa licensed certain intellectual property from Klydon for the development, production distribution, marketing and sale of uranium isotope U-235 ("U-235"). The license had a term of 999 years, unless terminated earlier by either party under certain provisions. The Company paid an upfront fee of $100,000, which was expensed to research and development expense. The Company was required to pay a nominal royalty per Kg of product sold plus 10% royalties on product net profits over the term of the contract. One of the officers, who is also a board member of Klydon, became a board member and consultant of ASP Isotopes Inc. and an employee of ASP Guernsey in January 2022. Effective July 26, 2022, the parties agreed to terminate the U-235 license, which was superseded and replaced by a new license agreement (described below).

In July 2022, ASP UK 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"). The Klydon license agreement superseded and replaced the Mo-100 license and U-235 license described in Note 8 above. The Klydon license agreement is royalty-free, has a term of 999 years and is worldwide for the development of the ASP technology and the distribution, marketing and sale of isotopes. Future production of

isotopes is limited to member countries of the Nuclear Suppliers Group. In connection with the Klydon license agreement the Company agreed to make an upfront payment of $100,000 (to be included within the payments the Company makes under the Turnkey Contract) and deferred payments of $300,000 over 24 months, which was expensed to research and development expense.

In July 2022, ASP South Africa acquired assets comprising a dormant Silicon-28 aerodynamic separation processing plant from Klydon for ZAR 6,000,000 (which at the then current exchange rate was approximately $354,000), which was recorded to property and equipment, would have been payable to Klydon on the later of 180 days of the acquisition and the date on which the assets generate any revenues of any nature.

On April 4, 2023, the Company perfected its interest under the Acknowledgement of Debt Agreement (see Note 8), pursuant to which the Company acquired certain intellectual property from Klydon ("Klydon Settlement"). The Company concluded that the Klydon Acquisition is accounted for under ASC 805, Business Combinations as an asset acquisition since the assets acquired were concentrated in a single identifiable asset from a related party. In conjunction with the Klydon Settlement, the Company recorded an increase to additional paid-in capital for the settlement of all liabilities owed to Klydon at the time of settlement totaling $626,223.

***TerraPower, LLC***

On April 4, 2024, the Company entered into an agreement with TerraPower to develop a conceptual design, refined cost/schedule/financing, risk register, and term sheet for a High Assay Low Enriched Uranium ("HALEU") facility (the "TerraPower Agreement"). The TerraPower Agreement may be terminated for (a) breach or default, (b) the Company's convenience or (c) TerraPower's convenience. TerraPower is obligated to make all payments for milestones completed by the Company and these payments are nonrefundable.

On October 18, 2024, the Company and TerraPower signed a term sheet (the "TerraPower Term Sheet") that provides for the execution of two definitive agreements: (1) an agreement pursuant to which TerraPower will provide funding for the Company's construction of a uranium enrichment facility capable of producing HALEU using the Company's proprietary aerodynamic separation process technology to be located in the Republic of South Africa and (2) An agreement pursuant to which the Company will deliver to TerraPower the full capacity of the enrichment facility.

The Company accounts for the TerraPower Agreement in accordance with ASC 808. The Company has concluded that other authoritative accounting literature does not apply directly to these payments from TerraPower, either directly or by analogy, including ASC 606 because TerraPower is not a customer. The Company has concluded that TerraPower is not a customer because TerraPower has not contracted with the Company to obtain goods or services that are an output of the Company's ordinary activities in exchange for consideration. The Company also has concluded that there is no other authoritative accounting literature that is appropriate to apply by analogy, and, accordingly, its accounting policy is to evaluate the income statement classification for presentation of amounts associated with each separate activity. As a result, the Company concludes that all portions of the net receivable from TerraPower are directly related to the conceptual design of the HALEU facility. Furthermore, the Company and TerraPower will jointly develop criteria for optimization of the HALEU facility's operations. TerraPower shares the risks and rewards of designing the HALEU facility since its successful completion will enable TerraPower to purchase output from the HALEU facility in the future.

For the year ended December 31, 2024, $200,000 has been recognized as collaboration revenue in the consolidated statements of operations and comprehensive loss.

**11. Acquisitions**

***PET Labs Pharmaceuticals***

In October 2023, the Company completed the acquisition of PET Labs. The acquisition is intended to accelerate the distribution of the Company's pipeline. The acquisition of PET Labs has been accounted for as a business combination in accordance with ASC 805.

Pursuant to the terms of the agreement, the Company acquired 51% of the common shares issued and outstanding for total purchase consideration of $2,000,000 in cash of which $500,000 was paid up front. In January 2024, the Company made a partial payment of $264,750 and the balance of $1,235,250 is expected to be paid in 2025 and is recorded in other current liabilities on the consolidated balance sheet.

In addition to the purchase consideration, the Company has an option to purchase the remaining 49% of the issued and outstanding shares for an agreed consideration totaling $2,200,000. No consideration or value relating to this option was recognized as it was not considered probable at the time of acquisition and as of December 31, 2024.

The Company incurred approximately $4,000 in transaction costs related to the acquisition of PET Labs, which is recorded in general and administrative expenses in the consolidated statement of operations and comprehensive loss for the year ended December 31, 2023.

Dr. Gerdus Kemp is an officer of PET Labs and, effective November 1, 2023, an employee of ASP UK. In addition, Dr. Kemp controls the remaining 49% ownership of PET Labs.

The following table summarizes the allocation of the purchase consideration to the fair value of the assets acquired and liabilities assumed:

| | | |
|---|---|---|
| **Consideration** | | |
| Cash | $ | 500,000 |
| Present value of balance due | | 1,395,348 |
| | $ | 1,895,348 |
| **Recognized amounts of identifiable assets acquired and liabilities assumed** | | |
| Cash and cash equivalents | $ | 378,152 |
| Accounts receivable | | 460,165 |
| Other current assets | | 184,457 |
| Property and equipment | | 821,926 |
| Right of use assets | | 592,304 |
| Financial liabilities | | (1,248,699 ) |
| Right of use liabilities | | (677,163 ) |
| Total identifiable net assets | | 511,142 |
| **Noncontrolling interest** | | (1,821,021 ) |
| **Goodwill** | | 3,205,227 |
| | $ | 1,895,348 |

Goodwill arising from the acquisition as of October 31, 2023 of $3,205,227 was attributable mainly to buyer specific synergies expected to arise from the acquisition. No goodwill from this acquisition is deductible for income tax purposes. The Company considered the contractual value of accounts receivable to be the same as the fair value and the full amount was collected. The results of PET Labs have been included in the consolidated financial statements from the date of the acquisition.

The Company accounts for business combinations in accordance with ASU No. 2015-16, Business Combinations (Topic 805), which requires an acquirer to retrospectively adjust provisional amounts recognized in a business combination during the measurement period (which represents a period not to exceed one year from the date of the acquisition), in the reporting period in which the adjustment is determined, as well as present separately on the face of the income statement or as a disclosure in the notes to the consolidated financial statements, the portion of the amount recorded in current period earnings that would have been recorded in previous reporting periods if the adjustment to the provisional amounts had been recognized as of the acquisition date.

The changes to the carrying value of goodwill is as follows:

| | | |
|---|---|---|
| Balance as of October 31, 2023 (acquisition date) | $ | 3,205,227 |
| Translation adjustment | | 61,876 |
| Balance as of December 31, 2023 | $ | 3,267,103 |
| Translation adjustment | | (99,002 ) |
| Balance as of December 31, 2024 | $ | 3,168,101 |

**ASP Rentals**

In December 2023, ASP South Africa entered into a Shareholders Agreement (“ASP Rentals Shareholders Agreement”) with ASP Rentals, a newly formed equipment financing service provider formed for the sole purpose of providing financing to ASP South Africa for its significant asset purchases in South Africa. In accordance with the terms of the ASP Rentals Shareholders Agreement, ASP Rentals issued 24% of its capital stock to ASP South Africa for total consideration of ZAR 3,300,829 (which at the exchange rate as of December 31, 2023 was $180,387) and the remaining 76% of its capital stock was issued to two third party entities for combined consideration of ZAR 13,203,317 (which at the exchange rate as of December 31, 2023 was $721,548).

In June 2024, ASP Rentals issued additional capital stock to support additional financing to ASP South Africa and PET Labs. Per the terms of the ASP Rentals Shareholder Agreement, ASP Rentals issued 20% of the new capital to ASP South Africa for total consideration of ZAR 3,671,412 (which at the exchange rate as of June 30, 2024 was $201,994) and the remaining 80% of the new capital to one of the two original third party entities for a combined consideration of ZAR 18,357,063 (which at the exchange rate as of June 30, 2024 was $1,009,969).

In August 2024, ASP Rentals issued additional capital stock to support additional financing to PET Labs. Per the terms of the ASP Rentals Shareholder Agreement, ASP Rentals issued 20% of the new capital to ASP South Africa for total consideration of ZAR 369,965 (which at the exchange rate as of August 23, 2024 was $21,421) and the remaining 80% of the new capital to one of the two original third party entities for a combined consideration of ZAR 1,849,826 (which at the exchange rate as of August 23, 2024 was $104,925).

In December 2024, ASP Rentals issued additional capital stock to support additional financing to ASP South Africa. Per the terms of the ASP Rentals Shareholder Agreement, ASP Rentals issued 20% of the new capital to ASP South Africa for total consideration of ZAR 130,000 (which at the exchange rate as of December 31, 2024 was $6,889) and the remaining 80% of the new capital to one of the two original third party entities for a combined consideration of ZAR 650,000 (which at the exchange rate as of December 31, 2024 was $35,746).

As a result of the additional financings in 2024, ASP South Africa now controls 42% of ASP Rentals.

In addition to issuance of these shares, future ASP South Africa and PET Labs equipment purchases may also be financed by ASP Rentals through the issuance of additional shares. ASP South Africa will only be entitled to dividend distributions upon the two third party entities receiving a designated return on their investment.

In conjunction with the ASP Rental Shareholders Agreement, ASP South Africa and PET Labs have both entered into an Asset Sale Agreement and an Asset Rental Agreement with ASP Rentals in order to facilitate the financing of equipment recently purchased by ASP South Africa and PET Labs. As a result of the transactions contemplated by these agreements, collectively, ASP Rentals is considered a variable interest entity. In addition, since the only function of ASP Rentals is to provide financing to ASP South Africa and PET Labs, ASP Isotopes is considered to be the primary beneficiary of ASP Rentals. Therefore, ASP Rentals has been consolidated in accordance with ASC 810.

Pursuant to the terms of the ASP Rentals Shareholders Agreement, as of December 31, 2023 ASP South Africa was obligated to acquire and ASP Rentals was obligated to issue 24% of the common shares of ASP Rentals to be issued and outstanding for total purchase consideration of ZAR 3,300,829 (which at the exchange rate as of December 31, 2023 was $180,387). As of December 31, 2023 these amounts are eliminated in consolidation.

As of December 31, 2023, ASP Rentals had a receivable and an obligation to issue 76% of the common shares of ASP Rentals with non-affiliates for an aggregate of ZAR 13,203,317 (which at the exchange rate as of December 31, 2023 was $721,548). As of December 31, 2023, the Company had recorded $721,548 as a receivable from noncontrolling interest in current assets and a non-controlling interest in equity. All consideration for these common shares of ASP Rentals was received in January 2024.

## 12. Stockholders' Equity

***Preferred stock***

The Company has 10,000,000 shares of preferred stock authorized, of which no shares were issued and outstanding as of December 31, 2024 and 2023.

***Common stock***

The Company has 500,000,000 shares of common stock authorized, of which 72,068,059 and 48,923,276 shares were issued and outstanding as of December 31, 2024 and 2023, respectively. Common stockholders are entitled to one vote for each share of outstanding common stock held at all meetings of stockholders and written actions in lieu of meetings. Common stockholders are entitled to receive dividends for each share of outstanding common stock, if and when declared by the Board. No dividends have been declared or paid by the Company through December 31, 2024.

In March 2023, an officer and scientific advisor of the Company exchanged an aggregate of 3,000,000 shares of ASP Isotopes Inc. common stock for 2,500 shares of Enlighted Isotopes convertible preferred stock. In conjunction with the exchange, Enlightened Isotopes transferred the common shares of ASP Isotopes Inc. to ASP Isotopes and then ASP Isotopes immediately cancelled all 3,000,000 shares. The Company will report the non-controlling interest of future net income or loss on the consolidated balance sheet and statement of operations and comprehensive loss. As of December 31, 2023, negligible activity had been recorded for Enlightened Isotopes. Activities for Enlightened Isotopes began in 2024.

The Company's non-employee board members agreed to receive the 2022 and 2023 director fees totaling $240,000 in shares of common stock. In August 2024, 163,632 shares of common stock were issued and the value of the fees totaling $165,000 is recorded as par and additional paid-in capital on the consolidated balance sheet. In December 2024, 77,626 shares of common stock were issued and the value of the fees totaling $75,000 is recorded as additional paid-in capital on the consolidated balance sheet. The Company's non-employee board members received 429,423 shares of common stock during 2024, of which $400,000 and $100,000 was recorded as stock compensation expense in 2024 and 2023, respectively.

In March 2023, the Company issued 3,164,557 shares of the Company's common stock at a purchase price of $1.58 per share and warrants to purchase up to an aggregate of 3,164,557 shares of its common stock with an exercise price of $1.75 per share for gross proceeds of $5,000,000. The Company incurred $506,390 in cash issuance costs and issued warrants to purchase up to an aggregate of 221,519 shares of common stock with an exercise price of $1.975 per share to the placement agent with an initial fair value of $179,116.

In October 2023, the Company entered into Securities Purchase Agreements with certain institutional and other accredited investors and certain directors of the Company to issue and sell an aggregate of 9,952,510 shares of the Company's common stock, for aggregate cash consideration of $9,129,495, as follows: (i) 8,459,093 shares to investors at a purchase price per share of $0.9105, (ii) 1,190,239 shares to investors at a purchase price per share of $0.9548, and (iii) 303,178 shares to directors at a purchase price per share of $0.96. The Company incurred issuance costs equivalent to 5% of the gross proceeds from new investors which was settled in stock through the issuance of 472,582 shares to the placement agent and additional cash issuance costs totaling $57,083.

In July 2024, the Company issued 13,800,000 shares of common stock in a public offering at a public offering price of $2.50 per share for aggregate gross proceeds totaling $34,500,000. Issuance costs, including commissions and expenses totaled $2,194,041.

In November 2024, the Company issued an additional 2,754,250 shares of common stock in a public offering at a public offering price of $6.75 per share for aggregate gross proceeds totaling $18,591,187. Issuance costs, including commissions and expenses totaled $1,454,344.

The following shares were issued to consultants and vendors for the year ended December 31, 2024:

| Description | Origination Date | Shares | Fair Value | Settlement Date | Fair Value at Settlement | Change in Fair Value |
|---|---|---|---|---|---|---|
| Settlement of liability with consultants | January 2024 | 100,000 | $ 195,000 | September 2024 | $ 219,500 | $ (24,500) |
| Settlement of liability with consultants | April 2024 | 60,000 | 240,600 | June 2024 | 183,600 | $ 57,000 |
| Issuance of common stock to consultant | June 2024 | 60,000 | 183,600 | June 2024 | 183,600 | $ — |
| Settlement of liability with consultants | July 2024 | 50,000 | 164,000 | September 2024 | 109,750 | $ 54,250 |
| Issuance of restricted common stock to consultants | September 2024 | 150,000 | — | September 2024 | — | $ — |
| Settlement of liability with consultants | December 2024 | 135,000 | 531,000 | December 2024 | 642,000 | $ (111,000) |
| | | 555,000 | $ 1,314,200 | | $ 1,338,450 | $ (24,250) |

The following shares were issued to consultants and vendors for the year ended December 31, 2023:

| Description | Origination Date | Shares | Fair Value | Settlement Date | Fair Value at Settlement | Change in Fair Value |
|---|---|---|---|---|---|---|
| Issuance of common stock in lieu of commissions | October 2022 | 57,250 | $ 90,455 | March 2023 | $ 75,570 | $ 14,885 |
| Settlement of liability with consultants | November 2022 | 12,500 | 50,000 | August 2023 | 18,125 | $ 31,875 |
| Settlement of liability with consultants | February 2023 | 100,000 | 172,500 | August 2023 | 145,000 | $ 27,500 |
| Settlement of liability with consultants | March 2023 | 100,000 | 93,700 | August 2023 | 145,000 | $ (51,300) |
| Issuance of common stock to settle share liability | May 2023 | 100,000 | 65,100 | November 2023 | 152,000 | $ (86,900) |
| Issuance of common stock to settle share liability | May 2023 | 50,000 | 30,900 | November 2023 | 76,000 | $ (45,100) |
| Settlement of liability with consultants | July 2023 | 150,000 | 181,500 | August 2023 | 248,000 | $ (66,500) |
| Settlement of liability with consultants | August 2023 | 100,000 | 126,000 | August 2023 | 145,000 | $ (19,000) |
| | | 669,750 | $ 810,155 | | $ 1,004,695 | $ (194,540) |

During 2023 and 2024, the Company issued shares of common stock to consultants and vendors to settle share liabilities. The fair value of these shares is recorded to share liability in the consolidated balance sheet and the change in fair value upon settlement of the share liability is recorded to change in fair value of share liability in the consolidated statements of operations and comprehensive loss.

Activity of the share liabilities for the year ended December 31, 2024 is as follows:

| | Share Liabilities as of December 31, 2023 | New Share Liabilities in 2024 | Mark to Market Adjustments in 2024 | Liabilities Settled in 2024 | Share Liabilities as of December 31, 2024 |
|---|---|---|---|---|---|
| Share liabilities | $ — | $ 1,130,600 | $ 24,250 | $ (1,154,850) | $ — |

Activity of the share liabilities for the year ended December 31, 2023 is as follows:

| | Share Liabilities as of December 31, 2022 | New Share Liabilities in 2023 | Mark to Market Adjustments in 2023 | Liabilities Settled in 2023 | Share Liabilities as of December 31, 2023 |
|---|---|---|---|---|---|
| Share liabilities | $ 140,455 | $ 669,700 | $ 194,540 | $ (1,004,695) | $ — |

***Common Stock Warrants***

In September 2023, the Company issued warrants to purchase 3,386,076 shares of common stock. The fair value of these warrants was determined to be $2,882,621 and estimated based on the Black-Scholes model, using the following assumptions:

| | |
|---|---|
| Expected volatility | 60.3 % |
| Weighted-average risk-free rate | 3.44 % |
| Expected term in years | 5.5 |
| Expected dividend yield | — % |

In April 2024, a warrant to purchase 3,164,557 shares of common stock was exercised and the Company received gross proceeds of $5,537,975. As an inducement for the warrant holder to exercise in cash, a warrant to purchase 1,225,000 shares of common stock at an exercise price of $3.90 per share was issued to that same warrant holder for no consideration (“Inducement Warrant”). The Inducement Warrant vests in October 2024 and expires in October 2029. The Company evaluated the terms of the

Inducement Warrant and determined that it should be accounted for as an equity-based warrant. The Company also evaluated the circumstances of the award and determined that the inducement should be treated as a deemed dividend.

The fair value of the Inducement Warrant was determined to be $2,779,659 and estimated based on the Black-Scholes model, using the following assumptions:

| | |
|---|---|
| Expected volatility | 73.5 % |
| Weighted-average risk-free rate | 4.37 % |
| Expected term in years | 5.5 |
| Expected dividend yield | — % |

The fair value of the Inducement Warrant is considered a deemed dividend and the amount is reflected in the calculation of earnings (loss) per share on a basic and diluted basis.

In conjunction with the exercise of the warrant in April 2024, the Company is now obligated to issue to an underwriter, a warrant to purchase 221,519 shares of common stock ("Commission Warrant") in addition to a cash payment totaling $387,658. The Company evaluated the terms of the Commission Warrant and determined that it should be accounted for as an equity-based warrant. The fair value of the Commission Warrant was determined to be $657,871 and estimated based on the Black-Scholes model, using the following assumptions:

| | |
|---|---|
| Expected volatility | 73.5 % |
| Weighted-average risk-free rate | 4.60 % |
| Expected term in years | 5.5 |
| Expected dividend yield | — % |

The cash payment and the issuance of the Commission Warrant was settled in December 2024. The fair value of the Commission Warrant upon issuance was $765,894. The resulting change in fair value of share liability was a loss of $108,023 for the year ended December 31, 2024 and is included in change in fair value of share liability in the statement of operations and comprehensive loss.

In October 2024, a warrant to purchase 151,741 shares of common stock was exercised and the Company received gross proceeds of $299,688.

**13. Stock Compensation Plan**

***Equity Incentive Plan***

In October 2021, the Company adopted the 2021 Stock Incentive Plan ("2021 Plan") that provided for the issuance of common stock to employees, nonemployee directors, and consultants. Recipients of incentive stock options are eligible to purchase shares of common stock at an exercise price equal to no less than the estimated fair market value of such stock on the date of grant. The 2021 Plan provided for the grant of incentive stock options, non-statutory stock options, restricted stock, restricted stock units, stock awards and stock appreciation rights. The maximum contractual term of options granted under the 2021 Plan is ten years. The maximum number of shares initially available for issuance under the 2021 Plan was 6,000,000. No further options were available to be issued under the 2021 Plan.

In November 2022, the Company adopted the 2022 Equity Incentive Plan ("2022 Plan") that provides for the issuance of common stock to employees, nonemployee directors, and consultants. Recipients of incentive stock options are eligible to purchase shares of common stock at an exercise price equal to no less than the estimated fair market value of such stock on the date of grant. The 2022 Plan provides for the grant of incentive stock options, non-statutory stock options, restricted stock, restricted stock units, stock awards and stock appreciation rights. The maximum contractual term of options granted under the 2022 Plan is ten years. The number of shares of the Company's common stock initially reserved for issuance under the 2022 Plan is equal to 5,000,000, subject to an annual increase, to be added on the first day of each fiscal year, beginning with the fiscal year ending December 31, 2023 and continuing until, and including, the fiscal year ending December 31, 2033, equal to the lesser of 5% of the number of shares of the Company's common stock outstanding on such date or an amount determined by the Company's board of directors. On January 1, 2024, the Company added 2,446,164 shares to the 2022 Plan. As of December 31, 2024, 395,535 shares remain available for future grant under the Plan.

In June 2024, the Company adopted the 2024 Inducement Equity Incentive Plan ("2024 Plan"). The 2024 Plan will be used exclusively for the grant of equity awards to individuals who were not previously employees or directors of the Company, or following a bona fide period of non-employment, as an inducement material to such individuals entering into employment with the Company, pursuant to Nasdaq Listing Rule 5635(c)(4). Recipients of stock options are eligible to purchase shares of common stock at an exercise price equal to no less than the estimated fair market value of such stock on the date of grant. The 2024 Plan provides

for the grant of non-statutory stock options, restricted stock, restricted stock units, stock awards and stock appreciation rights. The maximum contractual term of options granted under the 2024 Plan is ten years. The number of shares of the Company's common stock initially reserved for issuance under the 2024 plan is equal to 2,500,000. As of December 31, 2024, 1,825,000 shares remain available for future grant under the 2024 Plan.

***Stock Options***

The following table sets forth the activity for the Company's stock options during the periods presented:

| | Number of Options | Weighted-Average Exercise Price per Share | Weighted Average Remaining Contractual Term (in Years) | Aggregate Intrinsic Value |
|---|---|---|---|---|
| Outstanding as of December 31, 2022 | 2,901,000 | $ 1.91 | 9.4 | $ 199,500 |
| Granted | — | $ — | | |
| Forfeited | (135,000 ) | $ 2.00 | | |
| Outstanding as of December 31, 2023 | 2,766,000 | $ 1.91 | 8.4 | $ 231,000 |
| Granted | — | $ — | | |
| Forfeited | (35,000 ) | $ 2.00 | | |
| Outstanding as of December 31, 2024 | 2,731,000 | $ 1.90 | 7.4 | $ 7,171,930 |
| | | | | |
| Exercisable as of December 31, 2024 | 2,339,807 | $ 1.89 | 7.4 | $ 6,182,213 |
| Vested or expected to vest as of December 31, 2024 | 2,731,000 | $ 1.90 | 7.4 | $ 7,171,930 |

No options were granted in the years ended December 31, 2024 and 2023.

The Company recorded stock compensation from options of $783,145 and $973,844 for the year ended December 31, 2024 and 2023, respectively. As of December 31, 2024, there was $466,234 of unrecognized compensation cost related to non-vested share-based compensation arrangements granted under the Plan, which is expected to be recognized over a weighted average period of approximately 0.5 years.

***Stock Awards***

In October 2021, the Company issued 1,500,000 shares of restricted common stock to its Chief Executive Officer. The number of shares that vest is dependent on achieving certain performance conditions and dependent market conditions upon the third anniversary from the date of grant. The Company determined that the fair value of this award was $0.25 per share for a total value of $375,000. The Company determined the performance condition probable and recognized stock-based compensation expense of $375,000 for the year ended December 31, 2024.

The Company recorded stock-based compensation expense from stock awards totaling $7,778,259 and $7,669,955 for the years ended December 31, 2024 and 2023, respectively. As of December 31, 2024, there is $7,982,308 of unrecognized stock-based compensation expense related to the non-vested portion of restricted stock awards that is expected to be recognized over the next 2.2 years.

The following table summarizes awards and vesting of restricted common stock:

| | Number of Shares | Weighted Average Grant Date Fair Value Per Share |
|---|---|---|
| Unvested as of December 31, 2022 | 7,000,000 | $ 1.75 |
| Granted | 1,756,750 | $ 1.52 |
| Vested | (4,267,564 ) | $ 1.84 |
| Unvested as of December 31 2023 | 4,489,186 | $ 1.42 |
| Granted | 2,523,554 | $ 3.79 |
| Vested | (3,873,037 ) | $ 1.76 |
| Forfeited and retired | (325,000 ) | $ 1.19 |
| Unvested as of December 31 2024 | 2,814,703 | $ 3.24 |

Of the 2,523,554 shares of restricted common stock granted in 2024, 150,000 shares were issued to consultants and 170,088 shares were issued to the Company's non-employee board members.

***Stock-based Compensation Expense***

Stock-based compensation expense for all stock awards recognized in the accompanying consolidated statements of operations is as follows:

| | Year Ended December 31, | |
|---|---|---|
| | 2024 | 2023 |
| Selling, general and administrative | $ 8,231,386 | $ 8,378,875 |
| Research and development | 330,018 | 364,924 |
| Total | $ 8,561,404 | $ 8,743,799 |

**14. Net Loss Per Share**

The Company has reported losses since inception and has computed basic net loss per share attributable to common stockholders by dividing net loss attributable to common stockholders by the weighted-average number of shares of Common Stock outstanding for the period, without consideration for potentially dilutive securities. The Company computes diluted net loss per share of Common Stock after giving consideration to all potentially dilutive shares of common stock, including options to purchase common stock and warrants to purchase common stock, outstanding during the period determined using the treasury-stock and if-converted methods, except where the effect of including such securities would be antidilutive. Because the Company has reported net losses since inception, these potential shares of Common Stock have been anti-dilutive and basic and diluted loss per share were the same for all periods presented.

The following table sets forth the computation of basic and diluted net loss per share:

| | Year Ended December 31, | |
|---|---|---|
| | 2024 | 2023 |
| Numerator: | | |
| Net loss attributable to ASP Isotopes shareholders | $ (35,113,240) | $ (16,286,234) |
| Denominator: | | |
| Weighted average common stock outstanding, basic and diluted | 55,671,805 | 33,066,708 |
| Net loss per share, basic and diluted | $ (0.63) | $ (0.49) |

The following table sets forth the potentially dilutive securities that have been excluded from the calculation of diluted net loss per share because to include them would be anti-dilutive:

| | Year Ended December 31, | |
|---|---|---|
| | 2024 | 2023 |
| Options to purchase common stock | 2,731,000 | 2,766,000 |
| Restricted stock | 2,814,703 | 4,489,186 |
| Warrants to purchase common stock | 1,516,297 | 3,386,076 |
| Total shares of common stock equivalents | 7,062,000 | 10,641,262 |

**15. Income Taxes**

The components of net loss before taxes are as follows:

| | Year Ended December 31, | |
|---|---|---|
| | 2024 | 2023 |
| Domestic | $ (24,777,514) | $ (12,892,377) |
| Foreign | (7,533,765) | (3,407,882) |
| Total net loss before taxes | $ (32,311,279) | $ (16,300,259) |

Income tax (benefit) expense for the years ended December 31, 2024 and 2023 is comprised of the following:

| | December 31, 2024 | 2023 |
|---|---|---|
| Current: | | |
| U.S. Federal | $ 60,253 | $ — |
| State | 1,484 | — |
| Foreign | 193,045 | — |
| Total Current | 254,782 | — |
| Deferred: | | |
| Foreign | (143,333 ) | (6,133 ) |
| Total Deferred | (143,333 ) | (6,133 ) |
| Total income tax expense (benefit) | $ 111,449 | $ (6,133 ) |

The effective tax rate of the Company's provision for income taxes differs from the federal statutory rate for the years ended December 31, 2024 and 2023 as follows:

| | Year Ended December 31, 2024 | 2023 |
|---|---|---|
| Tax computed at federal statutory rate | 21.00 % | 21.00 % |
| Earnings in jurisdictions taxed at rates different from the statutory U.S. federal tax rate | 1.78 % | (0.58 )% |
| Return to provision | (3.88 )% | — |
| Change in fair value of convertible notes | (4.47 )% | — |
| Non-deductible stock compensation expense | (5.58 )% | (11.19 )% |
| Permanent differences | (0.09 )% | 0.24 % |
| Other | — | (2.44 )% |
| Valuation allowance | (9.10 )% | (7.00 )% |
| Income tax expense | (0.34 )% | 0.03 % |

Deferred income taxes reflect the net tax effects of (a) temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, and (b) operating losses and tax credit carryforwards. Significant components of deferred tax assets (liabilities) are as follows:

| | December 31, 2024 | 2023 |
|---|---|---|
| Deferred tax assets: | | |
| Net operating loss carryforwards | $ 5,261,986 | $ 2,321,339 |
| Capitalized R&D costs | 33,758 | 31,622 |
| Share-based compensation | — | 3,644 |
| Accruals and reserves | 142,146 | 12,647 |
| Right-of-use lease liability | 336,287 | 276,134 |
| Total deferred tax assets | 5,774,177 | 2,645,386 |
| Deferred tax liabilities: | | |
| Property and equipment, net | (315,806 ) | (256,315 ) |
| Right-of-use lease asset | (325,246 ) | (339,850 ) |
| Total deferred tax liabilities | (641,052 ) | (596,165 ) |
| Total net deferred tax assets | 5,133,125 | 2,049,221 |
| Less: valuation allowance | (5,101,278 ) | (2,159,799 ) |
| Net deferred taxes (liabilities) assets | $ 31,847 | $ (110,578 ) |

The Company accounts for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and deferred tax liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, the Company determines deferred tax assets and deferred tax liabilities on the basis of the differences between the financial statement and tax bases of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and deferred tax liabilities is recognized in income in the period that includes the enactment date.

The Company recognize deferred tax assets to the extent that the Company believes that these assets are more likely than not to be realized. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, carryback potential if permitted under the tax law, and results of recent operations. If the Company determines that it would not be able to realize its deferred tax assets in the future in excess of the net recorded amount, the Company would make an adjustment to the deferred tax assets through recognizing a valuation allowance, which would increase the provision for income taxes.

The Company records uncertain tax positions in accordance with ASC 740 on the basis of a two-step process in which (1) the Company determines whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, the Company recognizes the largest amount of tax benefit that is more than 50 percent likely to be realized upon ultimate settlement with the related tax authority.

We recognize interest and penalties related to UTBs on the income tax expense line in the accompanying consolidated statement of operations. Accrued interest and penalties are included on the related tax liability line in the consolidated balance sheet.

Management assesses the available positive and negative evidence to estimate whether sufficient future taxable income will be generated to permit use of the existing DTAs. On the basis of this evaluation, as of December 31, 2024, a full valuation allowance has been recorded against the federal, state, and South Africa deferred tax assets, excluding PET Labs and ASP Rentals which have no valuation allowance recorded. The amount of the DTA considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are reduced or increased or if objective negative evidence in the form of cumulative losses becomes present and less weight is given to subjective evidence such as our projections for growth.

We are subject to taxation in the United States and various states and foreign jurisdictions. The statute of limitations remains open for all periods of taxable loss until the losses have been utilized.

**16. Subsequent Events**

Effective on January 1, 2025, the Company added 3,603,403 shares to the 2022 Equity Incentive Plan.

The Company has evaluated subsequent events through March 31, 2025, the date on which the accompanying financial statements were issued, and no other events were noted.

**Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure**

None.

**Item 9A. Controls and Procedures**

**Disclosure Controls and Procedures**

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2024. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, mean controls and other procedures of a company that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company on the reports that it files or submits under the Exchange Act is accumulated and communicated to management, including, our principal executive and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure.

Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgement in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2024, our Chief Executive Officer and Chief Financial Officer concluded that, as a result of a material weakness identified in our internal control over financial reporting, our disclosure controls and procedures were not effective as of December 31, 2024**.**

In the course of preparing the financial statements that are included in this Form 10-K, management has determined that a material weakness exists within the internal controls over financial reporting. The material weakness identified relates to the lack of formal control documentation and consistent execution of control procedures, and the lack of a sufficient complement of personnel within the finance and accounting function with an appropriate degree of knowledge, experience and training. We also noted a material weakness related to logical security and privileged access in the area of information technology. We concluded that the material weaknesses in our internal control over financial reporting information technology occurred because, prior to becoming a public company, we were a private company and did not have the necessary business processes, systems, personnel, and related internal controls necessary to satisfy the accounting and financial reporting requirements of a public company.

In order to remediate the material weaknesses, we expect to enhance our formal documentation over internal control procedures and management controls infrastructure to allow for more consistent execution of control procedures and hire additional accounting, and finance and information technology resources or consultants with public company experience.

We may not be able to fully remediate the identified material weakness until the steps described above have been completed and our internal controls have been operating effectively for a sufficient period of time. We believe we have already and will continue to make progress in our remediation plan during the year ending December 31, 2025, but cannot assure you that we will be able to fully remediate the material weakness in 2025. If the steps we take do not correct the material weakness in a timely manner, we will be unable to conclude that we maintain effective internal control over financial reporting. Accordingly, there could continue to be a reasonable possibility that a material misstatement of our financial statements would not be prevented or detected on a timely basis. We also may incur significant costs to execute various aspects of our remediation plan but cannot provide a reasonable estimate of such costs at this time.

**Management's Annual Report on Internal Controls Over Financial Reporting**

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). Our internal control system was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes, in accordance with generally accepted accounting principles in the United States. Due to inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness of the internal control over financial reporting to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with policies and procedures may deteriorate. Our management, under the supervision and with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our internal control over financial reporting as of the end of the period covered by this Annual Report on Form 10-K based on the framework in Internal Control---Integrated Framework (2013 framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission, or COSO. Based on such evaluation, our management concluded that our internal control over financial reporting was not effective as of the end of the period covered by this Annual Report on Form 10-K due to the material weaknesses described above.

This Annual Report on Form 10-K does not include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. Our auditors will not be required to opine on the effectiveness of our internal control over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act of 2002 until we are no longer an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012.

**Changes in Internal Control Over Financial Reporting**

There has been no change in our internal control over financial reporting as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act during the quarter ended December 31, 2024 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

**Item 9B. Other Information**

None.

**Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections**

None.

**PART III**

**Item 10. Directors, Executive Officers and Corporate Governance**

The information required by this item will be included in an amendment to this Annual Report on Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

**Item 11. Executive Compensation**

The information required by this item will be included in an amendment to this Annual Report on Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

**Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters**

The information required by this item will be included in an amendment to this Annual Report on Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

**Item 13. Certain Relationships and Related Transactions and Director Independence**

The information required by this item will be included in an amendment to this Annual Report on Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

**Item 14. Principal Accounting Fees and Services**

The information required by this item will be included in an amendment to this Annual Report on Form 10-K or incorporated by reference from our definitive proxy statement to be filed pursuant to Rule 14A.

**PART IV**

**Item 15. Exhibits, Financial Statement Schedules**

The following documents are filed as part of this Annual Report on Form 10-K:

**(a)Financial Statements**

The information concerning our consolidated financial statements and Report of Independent Registered Public Accounting Firm required by this Item is incorporated by reference herein to the section of this Annual Report on Form 10-K in Item 8, entitled "Financial Statements and Supplementary Data."

**(b)Financial Statement Schedules**

All schedules have been omitted because the required information is not present or not present in amounts sufficient to require submission of the schedules, or because the information required is included in the Financial Statements or notes thereto.

**(c)Exhibits**

The list of exhibits filed with this report is set forth in the Exhibit Index immediately preceding the signature page and is incorporated herein by reference.

| Exhibit Number | Description of Document |
|---|---|
| 3.1 | Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.3 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 3.2 | Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 4.1 | Description of Securities Registered Under Section 12 of the Securities Exchange Act of 1934 (incorporated by reference to Exhibit 4.1 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 4.2 | Common Stock Purchase Warrant dated March 17, 2023 (incorporated by reference to Exhibit 4.2 to the Annual Report on Form 10-K for the year ended December 31, 2023). |
| 4.3 | Placement Agent Common Stock Purchase Warrant dated March 17, 2023 (incorporated by reference to Exhibit 4.3 to the Annual Report on Form 10-K for the year ended December 31, 2023). |
| 4.4 | Warrant issued to Armistice Capital Master Fund Ltd. dated April 10, 2024 (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed with the SEC on April 9, 2024). |
| 10.1+ | ASP Isotopes Inc. 2021 Stock Incentive Plan, as amended, and form of award agreements thereunder (incorporated by reference to Exhibit 10.1 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.2+ | ASP Isotopes Inc. 2022 Equity Incentive Plan and form of award agreements thereunder (incorporated by reference to Exhibit 10.2 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)) |
| 10.3+ | Performance Share Award Grant Notice and Performance Share Award Agreement with Paul Mann, dated October 4, 2021, as amended (incorporated by reference to Exhibit 10.3 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.4+ | Form of Indemnification Agreement between the registrant and each of its directors and executive officers (incorporated by reference to Exhibit 10.4 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.5+ | Form of Director Agreement (incorporated by reference to Exhibit 10.5 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.6+ | Executive Employment Agreement by and between the registrant and Paul Mann, dated October 4, 2021 (incorporated by reference to Exhibit 10.6 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.7+ | Executive Employment Agreement by and between ASP Isotopes Guernsey Limited and Hendrik Strydom, dated January 19, 2022 (incorporated by reference to Exhibit 10.7 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.8+ | Executive Employment Agreement by and between ASP Isotopes Guernsey Limited and Robert Ainscow, dated October 4, 2021, as amended (incorporated by reference to Exhibit 10.8 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |

| | |
|---|---|
| 10.9 | Letter Agreements between the registrant and Dr Einar Ronander and Dr Hendrik Strydom, dated January 2021 (incorporated by reference to Exhibit 10.13 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.10 | Chief Scientific Adviser Agreement between the registrant and Dr Einar Ronander, dated January 2021 (incorporated by reference to Exhibit 10.14 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.11 | Lease for Molybdenum Processing Plant between ASP Isotopes South Africa (Proprietary) Limited (formerly PDS Photonica Holdings South Africa (Proprietary) Limited) and Morgan Creek Properties 311 Pty Ltd. (incorporated by reference to Exhibit 10.15 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.12 | Form of Subscription Agreement (incorporated by reference to Exhibit 10.16 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.13 | License Agreement between ASP Isotopes UK Ltd and Klydon (Proprietary) Limited dated July 26, 2022 (incorporated by reference to Exhibit 10.17 to the Form S-1/A filed on November 9, 2022 (File No. 333-267392)). |
| 10.14 | Amended Executive Employment Agreement between the registrant and Paul Mann effective December 20, 2022 (incorporated by reference to Exhibit 10.19 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 10.15 | Acknowledgement of Debt Agreement between ASP Isotopes South Africa (Proprietary) Limited and Klydon (Proprietary) Limited dated November 30, 2022 (incorporated by reference to Exhibit 10.20 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 10.16 | Deed of Security Agreement between ASP Isotopes South Africa (Proprietary) Limited and Klydon (Proprietary) Limited dated November 30, 2022 (incorporated by reference to Exhibit 10.21 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 10.17 | Securities Purchase Agreement dated March 14, 2023 (private placement of shares and warrants) (incorporated by reference to Exhibit 10.22 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 10.18 | Registration Rights Agreement dated March 14, 2023 (private placement of shares and warrants) (incorporated by reference to Exhibit 10.23 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024). |
| 10.19 | Release Agreement, dated March 23, 2023 between Revere Securities LLC and ASP Isotopes Inc. (incorporated by reference to Exhibit 10.24 to the Annual Report on Form 10-K for the year ended December 31, 2023, filed on April 10, 2024) |
| 10.20 | Form of Securities Purchase Agreement by and between ASP Isotopes Inc. and the purchasers named therein (October 2023 private placement of shares) (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on October 12, 2023). |
| 10.21 | Form of Registration Rights Agreement by and between ASP Isotopes Inc. and the purchasers named therein (October 2023 private placement of shares) (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the SEC on October 12, 2023). |
| 10.22 | Share Purchase Agreement, dated October 30, 2023, by and between ASP Isotopes Inc., as purchaser, and Nucleonics Imaging Proprietary Limited, as seller, relating to the purchase and sale of ordinary shares of Pet Labs Pharmaceuticals Proprietary Limited (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on October 30, 2023). |
| 10.23 | Convertible Note Purchase Agreement (including Form of Convertible Promissory QLE Note), dated as of February 29, 2024, by and among Quantum Leap Energy LLC and the Purchasers listed therein (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on February 29, 2024). |
| 10.24 | Registration Rights Agreement, dated as of February 29, 2024, by and among Quantum Leap Energy LLC and the Purchasers listed therein (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the SEC on February 29, 2024). |
| 10.25+ | Quantum Leap Energy LLC 2024 Equity Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the SEC on February 29, 2024). |
| 10.26 | Form of Warrant Inducement Agreement by and between ASP Isotopes Inc. and Armistice Capital Master Fund Ltd. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on April 9, 2024). |

| | |
|---|---|
| 10.27 | ASP Isotopes Inc. 2024 Inducement Equity Incentive Plan and forms of award agreement thereunder (incorporated by reference to Exhibit 10.1 to the Form 8-K filed on June 13, 2024). |
| 10.28 | Executive Employment Agreement by and between the Company and Heather Kiessling, dated June 10, 2024 (incorporated by reference to Exhibit 10.1 to the Form 10-Q filed on November 19, 2024). |
| 10.29 | Convertible Note Purchase Agreement (including Form of Convertible Promissory QLE Note), dated as of June 5, 2024, by and among Quantum Leap Energy LLC and the Purchasers listed therein (incorporated by reference to Exhibit 10.1 to the Form 8-K filed on June 6, 2024). |
| 10.30 | Registration Rights Agreement, dated as of June 5, 2024, by and among Quantum Leap Energy LLC and the Purchasers listed therein (incorporated by reference to Exhibit 10.2 to the Form 8-K filed on June 6, 2024). |
| 10.31* | Non-Employee Director Compensation Policy adopted effective October 30, 2024. |
| 19.1* | Insider Trading Policy |
| 21.1* | List of Subsidiaries of the Registrant |
| 23.1* | Consent of EisnerAmper LLP, independent registered public accounting firm. |
| 24.1* | Power of Attorney (included as part of the signature page to this report). |
| 31.1* | Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 31.2* | Certification of Principal Accounting Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 32.1* | Certification of Principal Executive Officer and Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 97.1 | Policy Relating to Recovery of Erroneously Awarded Compensation, effective October 2, 2023 2023 (incorporated by reference to Exhibit 97.1 to the Form 10-K filed on April 10, 2024). |
| 99.1 | License Agreement, dated as of February 16, 2024, among ASP Isotopes UK Limited, as licensor, and Quantum Leap Energy LLC and Quantum Leap Energy Limited, as licensee (incorporated by reference to Exhibit 99.4 to the Form 8-K filed on February 29, 2024). |
| 99.2 | EPC Services Framework Agreement, dated as of February 16, 2024, between ASP Isotopes Inc. and Quantum Leap Energy LLC (incorporated by reference to Exhibit 99.5 to the Form 8-K filed on February 29, 2024). |
| 101.INS | Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document |
| 101.SCH | Inline XBRL Taxonomy Extension Schema With Embedded Linkbase Documents |
| 104 | Cover Page Interactive Data File (embedded within the Inline XBRL document) |

* Filed herewith.

** Furnished herewith.

+ Management contract or compensatory plan or arrangement.

**Item 16. Form 10-K Summary**

None.

**SIGNATURES**

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 31st day of March, 2025.

ASP Isotopes Inc.

By */s/ PAUL E. MANN*
Paul E. Mann
*Chairman, Chief Executive Officer and Director*

We, the undersigned directors and officers of ASP Isotopes Inc., hereby severally constitute Paul E. Mann and Heather Kiessling, and each of them singly, as our true and lawful attorneys with full power to each of them to sign for us, in our names in the capacities indicated below, any and all amendments to this Annual Report on Form 10-K filed with the Securities and Exchange Commission.

This power of attorney may only be revoked by a written document executed by the undersigned that expressly revokes this power by referring to the date and subject hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|---|
| */s/ PAUL E. MANN*<br>Paul E. Mann | Chief Executive Officer, Chairman and Director (Principal Executive Officer) | March 31, 2025 |
| */s/ HEATHER KIESSLING*<br>Heather Kiessling | Chief Financial Officer (Principal Financial and Accounting Officer) | March 31, 2025 |
| */s/ MICHAEL GORLEY, Ph.D.*<br>Michael Gorley, Ph.D. | Director | March 31, 2025 |
| */s/ DUNCAN MOORE, Ph.D.*<br>Duncan Moore, Ph.D. | Director | March 31, 2025 |
| */s/ ROBERT RYAN*<br>Robert Ryan | Director | March 31, 2025 |
| */s/ HENDRIK STRYDOM, Ph.D.*<br>Hendrik Strydom, Ph.D. | Director | March 31, 2025 |
| */s/ TODD WIDER, M.D.*<br>Todd Wider, M.D. | Director | March 31, 2025 |

**Exhibit 10.31**

**ASP Isotopes Inc.**

**Non-Employee Director Compensation Policy**

Each individual who provides services to ASP Isotopes Inc. (the "Company") as a member of the Board of Directors (the "Board"), other than any director who is employed by the Company or one of its subsidiaries (a "Covered Non-Employee Director"), will be entitled to receive the following amounts of compensation, subject to the limitations included in the Company's 2022 Equity Incentive Plan (or any successor plan):

**I. Cash Retainers**

(a) Annual Cash Retainer for Board Membership: $100,000 for general availability and participation in meetings and on conference calls of our Board. No additional compensation for attending individual Board meetings.

(b) Additional Annual Retainers for Committee Membership: None. No additional compensation for attending individual committee meetings.

All cash retainers will be paid quarterly, in arrears, or upon the earlier resignation or removal of the Covered Non-Employee Director. Cash retainers owing to Covered Non-Employee Directors shall be annualized, meaning that with respect to Covered Non-Employee Directors who join the Board during the calendar year, such amounts shall be pro-rated based on the number of calendar days served by such director.

**II. Equity Retainers**

All grants of equity retainer awards to Covered Non-Employee Directors pursuant to this Policy will be automatic and nondiscretionary, except as otherwise provided herein, and will be made in accordance with the following provisions:

(a) Value. For purposes of this Policy, "Value" means with respect to (i) any award of stock options the grant date fair value of the option (i.e., Black-Scholes Value) determined in accordance with the reasonable assumptions and methodologies employed by the Company for calculating the fair value of options under ASC 718; and (ii) any award of restricted stock and restricted stock units the product of (A) the average closing market price on the Nasdaq Capital Market (or such other market on which the Company's common stock is then principally listed) of one share of the Company's common stock over the trailing 30-day period up to and including the last day immediately preceding the grant date and (B) the aggregate number of shares pursuant to such award.

(b) Revisions. The Compensation Committee of the Board (the "Compensation Committee") in its discretion may change and otherwise revise the terms of awards to be granted under this Policy, including, without limitation, the number of shares subject thereto, for awards of the same or different type granted on or after the date the Compensation Committee determines to make any such change or revision.

(c) Initial Grant. Each Covered Non-Employee Director who is first elected to the Board will, upon his or her initial election to the Board, be granted an award of restricted stock with a Value of $100,000 (the "Initial Grant"). The Initial Grant shall vest in full on the one-year anniversary of the grant date. All vesting of the Annual Grant shall cease if the director resigns from the Board or otherwise ceases to serve as a director, unless the Board determines that the circumstances warrant continuation of vesting.

(d) Annual Grant.

1. Grants. On the date of the Company's Annual Meeting of Stockholders (the "Annual Meeting"), each Covered Non-Employee Director who will continue as a Board member following such Annual Meeting will receive either an award of restricted stock or an award of nonstatutory stock options, at the election of such Covered Non-Employee Director, on the date of such Annual Meeting of Stockholders (the "Annual Grant") with a Value of $250,000. The Annual Grant shall vest in full on the earlier of (i) the one-year anniversary of the grant date or (ii) the next Annual Meeting. All vesting of the Annual Grant shall cease if

the director resigns from the Board or otherwise ceases to serve as a director, unless the Board determines that the circumstances warrant continuation of vesting.

2. Election to Receive Nonstatutory Stock Option or Restricted Stock.

(i) General. On or before December 31 of each calendar year, or such earlier deadline as may established by the Board, the Committee, or their respective authorized designee, in its discretion (the "Annual Submission Deadline"), each individual who is then a Covered Non-Employee Director may elect to receive any Annual Grant to be granted to him or her in the immediately following calendar year in the form of either a nonstatutory stock option or an award of restricted stock. Any such election must be submitted to the Secretary of the Company or his or her authorized designee in the form and manner specified by the Secretary or designee, and shall become irrevocable effective as of the Annual Submission Deadline.

(ii) Default. A Covered Non-Employee Director who fails to make a timely election with respect to his or her Annual Grant (if any) in accordance with the terms of this Section II.(d)(2) shall receive any such award in the form of restricted stock.

**III. Expenses**

The Company will reimburse all reasonable out-of-pocket expenses incurred by Covered Non-Employee Directors in attending meetings of the Board or any committee thereof.

**IV. Maximum Annual Compensation**

The aggregate amount of compensation, including both equity compensation and cash compensation, paid to any Covered Non-Employee Director in a calendar year period shall not exceed the limits set forth in the Company's 2022 Equity Incentive Plan or any similar provision of a successor plan.

**Date Approved**: October 30, 2024

**Date Effective**: October 30, 2024

**Exhibit 19.1**

**ASP ISOTOPES INC.**

**INSIDER TRADING POLICY**

As adopted by the Board of Directors as of December 9, 2024

Table of Contents

**Section 1. All Employees, Officers, Directors and their Family Members and Affiliates Are Subject to this Policy.** This Insider Trading Policy ("***Policy***") applies to all employees, outside directors, officers, and consultants of ASP Isotopes Inc., a Delaware corporation ("***ASP Isotopes***" or the "***Company***"), their family members and entities over which such individuals have or share voting or investment control. This Policy also applies to any other person who receives material nonpublic information from any ASP Isotopes insider or is otherwise designated by the Compliance Officer. For purposes of this policy, "***family members***" include people who live with you, or are financially dependent on you, and also include those whose transactions in securities are directed by you or are subject to your influence or control.

This Policy continues to apply following termination of employment or other relationship with ASP Isotopes until after the second trading day that any material non-public information in your possession has become public or is no longer material. Each employee, officer, consultant and director is *personally responsible* for the actions of their family members and other persons with whom they have a relationship who are subject to this policy, including any pre-clearances required.

**Section 2. Trading in ASP Isotopes Securities While in Possession of Material Nonpublic Information is Prohibited.** The purchase or sale of securities by any person who possesses material nonpublic information is a violation of U.S. federal and state securities laws. It is important to avoid the *appearance*, as well as the fact, of trading based on material nonpublic information.

No person subject to this Policy who is aware of material nonpublic information relating to ASP Isotopes may, directly or indirectly (through family members, other persons, entities or otherwise) buy, sell, or otherwise trade in the securities of ASP Isotopes, or advise anyone else to do so, other than pursuant to a trading plan that complies with Rule 10b5-1 promulgated by the Securities and Exchange Commission ("***SEC***") or as specifically exempted in Section 9(B) of this Policy, or otherwise engage in any action to take personal advantage of that information. For purposes of this Policy, the term "***trade***" includes any transaction in ASP Isotopes securities, including gifts and pledges.

Each person subject to this Policy may, from time to time, have to forego a proposed transaction even if he or she planned to make the transaction before learning material nonpublic information and even though the employee may suffer economic loss or forego anticipated profit by waiting.

**Section 3. Trading Window.** Directors, officers and employees of the Company are only permitted to sell ASP Isotopes securities during an open "trading window." The trading window generally opens following the close of trading on the second full trading day following the public issuance of the Company's earnings release for the most recent fiscal quarter and closes at the close of the market on two weeks before the end of each fiscal quarter. The Compliance Officer may advise directors, officers and employees of the Company when the trading window opens and closes; provided that, in any event, directors, officers and employees of the Company are charged with the knowledge of and responsible for their own compliance with this Policy. In addition to when the trading window is scheduled to be closed, the Company may impose a special blackout period at its discretion due to the existence of material nonpublic information. Even during an otherwise open trading window, directors, officers and employees of the Company are prohibited from trading in ASP Isotopes securities while in possession of material nonpublic information.

**Section 4. Trading in Other Public Companies' Securities While in Possession of Material Nonpublic Information is Prohibited.** No person subject to this Policy who possesses material nonpublic information relating to other publicly traded companies, including our vendors, customers and partners, as a result of employment with ASP Isotopes or the performance of services on our behalf, may, directly or indirectly (through family members, other persons, entities or otherwise) buy or sell securities of such companies, or advise anyone else to do so, or otherwise engage in any action to take personal advantage of that information.

**Section 5.** Certain Types of Transactions Are Prohibited.

**A.** *Short Sales*. Short sales of ASP Isotopes securities are prohibited, as short sales evidence the seller's expectation that ASP Isotopes securities will decline in value, signal to the market that the seller has no confidence in the Company or its short-term prospects, and may reduce the seller's incentive to improve ASP Isotopes performance. In addition, Section 16(c) of the Securities Exchange Act of 1934, as amended (the "***Exchange Act***"), prohibits executive officers and directors from engaging in short sales.

**B.** *Publicly Traded Options*. Transactions in puts, calls or other derivative securities involving ASP Isotopes stock are prohibited, as any such transaction is, in effect, a bet on the short-term movement of the Company's stock, creates the appearance of trading based on inside information, and may focus attention on short-term performance at the expense of ASP Isotopes long-term objectives.

**C.** *Hedging Transactions*. Hedging or monetization transactions (including but not limited to zero-cost collars, prepaid variable forwards, equity swaps, puts, calls, collars, forwards and other derivative instruments) are prohibited, as such transactions allow you to continue to own ASP Isotopes securities without the full risks and rewards of ownership and as a result, you may not have the same objectives as other stockholders.

**D.** *Margin Accounts and Pledges*. Directors, officers and other employees are prohibited from holding Company securities in a margin account or pledging Company securities as collateral for a loan, as such securities may be traded without your consent (for failing to meet a margin call or if you default on the loan) at a time when you possess material nonpublic information or otherwise are not permitted to trade.

**E.** *Short-Term Trading*. Executive officers and directors who purchase ASP Isotopes securities in the open market may not sell any ASP Isotopes securities of the same class during the six months following the purchase (or vice versa), as short-term trading of the Company's securities may be distracting and may unduly focus the person on short-term stock market performance, instead of ASP Isotopes long-term business objectives, and may result in the disgorgement of any short swing profits.

**Section 6. Sharing Material Nonpublic Information is Prohibited.** No person subject to this Policy who possesses material nonpublic information relating to ASP Isotopes or any other publicly traded companies may directly or indirectly (through family members, other persons, entities or otherwise) pass that information on to others outside the Company, including friends, family, or other acquaintances (referred to as *"**tipping**"*) until such information has been disseminated to the public. You must treat material nonpublic information about our business partners with the same care required with respect to such information related directly to ASP Isotopes.

Tipping includes passing information under circumstances that could suggest that you were trying to help another profit or avoid a loss. Exercise care when speaking with others who do not "need to know", even if they are subject to this Policy, as well as when communicating with family, friends and others not associated with ASP Isotopes. To avoid the appearance of impropriety, refrain from discussing our business or prospects or making recommendations about buying or selling our securities or the securities of other companies with which we have a relationship. Inquiries about ASP Isotopes should be directed to our Corporate Communications, Investor Relations, or Legal teams.

**Section 7. Recommendations Regarding Trading in Company Securities are Prohibited.** No person subject to this Policy may make recommendations or express opinions on trading in ASP Isotopes securities while in possession of material nonpublic information, except to advise others not to trade in ASP Isotopes securities if doing so might violate the law or this Policy.

**Section 8. Only Designated Company Spokespersons Are Authorized to Disclose Material Nonpublic Information.** U.S. federal securities laws prohibit the Company from selectively disclosing material nonpublic information. ASP Isotopes has established procedures for releasing material information in a manner that is designed to achieve broad dissemination of the information immediately upon its release. Employees may not, therefore, disclose material nonpublic information to anyone outside the Company, including family members and friends, other than in accordance with those established procedures. Any inquiries about the Company should be directed to our Corporate Communications and Investor Relations teams. Additionally, the Legal team is responsible for handling legal matters that may involve certain disclosures.

**Section 9. Employees Must Follow Company Guidelines Pertaining to Electronic Communications.** Employees must follow the ASP Isotopes Disclosure and Regulation FD Policy before participating in any Internet electronic communication forums concerning the Company.

**Section 10.** Other Transactions in Company Securities.

**A. *General Rule.*** This Policy applies to all transactions in ASP Isotopes securities, including any securities the Company may issue from time to time, such as preferred stock, warrants and convertible debentures, as well as to derivative securities relating to the Company's stock, whether or not issued by ASP Isotopes, such as exchange-traded options.

**B. *Employee Benefit Plans.***

1. *Equity Incentive Plans*. The trading restrictions set forth in this Policy do not apply to the exercise of stock options or other equity awards for cash, but do apply to all sales of securities acquired through the exercise of stock options or other equity awards, including "same-day sale" or cashless exercise of Company stock options.

2. *Employee Stock Purchase Plans*. The trading restrictions set forth in this Policy do not apply to purchases of Company securities pursuant to the employee's advance instructions under employee stock purchase plans or employee benefit plans (e.g., a pension or 401(k) plan). However, no alteration to instructions regarding the level of withholding or the purchase of Company securities in such plans is permitted while in the possession of material nonpublic information. Any

sale of securities acquired under such plans remains subject to the prohibitions and restrictions of this Policy.

**Section 11.** Directors, Officers and Certain Named Employees Are Subject to Additional Restrictions.

**A. *Section 16 Insiders.*** The Company's directors and officers ("***Section 16 Insiders***") are subject to the reporting provisions and trading restrictions of Section 16 of the Exchange Act and the underlying rules and regulations promulgated by the SEC.

**B. *Insider Employees.*** ASP Isotopes has designated the persons with the roles/titles listed on Exhibit A as employees who have frequent access to material nonpublic information concerning the Company ("***Insider Employees***"). The Company will amend Exhibit A from time to time as necessary.

**C. *Additional Restrictions.*** Because Section 16 Insiders and Insider Employees regularly possess material nonpublic information about the Company, and in light of the reporting requirements to which Section 16 Insiders are subject under Section 16 of the Exchange Act, Section 16 Insiders and Insider Employees are subject to the additional restrictions set forth in Appendix I hereto. For purposes of this Policy, Section 16 Insiders and Insider Employees are each referred to as "***Insiders***."

**Section 12. Policy Violations Must Be Reported.** Any person who violates this Policy, the Company's Disclosure and Regulation FD Policy or any federal or state laws governing insider trading, or knows of any such violation by any other person, must report the violation immediately to the Compliance Officer. Upon learning of any such violation, the Compliance Officer will determine whether the Company should release any material nonpublic information or whether the Company should report the violation to the SEC or other appropriate governmental authority.

**Section 13. Insider Trading Compliance Officers.** Unless the Board of Directors provides otherwise, the Company's Chief Financial Officer shall act as the Company's initial Insider Trading Compliance Officer ("***Compliance Officer***"); provided, however, that if the Chief Financial Officer is a party to a proposed trade, transaction or inquiry relating to this Policy, the Company's Chief Executive Officer shall act as the Compliance Officer with respect to such proposed trade, transaction or inquiry. The Compliance Officer shall consult with outside legal counsel as appropriate. The Compliance Officer may delegate his or her authority to act as the Compliance Officer as he or she deem necessary or appropriate in his or her sole discretion. The duties of the Compliance Officer and his or her delegees may include the following:

- Administering, monitoring and enforcing compliance with the Policy.
- Responding to all inquiries relating to this policy and its procedures.
- Designating and announcing special trading blackout periods during which no Insiders may trade in Company securities.
- Providing copies of this Policy and other appropriate materials to all current and new directors, officers and employees, and such other persons as the Compliance Officer determines have access to material nonpublic information concerning the Company.
- Administering, monitoring and enforcing compliance with federal and state insider trading laws and regulations.

- Assisting in the preparation and filing of all required SEC reports relating to trading in Company securities, including without limitation Forms 3, 4, 5 and 144 and Schedules 13D and 13G.
- Maintaining as Company records originals or copies of all documents required by the provisions of this Policy or the procedures set forth herein, and copies of all required SEC reports relating to insider trading, including without limitation Forms 3, 4, 5 and 144 and Schedules 13D and 13G.
- Revising the Policy as necessary to reflect changes in federal or state insider trading laws and regulations.
- Maintaining the accuracy of the list of roles/titles as set forth on Exhibit A, and updating such list periodically as necessary to reflect additions or deletions.

The Compliance Officer may designate one or more individuals who may perform the Compliance Officer's duties under this policy in the event that a Compliance Officer is unable or unavailable to perform such duties.

**Section 14.** Definition of "***Material Nonpublic Information***"

**A. *"Material".*** Information about the Company is "material" if it would be expected to affect the investment or voting decisions of a reasonable stockholder or investor, or if the disclosure of the information would be expected to significantly alter the total mix of the information in the marketplace about ASP Isotopes. In simple terms, material information is any type of information which could reasonably be expected to affect the market price of ASP Isotopes securities or an investor's decision to buy or sell ASP Isotopes securities. Both positive and negative information may be material. While it is not possible to identify all information that would be deemed material, the following information ordinarily would be considered material:

- Financial performance, including operating results and changes in performance or liquidity.
- Projections of future earnings or losses, or other earnings guidance, and any changes to previously announced earnings guidance.
- Company projections and strategic plans.
- New major contracts, suppliers, or finance sources or the loss thereof.
- Development or release of a significant new service.
- Significant pricing or cost changes.
- Potential mergers or acquisitions, the sale of Company assets or subsidiaries or major partnering agreements.
- Changes in senior management or the Board of Directors.
- Stock splits, public or private securities/debt offerings, or changes in Company dividend policies or amounts.
- Actual or threatened major litigation, or the resolution of such litigation.

**B. *"Nonpublic".*** Material information is "nonpublic" if it has not been widely disseminated to the general public through a report filed with the SEC or through major newswire services, national news services or financial news services. For purposes of this Policy, information will be considered public after the close of trading on the second full trading day following the Company's widespread public release of the information.

**C. *Consult Compliance Officer When in Doubt.*** Any employees who are unsure whether the information that they possess is material or nonpublic must consult the Compliance Officer for guidance before trading in any Company securities.

**Section 15. ASP Isotopes May Suspend All Trading Activities by Employees.** In order to avoid any questions and to protect both employees and the Company from any potential liability, from time to time ASP Isotopes may impose a "blackout" period during which some or all employees may not buy or sell ASP Isotopes securities. The Compliance Officer will impose such a blackout period if, in their judgment, there exists nonpublic information that would make trades by ASP Isotopes employees (or certain employees) inappropriate in light of the risk that such trades could be viewed as violating applicable securities laws. If you are made aware of such a blackout period, do not disclose its existence to anyone.

**Section 16.** Violations of Insider Trading Laws or This Policy Can Result in Severe Consequences.

**A. *Civil and Criminal Penalties*.** The consequences of prohibited insider trading or tipping can be severe. Persons violating insider trading or tipping rules may be required to disgorge profit made or loss avoided, pay civil penalties up to three times the profit made or loss avoided, face private action for damages, as well as be subject to criminal penalties, including up to 20 years in prison and fines of up to $5 million. The Company and/or the supervisors of the person violating the rules may also be required to pay major civil or criminal penalties.

**B. *Company Discipline*.** Violation of this Policy or federal or state insider trading laws by any director, officer or employee may subject the director to removal proceedings and the officer or employee to disciplinary action by the Company, including termination for cause.

**Section 17. This Policy Is Subject to Revision.** ASP Isotopes may change the terms of this Policy from time to time to respond to developments in law and practice, and will take steps to inform all affected persons of any material changes.

**Section 18. All Persons Must Acknowledge Their Agreement to Comply with This Policy.** The Policy will be available on the Company's internal website, delivered to all persons subject to this Policy upon adoption, and to all new other persons at the start of their employment or relationship with the Company. Upon first receiving a copy of the Policy or any revised versions, each such person must sign an acknowledgment that he or she has received a copy and agrees to comply with the Policy's terms. This acknowledgment and agreement will constitute consent for ASP Isotopes to impose sanctions for violation of this Policy and to issue any necessary stop-transfer orders to the Company's transfer agent to enforce compliance with this Policy.

## APPENDIX I

### Special Restrictions on Transactions in Company Securities by Insiders

To minimize the risk of apparent or actual violations of the rules governing insider trading, we have adopted these special restrictions relating to transactions in our securities by Insiders. Insiders are responsible for ensuring compliance with this Appendix I, including restrictions on all trading during certain periods, by family members and members of their households and by entities over which they exercise voting or investment control. Insiders should provide each of these persons or entities with a copy of this Policy.

**Section 1. Trade Pre-Clearance Required.** As part of this Policy, all purchases and sales of equity securities of the Company by Insiders, other than transactions that are not subject to the Policy or transactions pursuant to a Rule 10b5-1 trading plan authorized by the Compliance Officer, must be pre-cleared by the Compliance Officer. This requirement is intended to prevent inadvertent Policy violations, avoid trades involving the appearance of improper insider trading, facilitate timely Form 4 reporting by Section 16 Insiders and avoid transactions that are subject to disgorgement under Section 16(b) of the Exchange Act.

Requests for pre-clearance must be submitted via email to the Compliance Officer at least two business days in advance of each proposed transaction. If the Insider does not receive a response from the Compliance Officer within 24 hours, the Insider must follow up to ensure that the message was received. Each Insider request for pre-clearance should include the nature of the proposed transaction and the expected date of the transaction. In addition, each request by a Section 16 Insider for pre-clearance should also include the following information:

- Number of shares involved.
- If the transaction involves a stock option exercise, the specific option to be exercised.
- Contact information for the broker who will execute the transaction.

Once the proposed transaction is pre-cleared, the Insider may proceed with it on the approved terms, provided that he or she complies with all other securities law requirements, such as Rule 144 and prohibitions regarding trading on the basis of inside information, and with any special trading blackout imposed by the Company prior to the completion of the trade.

**Section 2. Pre-Clearance of Rule 10b5-1 Plans Required.** Pre-clearance is required for the establishment of a Rule 10b5-1 trading plan at least five full trading days prior to entry into or modification of the plan. However, pre-clearance will not be required for individual transactions effected pursuant to a pre-cleared Rule 10b5-1 trading plan. All Section 16 Insiders must immediately report the results of transactions effected under a trading plan to the Compliance Officer since they will be reportable on Form 4 within two business days following the execution of the trade, subject to an extension of not more than two additional business days where the Section 16 Insider is not immediately aware of the execution of the trade. Notwithstanding the foregoing, any transactions by the Compliance Officer, or a delegee of the Compliance Officer under this Policy, shall be subject to pre-clearance by the Chief Executive Officer.

**Section 3. Hardship Exemptions.** The Compliance Officer may, on a case by case basis, authorize a transaction in ASP Isotopes securities outside of the trading window (but in no event during a special blackout period) due to financial or other hardship. Any request for a hardship exemption must be in writing and must describe the amount and nature of the proposed transaction and the circumstances of the hardship. The Insider requesting the hardship exemption

must also certify to the Compliance Officer within two business days prior to the date of the proposed trade that he or she is not in possession of material nonpublic information concerning ASP Isotopes. The existence of the foregoing procedure does not in any way obligate the Compliance Officer to approve any hardship exemption requested by an Insider.

**Section 4. Brokers.** All Insiders must ensure that their broker does not execute any transaction for the Insider (other than under a previously authorized Rule 10b5-1 trading plan) until the broker has verified with the Compliance Officer that the transaction has been pre-cleared.

**Section 5. Reporting of Transactions Required.** To facilitate timely reporting under Section 16 of the Exchange Act, Section 16 Insiders are required to *on the same day as the trade date*, or, with respect to transactions effected pursuant to a Rule 10b5-1 plan, on the day the Insider is advised of the terms of the transaction, (a) report the details of each transaction to the Compliance Officer and (b) arrange with persons whose trades must be reported by the Insider under Section 16 (such as immediate family members living in the Insider's household) to immediately report directly to the Company and to the Insider the following transaction details:

- Transaction date (trade date).
- Number of shares involved.
- Price per share at which the transaction was executed (before addition or deduction of brokerage commission and other transaction fees).
- For stock option exercises, the specific option exercised.
- Contact information for the broker who executed the transaction.
- Specific representation that the Insider is not in possession of material non-public information.

The transaction details must be reported to the Compliance Officer, with copies to ASP Isotopes personnel who will assist the Section 16 Insider in preparing his or her Form 4.

**Section 6. Oversight by the Nominating and Corporate Governance Committee.** The Nominating and Corporate Governance Committee (the "***Committee***") of the Board of Directors will be responsible for monitoring and recommending any modification to this Policy, if necessary or advisable, to the Board of Directors. The Committee will also review, at least annually, those individuals who are deemed to be executive officers for purposes of Section 16 and will recommend any changes regarding such status to the Board of Directors.

**Section 7. Named Employees Considered Insiders.** The Committee will review, at least annually, those individuals deemed to be Insiders for purposes of this Appendix I. Insiders shall include persons subject to Section 16 and such other persons as the Committee deems to be Insiders. Generally, Insiders shall be any person who by function of their employment is *consistently* in possession of material nonpublic information *or* performs an operational role, such as head of a division or business unit, that is material to the Company as a whole.

**Section 8. Special Guidelines for 10b5-1 Trading Plans.** Notwithstanding the foregoing, an Insider will not be deemed to have violated this Policy for transactions that meet all of the enumerated criteria below:

**A.** The transaction must be made pursuant to a documented plan (the "***Plan***") entered into in good faith that complies with all provisions of Rule 10b5-1 (the "***Rule***"), including, without limitation:

**1.** Each Plan must:

**a.** specify the amount of securities to be purchased or sold and the price at which and the date on which the securities are to be purchased or sold, or

**b.** include a written formula or algorithm, or computer program, for determining the amount of securities to be purchased or sold and the price at which and the date on which the securities were to be purchased or sold.

**2.** In any case, such Plan must prohibit the Insider and any other person who possesses material nonpublic information from exercising any subsequent influence over how, when, or whether to effect purchases or sales.

**B.** Each Plan must be authorized prior to the effective time of any transactions under such Plan by the Company's Compliance Officer. The Company reserves the right to withhold authorization of any Plan that the Compliance Officer determines, in his or her sole discretion,

**1.** fails to comply with the Rule, or

**2.** exposes the Company or the Insider to liability under any other applicable state or federal rule, regulation or law, or

**3.** creates any appearance of impropriety, or

**4.** fails to meet the guidelines established by the Company, or

**5.** otherwise fails to satisfy review by the Compliance Officer for any reason, in the sole discretion of the Compliance Officer.

**C.** Any modifications to the Plan or deviations from the Plan without prior authorization of the Compliance Officer is a violation of this Policy. Any such modifications or deviations are subject to the authorization of a Compliance Officer in accordance with Section B above.

**D.** Each Plan must be established at a time when the trading window is open and the person is not in possession of material nonpublic information.

**E.** Each Plan must provide appropriate mechanisms to ensure that the Insider complies with all rules and regulations, including Rule 144, Rule 701 and Section 16(b), applicable to securities transactions under the Plan by the Insider.

**F.** Each Plan must provide for the suspension of all transactions under such Plan in the event that the Company, in its sole discretion, deems such suspension necessary and advisable, including suspensions necessary to comply with trading restrictions imposed in connection with any lock-up agreement required in connection with a securities issuance transaction or other similar events.

**G.** None of the Company, the Compliance Officer, nor any of the Company's officers, employees or other representatives shall be deemed, solely by their authorization of an Insider's Plan, to have represented that any Plan complies with the Rule or to have assumed any liability or responsibility to the Insider or any other party if such Plan fails to comply with the Rule.

**EXHIBIT A**

**INSIDER EMPLOYEES**

**(as of December 9, 2024)**

All Company officers

All Company employees on the Management Team

All Company employees in the finance department

All Company employees in the legal department

All administrative assistants to Company officers

**EXHIBIT 21.1**

**ASP Isotopes Inc.**
**Subsidiaries of the Registrant**

| **Subsidiaries*** | **Place of Incorporation** |
|---|---|
| ASP Isotopes Guernsey Limited<br>(formerly, PDS-Photonica Holdings (Guernsey) Limited) | Guernsey |
| ASP Isotopes South Africa (Proprietary) Limited<br>(formerly, PDS Photonica Holdings South Africa (PTY) Limited) | South Africa |
| Enlightened Isotopes (Pty) Ltd | South Africa |
| ASPI South Africa Asset Finance | South Africa |
| Enriched Energy LLC | Delaware, U.S. |
| ASP Isotopes UK Ltd | England & Wales |
| Enlightened Isotopes (Pty) Ltd | South Africa |
| ASP Isotopes ehf | Iceland |
| Quantum Leap Energy LLC | Delaware, U.S. |
| Quantum Leap Energy Limited | England & Wales |
| Quantum Leap Energy (Pty) Ltd | South Africa |
| QLE TP Funding LLC | Delaware, U.S. |
| PET Labs Pharmaceuticals (Pty) Ltd | South Africa |
| PET Labs Global Nuclear Medicine SEZC | Cayman Islands |

* Please note that this list includes all subsidiaries of ASP Isotopes Inc. without regard to whether they would constitute a "significant subsidiary" pursuant to Item 601(b)(21)(ii) of Regulation S-K.

**Exhibit 23.1**

## CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements of ASP Isotopes Inc. on Form S-1 (Nos. 333-275686 and 333-271137), Form S-3 (Nos. 333-279267, 333-279857 and 333-282936) and Form S-8 (Nos. 333-268421, 333-280157 and 333-280158) of our report dated March 31, 2025, on our audits of the financial statements as of December 31, 2024 and 2023 and for each of the years then ended, which report is included in this Annual Report on Form 10-K to be filed on or about March 31, 2025.

*/s/ EisnerAmper LLP*

EISNERAMPER LLP
Iselin, New Jersey
March 31, 2025

**EXHIBIT 31.1**

**CERTIFICATION PURSUANT TO**
**SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a)**
**AS ADOPTED PURSUANT TO**
**SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Paul Mann, certify that:

1.I have reviewed this Annual Report on Form 10-K of ASP Isotopes Inc. for the year ended December 31, 2024;

2.Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3.Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4.The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a)designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b)designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c)evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d)disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5.The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a)all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b)any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 31, 2025

*/s/ Paul Mann*
Paul Mann
*Chief Executive Officer (principal executive officer)*

**EXHIBIT 31.2**

**CERTIFICATION PURSUANT TO**
**SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a)**
**AS ADOPTED PURSUANT TO**
**SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Heather Kiessling, certify that:

1.I have reviewed this Annual Report on Form 10-K of ASP Isotopes Inc. for the year ended December 31, 2024;

2.Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3.Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4.The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a)designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b)designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c)evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d)disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5.The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a)all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b)any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 31, 2025

*/s/ Heather Kiessling*
Heather Kiessling
*Chief Financial Officer (principal financial officer and principal accounting officer)*

**EXHIBIT 32.1**

**CERTIFICATION PURSUANT TO SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of ASP Isotopes Inc. (the "Corporation") on Form 10-K for the year ended December 31, 2024, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Paul Mann, as Chief Executive Officer of the Corporation, and I, Heather Kiessling, as Chief Financial Officer of the Corporation, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1)The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2)The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Corporation.

Date: March 31, 2025

By: */s/ Paul Mann*
Paul Mann
Chief Executive Officer
*(Principal Executive Officer)*

Date: March 31, 2025

By: */s/ Heather Kiessling*
Heather Kiessling
Chief Financial Officer
*(Principal Financial Officer)*

A signed original of this written statement required by Section 906 has been provided to the Corporation and will be retained by the Corporation and furnished to the Securities and Exchange Commission or its staff upon request. This certification shall not be deemed "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liability of Section 18 of the Exchange Act. Such certification shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that the Corporation specifically incorporates it by reference.