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

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2022

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 001-39729

SOTERA HEALTH COMPANY
(Exact name of registrant as specified in its charter)

Delaware	**47-3531161**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
9100 South Hills Blvd, Suite 300	
Broadview Heights, Ohio	**44147**
(Address of principal executive offices)	(Zip Code)
Registrant's telephone number, including area code	**(440) 262-1410**

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	**SHC**	**The Nasdaq Stock Market LLC**

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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). ☐ Yes ☒ No

As of July 27, 2022, there were 282,902,367 shares of the registrant's common stock, $0.01 par value per share, outstanding.

SOTERA HEALTH COMPANY
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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q includes “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Forward looking statements are often characterized by the use of the words such as “believes,” “estimates,” “expects,” “projects,” “may,” “intends,” “plans” or “anticipates,” or by discussions of strategy, plans or intentions. Such forward-looking statements involve known and unknown risks, uncertainties and other important factors that could cause our actual results, performance or achievements, or industry results, to differ materially from historical results or any future results, performance or achievements expressed, suggested or implied by such forward-looking statements. Such risks and uncertainties include, but are not limited to:

- disruption in the availability of, or increases in the price of, ethylene oxide (“EO”), Cobalt-60 (“Co-60”) or our other direct materials, services and supplies, including as a result of current geopolitical instability arising from U.S., Canadian and European Union relations with Russia and related sanctions;
- adverse changes in industry trends;
- changes in environmental, health and safety regulations or preferences;
- health and safety risks associated with the use, storage, transportation and disposal of potentially hazardous materials such as EO and Co-60;
- liability claims relating to health risks associated with the use of EO;
- current and future legal proceedings;
- competition we face;
- market changes, including inflationary trends, that impact our long-term supply contracts with variable price clauses and increase our cost of revenues;
- allegations of our failure to properly perform services and potential product liability claims, recalls, penalties and reputational harm;
- compliance with the extensive regulatory requirements to which we are subject, the related costs, and any failures to receive or maintain, or delays in receiving, required clearance or approvals;
- business continuity hazards, including supply chain disruptions and other risks associated with our operations;
- the ongoing impact of the COVID-19 pandemic;
- our ability to increase capacity at existing facilities, build new facilities in a timely and cost-effective manner and renew leases for our facilities;
- our ability to attract and retain qualified employees;
- the risks of doing business internationally, including global and regional economic and political instability and compliance with numerous laws and regulations in multiple jurisdictions;
- cyber security breaches, unauthorized data disclosures, and our dependence on information technology systems;
- any inability to pursue strategic transactions, including our ability to find suitable acquisition targets, or our failure to integrate strategic acquisitions successfully into our business;
- our ability to maintain effective internal controls over financial reporting;
- our reliance on intellectual property to maintain our competitive position and the risk of claims from third parties that we infringe or misappropriate their intellectual property rights;
- our ability to comply with rapidly evolving data privacy and security laws and regulations and any ineffective compliance efforts with such laws and regulations;
- the effects of unionization efforts and labor regulations in certain countries in which we operate;
- our ability to maintain profitability in the future;
- impairment charges on our goodwill and other intangible assets with indefinite lives, as well as other long-lived assets and intangible assets with definite lives;
- adverse changes to our tax positions in U.S. or non-U.S. jurisdictions, the interpretation and application of recent U.S. tax legislation or other changes in U.S. or non-U.S. taxation of our operations;
- our significant leverage could adversely affect our ability to raise additional capital, limit our ability to react to changes in the economy or our industry, limit our flexibility in operating our business through restrictions contained in our debt agreements and prevent us from meeting our obligations under our existing and future indebtedness; and
- uncertainty around discontinuation of LIBOR and transition to certain other interest “benchmarks.”

These statements are based on current plans, estimates and projections, and therefore you should not place undue reliance on them. Forward-looking statements speak only as of the date they are made, and we undertake no obligation to update them publicly in light of new information or future events, except as required by law. The inclusion of this forward-looking information should not be regarded as a representation by us or any other person that the future plans, estimates or expectations contemplated by us will be achieved.

You should carefully consider the above factors, as well as the factors discussed elsewhere in this Quarterly Report on Form 10-Q, including under Part II, Item 1A, “Risk Factors,” as well as Part I, Item 1A, “Risk Factors” of our Annual Report on Form 10-K for the year ended December 31, 2021 (the “2021 10-K”). If any of these trends, risks or uncertainties actually occurs or continues, our business, financial condition or operating results could be materially adversely affected, the trading prices of our securities could decline and you could lose all or part of your investment. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by this cautionary statement.

Unless expressly indicated or the context requires otherwise, the terms “Sotera Health,” “Company,” “we,” “us,” and “our” in this document refer to Sotera Health Company, a Delaware corporation, and, where appropriate, its subsidiaries on a consolidated basis.

Part I—FINANCIAL INFORMATION

Item 1. Financial Statements

Sotera Health Company

Consolidated Balance Sheets
(in thousands)

	As of	
	June 30, 2022	December 31, 2021
Assets	*(Unaudited)*	
Current assets:		
Cash and cash equivalents	**$ 139,564**	$ 106,917
Restricted cash short-term	**1,054**	7
Accounts receivable, net of allowance for uncollectible accounts of $1,816 and $1,287, respectively	**119,852**	108,183
Inventories, net	**39,652**	54,288
Prepaid expenses and other current assets	**81,173**	71,923
Income taxes receivable	**17,386**	4,643
Total current assets	**398,681**	345,961
Property, plant, and equipment, net	**699,571**	650,797
Operating lease assets	**29,853**	39,946
Deferred income taxes	**5,425**	5,885
Investment in unconsolidated affiliate	**—**	9,405
Post-retirement assets	**8,788**	5,478
Other assets	**38,308**	12,866
Other intangible assets, net	**543,057**	598,844
Goodwill	**1,116,002**	1,120,320
Total assets	**$ 2,839,685**	$ 2,789,502
Liabilities and equity		
Current liabilities:		
Accounts payable	**$ 65,271**	$ 72,868
Accrued liabilities	**52,658**	61,861
Deferred revenues	**6,863**	8,669
Current portion of finance lease obligations	**1,615**	1,160
Current portion of operating lease obligations	**8,132**	9,289
Current portion of asset retirement obligations	**606**	619
Income taxes payable	**6,876**	6,695
Total current liabilities	**142,021**	161,161
Long-term debt	**1,745,548**	1,743,534
Finance lease obligations, less current portion	**57,140**	40,877
Operating lease obligations, less current portion	**24,546**	33,017
Noncurrent asset retirement obligations	**42,688**	41,833
Deferred lease income	**20,146**	20,745
Post-retirement obligations	**11,198**	11,464
Noncurrent liabilities	**15,668**	16,274
Deferred income taxes	**144,730**	134,501
Total liabilities	**2,203,685**	2,203,406
See Commitments and contingencies note		
Equity:		
Common stock, with $0.01 par value, 1,200,000 shares authorized; 286,037 shares issued at June 30, 2022 and December 31, 2021, respectively.	**2,860**	2,860
Preferred stock, with $0.01 par value, 120,000 authorized; no shares issued at June 30, 2022 and December 31, 2021, respectively	**—**	—
Treasury stock, at cost (3,135 and 3,052 shares at June 30, 2022 and December 31, 2021, respectively)	**(32,654)**	(33,545)
Additional paid-in capital	**1,181,995**	1,172,593
Retained deficit	**(411,187)**	(472,246)
Accumulated other comprehensive loss	**(105,014)**	(83,566)
Total equity attributable to Sotera Health Company	**636,000**	586,096
Noncontrolling interests	**—**	—
Total equity	**636,000**	586,096
Total liabilities and equity	**$ 2,839,685**	$ 2,789,502

See notes to consolidated financial statements.

Sotera Health Company

Consolidated Statements of Operations and Comprehensive Income (Loss)

(in thousands, except per share amounts)
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	**2021**	**2022**	**2021**
Revenues:				
Service	**$ 221,529**	$ 208,710	**$ 427,747**	$ 397,408
Product	**45,110**	43,207	**75,646**	66,657
Total net revenues	**266,639**	251,917	**503,393**	464,065
Cost of revenues:				
Service	**98,407**	91,391	**192,983**	176,427
Product	**17,836**	16,765	**31,139**	28,505
Total cost of revenues	**116,243**	108,156	**224,122**	204,932
Gross profit	**150,396**	143,761	**279,271**	259,133
Operating expenses:				
Selling, general and administrative expenses	**63,132**	49,828	**122,674**	102,293
Amortization of intangible assets	**15,769**	15,661	**31,610**	32,204
Total operating expenses	**78,901**	65,489	**154,284**	134,497
Operating income	**71,495**	78,272	**124,987**	124,636
Interest expense, net	**14,044**	19,163	**24,448**	40,445
Impairment of investment in unconsolidated affiliate	**9,613**	—	**9,613**	—
Loss on extinguishment of debt	**—**	—	**—**	14,312
Foreign exchange (gain) loss	**(755)**	76	**33**	654
Other expense (income), net	**485**	(2,764)	**(2,482)**	(6,654)
Income before income taxes	**48,108**	61,797	**93,375**	75,879
Provision for income taxes	**17,690**	19,182	**32,316**	22,199
Net income	**30,418**	42,615	**61,059**	53,680
Less: Net income attributable to noncontrolling interests	**—**	16	**—**	239
Net income attributable to Sotera Health Company	**30,418**	42,599	**61,059**	53,441
Other comprehensive income (loss) net of tax:				
Pension and post-retirement benefits (net of taxes of $179, $(142), $87, and $(226), respectively)	**532**	(421)	**258**	(670)
Interest rate derivatives (net of taxes of $1,241, $0, $3,350 and $0, respectively)	**3,178**	—	**9,357**	—
Foreign currency translation	**(46,038)**	20,425	**(31,063)**	17,339
Comprehensive income (loss)	**(11,910)**	62,619	**39,611**	70,349
Less: comprehensive income attributable to noncontrolling interests	**—**	326	**—**	534
Comprehensive income (loss) attributable to Sotera Health Company	**$ (11,910)**	$ 62,293	**$ 39,611**	$ 69,815
Earnings per share:				
Basic	**$ 0.11**	$ 0.15	**$ 0.22**	$ 0.19
Diluted	**0.11**	0.15	**0.22**	0.19
Weighted average number of shares outstanding:				
Basic	**279,990**	279,078	**279,910**	278,953
Diluted	**280,171**	279,214	**280,038**	279,078

See notes to consolidated financial statements.

Sotera Health Company

Consolidated Statements of Cash Flows
(in thousands)
(Unaudited)

	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Operating activities:		
Net income	**$ 61,059**	$ 53,680
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	**31,611**	31,062
Amortization of intangible assets	**41,378**	44,060
Impairment of investment in unconsolidated affiliate	**9,613**	—
Loss on extinguishment of debt	**—**	14,312
Deferred income taxes	**10,416**	3,504
Share-based compensation expense	**10,339**	6,942
Accretion of asset retirement obligations	**1,118**	1,153
Unrealized foreign exchange losses	**1,274**	1,097
Unrealized gains on derivatives not designated as hedging instruments	**(8,029)**	(1,614)
Amortization of debt issuance costs	**2,836**	3,245
Other	**(4,043)**	(4,241)
Changes in operating assets and liabilities:		
Accounts receivable	**(13,921)**	(25,754)
Inventories	**14,012**	(770)
Other current assets	**(6,683)**	983
Accounts payable	**(9,993)**	15,080
Accrued liabilities	**(11,869)**	(4,375)
Income taxes payable / receivable	**(15,968)**	(3,998)
Other liabilities	**(468)**	(95)
Other long-term assets	**(4,426)**	(15)
Net cash provided by operating activities	**108,256**	134,256
Investing activities:		
Purchases of property, plant and equipment	**(71,642)**	(44,789)
Purchase of mandatorily redeemable noncontrolling interest in Nelson Laboratories Fairfield, Inc.	**—**	(12,425)
Purchase of BioScience Laboratories, LLC, net of cash acquired	**—**	(13,760)
Adjustment to purchase of Regulatory Compliance Associates Inc.	**450**	—
Net cash used in investing activities	**(71,192)**	(70,974)
Financing activities:		
Purchase of noncontrolling interests in China subsidiaries	**—**	(7,720)
Payments of debt issuance costs	**(27)**	(3,661)
Other financing activities	**(1,056)**	(709)
Net cash used in financing activities	**(1,083)**	(12,090)
Effect of exchange rate changes on cash and cash equivalents	**(2,287)**	2,578
Net increase in cash and cash equivalents, including restricted cash	**33,694**	53,770
Cash and cash equivalents, including restricted cash, at beginning of period	**106,924**	102,454
Cash and cash equivalents, including restricted cash, at end of period	**$ 140,618**	$ 156,224
Supplemental disclosures of cash flow information:		
Cash paid during the period for interest	**$ 42,057**	$ 36,615
Cash paid during the period for income taxes, net of tax refunds received	**37,340**	22,785
Purchases of property, plant and equipment included in accounts payable	**17,923**	9,670

See notes to consolidated financial statements.

Sotera Health Company

Consolidated Statements of Equity
(in thousands)
(Unaudited)

	Three Months Ended June 30, 2022							
	Common Stock							
	Shares	Amount	Treasury Stock	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance at March 31, 2022	**282,930**	**$ 2,860**	**$ (33,536)**	**$ 1,177,097**	**$ (441,605)**	**$ (62,686)**	**$ —**	**$ 642,130**
Share-based compensation plans	(28)	—	882	4,898	—	—	—	**5,780**
Comprehensive income (loss):								
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	—	532	—	**532**
Foreign currency translation	—	—	—	—	—	(46,038)	—	**(46,038)**
Interest rate derivatives, net of tax	—	—	—	—	—	3,178	—	**3,178**
Net income	—	—	—	—	30,418	—	—	**30,418**
Balance at June 30, 2022	**282,902**	**$ 2,860**	**$ (32,654)**	**$ 1,181,995**	**$ (411,187)**	**$ (105,014)**	**$ —**	**$ 636,000**

	Six Months Ended June 30, 2022							
	Common Stock							
	Shares	Amount	Treasury Stock	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance at December 31, 2021	**282,985**	**$ 2,860**	**$ (33,545)**	**$ 1,172,593**	**$ (472,246)**	**$ (83,566)**	**$ —**	**$ 586,096**
Share-based compensation plans	(83)	—	891	9,402	—	—	—	**10,293**
Comprehensive income (loss):								
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	—	258	—	**258**
Foreign currency translation	—	—	—	—	—	(31,063)	—	**(31,063)**
Interest rate derivatives, net of tax	—	—	—	—	—	9,357	—	**9,357**
Net income	—	—	—	—	61,059	—	—	**61,059**
Balance at June 30, 2022	**282,902**	**$ 2,860**	**$ (32,654)**	**$ 1,181,995**	**$ (411,187)**	**$ (105,014)**	**$ —**	**$ 636,000**

See notes to consolidated financial statements.

Sotera Health Company

Consolidated Statements of Equity (continued)
(in thousands)
(Unaudited)

Three Months Ended June 30, 2021

	Common Stock							
	Shares	Amount	Treasury Stock	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance at March 31, 2021	282,900	$ 2,860	$ (34,000)	$ 1,169,852	$ (578,286)	$ (97,162)	$ 2,480	$ 465,744
Acquisition of noncontrolling interests	—	—	—	(5,772)	—	—	(2,806)	(8,578)
Issuance of shares	47	—	—	1,080	—	—	—	1,080
Share-based compensation plans	(30)	—	—	2,406	—	—	—	2,406
Comprehensive income (loss):								
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	—	(421)	—	(421)
Foreign currency translation	—	—	—	—	—	20,115	310	20,425
Net income	—	—	—	—	42,599	—	16	42,615
Balance at June 30, 2021	282,917	$ 2,860	$ (34,000)	$ 1,167,566	$ (535,687)	$ (77,468)	$ —	$ 523,271

Six Months Ended June 30, 2021

	Common Stock							
	Shares	Amount	Treasury Stock	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance at December 31, 2020	283,248	$ 2,860	$ (34,000)	$ 1,166,412	$ (589,128)	$ (93,842)	$ 2,272	$ 454,574
Acquisition of noncontrolling interests	—	—	—	(5,772)	—	—	(2,806)	(8,578)
Issuance of shares	47	—	—	1,080	—	—	—	1,080
Share-based compensation plans	(378)	—	—	5,846	—	—	—	5,846
Comprehensive income (loss):								
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	—	(670)	—	(670)
Foreign currency translation	—	—	—	—	—	17,044	295	17,339
Net income	—	—	—	—	53,441	—	239	53,680
Balance at June 30, 2021	282,917	$ 2,860	$ (34,000)	$ 1,167,566	$ (535,687)	$ (77,468)	$ —	$ 523,271

See notes to consolidated financial statements.

1. Basis of Presentation

Principles of Consolidation – Sotera Health Company (also referred to herein as the “Company,” “we,” “our,” “us” or “its”), is a leading global provider of mission-critical end-to-end sterilization solutions, lab testing and advisory services for the healthcare industry with operations primarily in the Americas, Europe and Asia.

We operate and report in three segments, Sterigenics, Nordion and Nelson Labs. We describe our reportable segments in Note 18, “Segment Information”. All significant intercompany balances and transactions have been eliminated in consolidation.

Noncontrolling interests represented the noncontrolling stockholders’ proportionate share of the total equity in the Company’s consolidated subsidiaries. In the second quarter of 2021, we purchased the outstanding noncontrolling interests of 15% and 33% of our two China subsidiaries. Refer to Note 4, “Acquisitions” for additional details. Prior to our acquisition of the noncontrolling interests in our two subsidiaries in China, we consolidated the results of operations of these subsidiaries with our results of operations and reflected the noncontrolling interest on our Consolidated Statements of Operations and Comprehensive Income (Loss) as “Net income attributable to noncontrolling interests.”

On March 11, 2021, we purchased the 15% noncontrolling interest that remained from the August 2018 acquisition of Nelson Laboratories Fairfield, Inc. (“Nelson Labs Fairfield”). As the purchase of this noncontrolling interest was mandatorily redeemable, no earnings were allocated to this noncontrolling interest. See Note 4, “Acquisitions” for additional details.

In July 2020, we acquired a 60% equity ownership interest in Auralux Enterprises, Ltd. (“Auralux”), a joint venture to construct an E-beam facility in Alberta, Canada in connection with our acquisition of Iotron Industries Canada, Inc. (“Iotron”). We determined this to be an investment in a variable interest entity (“VIE”). The investment was not consolidated as the Company concluded that we are not the primary beneficiary of the VIE. The Company accounts for the joint venture using the equity method. The investment is reflected within “Investment in unconsolidated affiliates” on the Consolidated Balance Sheets. During the three months ended June 30, 2022, we identified certain events and circumstances that indicated a decline in value of our investment in Auralux that was other-than-temporary. Consequently, as of June 30, 2022, we wrote down the investment in Auralux to its fair value of $0, resulting in an impairment charge of approximately $9.6 million.

Use of Estimates – In preparing our consolidated financial statements in conformity with U.S. Generally Accepted Accounting Principles (“GAAP”), we make estimates and assumptions that affect the amounts reported and the accompanying notes. We regularly evaluate the estimates and assumptions used and revise them as new information becomes available. Actual results may vary from those estimates.

Interim Financial Statements – The accompanying consolidated financial statements include the assets, liabilities, operating results, and cash flows of the Company and its wholly owned subsidiaries. These financial statements are prepared in accordance with U.S. GAAP for interim financial information, the instructions to the Quarterly Report on Form 10-Q and Rule 10-01 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements. In the opinion of management, all adjustments (consisting of normal recurring adjustments) considered necessary for a fair presentation have been included. These unaudited interim financial statements should be read in conjunction with the Company's annual consolidated financial statements and accompanying notes on Form 10-K for the year ended December 31, 2021.

2. Recent Accounting Standards

Adoption of Accounting Standard Updates

Effective January 1, 2022, we adopted *Accounting Standards Update (“ASU”) 2016-13, Financial Instruments – Credit Losses* (“ASU 2016-13”): *Measurement of Credit Losses on Financial Instruments*, and the subsequently issued additional guidance that modified ASU 2016-13 which was originally issued by the Financial Accounting Standards Board (“FASB”) in June 2016. The standard requires an entity to change its accounting approach in determining impairment of certain financial instruments, including trade receivables, from an “incurred loss” to a “current expected credit loss” model. The adoption of this standard did not have a material impact on our consolidated financial statements and disclosures.

Effective January 1, 2022, we adopted *ASU 2019-12 - Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes* which was issued by the FASB in December 2019. The standard simplifies the accounting for income taxes and makes a number of changes meant to add or clarify guidance on accounting for income taxes. The adoption of this standard did not have a material impact on our consolidated financial statements and disclosures.

ASUs Issued But Not Yet Adopted

In October 2021, the FASB issued *ASU 2021-08 - Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers* ("ASU 2021-08"). The amendments in ASU 2021-08 require that an acquiring entity recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with Accounting Standards Codification ("ASC") Topic 606, Revenue from Contract with Customers ("ASC Topic 606"). At the acquisition date, an acquirer should account for the related revenue contracts in accordance with ASC Topic 606 as if it had originated the contracts. For public business entities, these amendments are effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. We are currently assessing the effect that ASU 2021-08 will have on our financial position, results of operations, and disclosures.

3. Revenue Recognition

The following table shows disaggregated net revenues from contracts with external customers by timing of revenue and by segment for the three and six months ended June 30, 2022 and 2021:

(thousands of U.S. dollars)	Three Months Ended June 30, 2022			
	Sterigenics	**Nordion**	**Nelson Labs**	**Consolidated**
Point in time	$ 157,792	$ 46,386	$ —	$ 204,178
Over time	—	4,092	58,369	62,461
Total	**$ 157,792**	**$ 50,478**	**$ 58,369**	**$ 266,639**

(thousands of U.S. dollars)	Three Months Ended June 30, 2021			
	Sterigenics	**Nordion**	**Nelson Labs**	**Consolidated**
Point in time	$ 145,182	$ 47,753	$ —	$ 192,935
Over time	—	1,372	57,610	58,982
Total	**$ 145,182**	**$ 49,125**	**$ 57,610**	**$ 251,917**

(thousands of U.S. dollars)	Six Months Ended June 30, 2022			
	Sterigenics	**Nordion**	**Nelson Labs**	**Consolidated**
Point in time	$ 307,254	$ 79,671	$ —	$ 386,925
Over time	—	4,809	111,659	116,468
Total	**$ 307,254**	**$ 84,480**	**$ 111,659**	**$ 503,393**

(thousands of U.S. dollars)	Six Months Ended June 30, 2021			
	Sterigenics	**Nordion**	**Nelson Labs**	**Consolidated**
Point in time	$ 276,333	$ 73,671	$ —	$ 350,004
Over time	—	1,372	112,689	114,061
Total	**$ 276,333**	**$ 75,043**	**$ 112,689**	**$ 464,065**

Contract Balances

As of June 30, 2022, and December 31, 2021, contract assets included in "Prepaid expenses and other current assets" on the Consolidated Balance Sheets totaled approximately $21.7 million and $15.6 million, respectively, resulting from revenue recognized over time in excess of the amount billed to the customer.

When we receive consideration from a customer prior to transferring goods or services under the terms of a sales contract, we record deferred revenue, which represents a contract liability. Deferred revenue totaled $6.9 million and $8.7 million at June 30, 2022 and December 31, 2021, respectively. We recognize deferred revenue after all revenue recognition criteria are met.

4. Acquisitions

Acquisition of Regulatory Compliance Associates Inc.

On November 4, 2021, we acquired Regulatory Compliance Associates Inc. (“RCA”) for approximately $30.6 million, net of $0.6 million of cash acquired. RCA is an industry leader in providing life sciences consulting focused on quality, regulatory, and technical advisory services for the pharmaceutical, medical device and combination device industries. Headquartered in Pleasant Prairie, Wisconsin, RCA will expand and further strengthen the technical consulting and expert advisory capabilities of our Nelson Labs segment.

The purchase price of RCA was allocated to the underlying assets acquired and liabilities assumed based upon management's estimated fair values at the date of acquisition. Changes to the allocation of the purchase price may occur as these measurements are completed. As of June 30, 2022, approximately $25.2 million of goodwill was recorded related to the RCA acquisition, representing the excess of the purchase price over preliminary estimated fair values of all the assets acquired and liabilities assumed. Based on our most recent estimates, we also recorded $6.4 million of finite-lived intangible assets, primarily related to customer relationships. The purchase price allocation will be finalized within a measurement period not to exceed one year from closing. We funded this acquisition using available cash. The acquisition price and the results of operations for this acquired entity are not material in relation to our consolidated financial statements.

Acquisition of Noncontrolling Interests in China Subsidiaries

On May 18, 2021, we acquired the remaining 15% and 33% noncontrolling interests associated with our two subsidiaries located in China. As a result, both entities are now 100% owned by the Company. The purchase price of the remaining equity interests was approximately $8.6 million, net of the cancellation of an $0.8 million demand note. We paid 90% of the cash consideration on the acquisition date. The remaining amounts were partially settled in post-closing payments in the third quarter of 2021; $0.2 million of the post-closing payment remain outstanding as of June 30, 2022 subject to the terms of the equity transfer agreements. As a result of the transactions, we continue to consolidate both of these subsidiaries, however, as of May 18, 2021, we no longer record noncontrolling interests in the consolidated financial statements as these subsidiaries are fully owned by the Company. The purchases were accounted for as equity transactions. As a result of these transactions, noncontrolling interests were reduced by $2.8 million reflecting the carrying value of the interest with $5.8 million of the difference charged to additional paid-in capital.

Acquisition of Mandatorily Redeemable Noncontrolling Interest - Nelson Labs Fairfield

On March 11, 2021, we completed the acquisition of the remaining 15% ownership of Nelson Labs Fairfield for $12.4 million, resulting in a gain of $1.2 million included in “Other expense (income), net” in the Consolidated Statements of Operations and Comprehensive Income (Loss) relative to the $13.6 million previously accrued. Pursuant to the terms of the acquisition, we initially acquired 85% of the equity interests of Nelson Labs Fairfield in August 2018 and were obligated to acquire the remaining 15% noncontrolling interest within three years from the date of the acquisition.

Acquisition of BioScience Laboratories, LLC

On March 8, 2021, we acquired BioScience Laboratories, LLC (“BioScience Labs”) for approximately $13.5 million, net of $0.2 million of cash acquired plus the contemporaneous repayment of BioScience Lab's outstanding debt of $1.9 million. BioScience Labs is a provider of outsourced topical antimicrobial product testing in the pharmaceutical, medical device, and consumer products industries with one location in Bozeman, Montana. BioScience Labs is included within the Nelson Labs segment.

The purchase price of BioScience was allocated to the underlying assets acquired and liabilities assumed based upon management's estimated fair values at the date of acquisition. Approximately $8.4 million of goodwill was recorded related to the BioScience Labs acquisition, representing the excess of the purchase price over preliminary estimated fair values of all the assets acquired and liabilities assumed. We funded this acquisition using available cash. The acquisition price and the results of operations for this acquired entity are not material in relation to our consolidated financial statements.

5. Inventories

Inventories consisted of primarily of the following:

(thousands of U.S. dollars)	June 30, 2022	December 31, 2021
Raw materials and supplies	**$ 33,329**	$ 41,514
Work-in-process	**484**	3,919
Finished goods	**5,961**	8,979
	39,774	54,412
Reserve for excess and obsolete inventory	**(122)**	(124)
Inventories, net	**$ 39,652**	$ 54,288

6. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consisted primarily of the following:

(thousands of U.S. dollars)	June 30, 2022	December 31, 2021
Prepaid taxes	**$ 27,972**	$ 24,937
Prepaid business insurance	**5,070**	10,707
Prepaid rent	**1,153**	920
Customer contract assets	**21,746**	15,565
Insurance and indemnification receivables	**4,245**	3,144
Current deposits	**647**	623
Prepaid maintenance contracts	**388**	279
Value added tax receivable	**1,128**	2,512
Prepaid software licensing	**2,444**	2,055
Stock supplies	**3,420**	3,374
Embedded derivatives	**1,389**	496
Other	**11,571**	7,311
Prepaid expenses and other current assets	**$ 81,173**	$ 71,923

7. Goodwill and Other Intangible Assets

Changes to goodwill during the six months ended June 30, 2022 were as follows:

(thousands of U.S. dollars)	Sterigenics	Nordion	Nelson Labs	Total
Goodwill at December 31, 2021	$ 660,743	$ 288,905	$ 170,672	$ 1,120,320
RCA acquisition measurement period adjustments	—	—	4,601	4,601
Changes due to foreign currency exchange rates	(1,857)	(4,307)	(2,755)	(8,919)
Goodwill at June 30, 2022	**$ 658,886**	**$ 284,598**	**$ 172,518**	**$ 1,116,002**

Other intangible assets consisted of the following:

(thousands of U.S. dollars) As of June 30, 2022	Gross Carrying Amount	Accumulated Amortization
Finite-lived intangible assets		
Customer relationships	**$ 652,538**	**$ 391,452**
Proprietary technology	**87,177**	**47,793**
Trade names	**2,555**	**452**
Land-use rights	**9,255**	**1,620**
Sealed source and supply agreements	**214,744**	**91,341**
Other	**5,679**	**2,673**
Total finite-lived intangible assets	**971,948**	**535,331**
Indefinite-lived intangible assets		
Regulatory licenses and other[(a)]	**80,878**	**—**
Trade names / trademarks	**25,562**	**—**
Total indefinite-lived intangible assets	**106,440**	**—**
Total	**$ 1,078,388**	**$ 535,331**

As of December 31, 2021	Gross Carrying Amount	Accumulated Amortization
Finite-lived intangible assets		
Customer relationships	$ 668,628	$ 365,935
Proprietary technology	88,826	44,866
Trade names	145	116
Land-use rights	9,744	1,586
Sealed source and supply agreements	241,611	109,838
Other	6,454	2,166
Total finite-lived intangible assets	1,015,408	524,507
Indefinite-lived intangible assets		
Regulatory licenses and other[(a)]	82,110	—
Trade names / trademarks	25,833	—
Total indefinite-lived intangible assets	107,943	—
Total	$ 1,123,351	$ 524,507

(a) Includes certain transportation certifications, a class 1B nuclear license and other intangibles related to obtaining such licensure. These assets are considered indefinite-lived as the decision for renewal by the Canadian Nuclear Safety Commission is highly based on a licensee’s previous assessments, reported incidents, and annual compliance and inspection results. New applications for license can take a significant amount of time and cost; whereas an existing licensee with a historical record of compliance and current operating conditions more than likely ensures renewal for another 10 year license period as Nordion has demonstrated over its 75 years of history.

Amounts include the impact of foreign currency translation.

Amortization expense for other intangible assets was $21.2 million ($5.4 million is included in “Cost of revenues” and $15.8 million in “Selling, general and administrative expenses”) and $41.4 million ($9.8 million is included in “Cost of revenues” and $31.6 million in “Selling, general and administrative expenses”) in the Consolidated Statements of Operations and Comprehensive Income (Loss) for the three and six months ended June 30, 2022, respectively.

Amortization expense for other intangible assets was $21.8 million ($6.1 million is included in “Cost of revenues” and $15.7 million in “Selling, general and administrative expenses”) and $44.1 million ($11.9 million is included in “Cost of revenues” and $32.2 million in “Selling, general and administrative expenses”) in the Consolidated Statements of Operations and Comprehensive Income (Loss) for the three and six months ended June 30, 2021, respectively.

The estimated aggregate amortization expense for finite-lived intangible assets for each of the next five years and thereafter is as follows:

(thousands of U.S. dollars)

For the remainder of 2022	**$**	**40,551**
2023		**81,166**
2024		**80,389**
2025		**43,028**
2026		**22,788**
Thereafter		**168,695**
Total	**$**	**436,617**

The weighted-average remaining useful life of the finite-lived intangible assets was approximately 8.8 years as of June 30, 2022.

8. Accrued Liabilities

Accrued liabilities consisted of the following:

(thousands of U.S. dollars)

		June 30, 2022		December 31, 2021
Accrued employee compensation	**$**	**27,500**	$	33,334
Legal reserves		**3,119**		3,259
Accrued interest expense		**782**		10,755
Embedded derivatives		**2,322**		—
Professional fees		**7,972**		4,314
Accrued utilities		**1,671**		1,797
Insurance accrual		**1,781**		2,068
Accrued taxes		**3,291**		2,209
Other		**4,220**		4,125
Accrued liabilities	**$**	**52,658**	$	61,861

9. Long-Term Debt

Long-term debt consisted of the following:

(thousands of U.S. dollars)

		June 30, 2022		December 31, 2021
Term loan, due 2026	**$**	**1,763,100**	$	1,763,100
Other long-term debt		**450**		450
Total long-term debt		**1,763,550**		1,763,550
Less unamortized debt issuance costs and debt discounts		**(18,002)**		(20,016)
Total long-term debt, less debt issuance costs and debt discounts	**$**	**1,745,548**	$	1,743,534

Debt Facilities

Senior Secured Credit Facilities

On December 13, 2019, Sotera Health Holdings, LLC (“SHH”), our wholly owned subsidiary, entered into senior secured first lien credit facilities (the “Senior Secured Credit Facilities”), consisting of both a prepayable senior secured first lien term loan (the “Term Loan”) and a senior secured first lien revolving credit facility (the “Revolving Credit Facility”) pursuant to a first lien credit agreement (the “Credit Agreement”). The Revolving Credit Facility and Term Loan mature on June 13, 2026 and December 13, 2026, respectively. The total borrowing capacity under the Revolving Credit Facility is $347.5 million. The Senior Secured Credit Facilities also provide SHH the right at any time and under certain conditions to request incremental term loans or incremental revolving credit commitments based on a formula defined in the Senior Secured Credit Facilities. As of June 30, 2022 and December 31, 2021, total borrowings under the Term Loan were $1,763.1 million, respectively, and there were no borrowings outstanding on the Revolving Credit Facility. The weighted average interest rate on borrowings under the Term Loan for the three months ended June 30, 2022 and June 30, 2021 was 3.53% and 3.25%, respectively, and 3.39% and 3.64% for the six months ended June 30, 2022 and June 30, 2021, respectively.

On January 20, 2021, we closed on an amendment repricing our Term Loan. The interest rate spread over the London Interbank Offered Rate (“LIBOR”) on the facility was reduced from 450 basis points to 275 basis points, and the facility’s LIBOR floor was reduced from 100 basis points to 50 basis points. The changes resulted in an effective reduction in current interest rates of 225 basis points. In connection with this amendment, we wrote off $11.3 million of unamortized debt issuance and discount costs and incurred an additional $2.9 million of expense related to debt issuance costs attributable to the refinancing. These costs were recorded to “Loss on extinguishment of debt” in our Consolidated Statements of Operations and Comprehensive Income (Loss).

On March 26, 2021, we amended the Revolving Credit Facility, to (i) decrease the Applicable Rate (as defined in the Credit Agreement) related to any Revolving Loans (as defined in the Credit Agreement) from a rate per annum that ranged from an alternative base rate (“ABR”) plus 2.50% to ABR plus 3.00% depending on SHH’s Senior Secured First Lien Net Leverage Ratio to ABR plus 1.75%; and in the case of Eurodollar Loans (as defined in the Credit Agreement) from a rate per annum which ranged from the Adjusted LIBOR plus 3.50% to the Adjusted LIBOR plus 4.00% depending on SHH’s Senior Secured First Lien Net Leverage Ratio (as defined in the Credit Agreement), to the Adjusted LIBOR (as defined in the Credit Agreement) plus 2.75%, and (ii) extend the maturity date of the Revolving Facility from December 13, 2024 to June 13, 2026. The other material terms of the Credit Agreement remain unchanged and the amendment does not change the capacity of our Revolving Credit Facility. No unamortized debt issuance costs associated with the Revolving Credit Facility were written off and direct fees and costs incurred in connection with the amendment were immaterial.

As of June 30, 2022 and December 31, 2021, capitalized debt issuance costs totaled $2.4 million and $2.7 million, respectively, and debt discounts totaled $15.6 million and $17.3 million, respectively, related to the Senior Secured Credit Facilities. Such costs are recorded as a reduction of debt on our Consolidated Balance Sheets and amortized as a component of interest expense over the term of the debt agreement.

The Senior Secured Credit Facilities contain additional covenants that, among other things, restrict, subject to certain exceptions, our ability and the ability of our restricted subsidiaries to engage in certain activities, such as incur indebtedness or permit to exist any lien on any property or asset now owned or hereafter acquired, as specified in the Senior Secured Credit Facilities. The Senior Secured Credit Facilities also contain certain customary affirmative covenants and events of default, including upon a change of control. As of June 30, 2022, we were in compliance with all the Senior Secured Credit Facilities covenants.

All of SHH’s obligations under the Senior Secured Credit Facilities are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of the Company, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the Senior Secured Credit Facilities, and the guarantees of such obligations, are secured by substantially all assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Senior Secured Credit Facilities.

Outstanding letters of credit are collateralized by encumbrances against the Revolving Credit Facility and the collateral pledged thereunder, or by cash placed on deposit with the issuing bank. As of June 30, 2022, the Company had $70.1 million of letters of credit issued against the Revolving Credit Facility, resulting in total availability under the Revolving Credit Facility of $277.4 million.

Term Loan Interest Rate Risk Management

The Company utilizes interest rate derivatives to reduce the variability of cash flows in the interest payments associated with the Term Loan due to changes in LIBOR (or its successor). For additional information on the derivative instruments described above, refer to Note 17, “Financial Instruments and Financial Risk”, *“Derivatives Instruments.”*

First Lien Notes

On July 31, 2020, SHH issued $100.0 million aggregate principal amount of senior secured first lien notes due 2026 (the “First Lien Notes”), which were scheduled to mature on December 13, 2026. On August 27, 2021 SHH redeemed in full the $100.0 million aggregate principal amount of the First Lien Notes. In connection with this redemption, the Company paid a $3.0 million early redemption premium, in accordance with the terms of the First Lien Notes Indenture, and wrote off $3.4 million of debt issuance and discount costs. The Company recognized these expenses within “Loss on extinguishment of debt” in our Consolidated Statements of Operations and Comprehensive Income (Loss) for the year ended December 31, 2021.

Prior to the redemption, the First Lien Notes bore interest at a rate equal to LIBOR subject to a 1.00% floor plus 6.00% per annum. Interest was payable on a quarterly basis with no principal due until maturity. The weighted average interest rate on the First Lien Notes during 2021 up to the August 27, 2021 redemption date was 7.00%.

Aggregate Maturities

Aggregate maturities of the Company’s long-term debt, excluding debt discounts, as of June 30, 2022, are as follows:

(thousands of U.S. dollars)		
2022	**$**	**—**
2023		**450**
2024		**—**
2025		**—**
2026		**1,763,100**
Thereafter		**—**
Total	**$**	**1,763,550**

10. Income Taxes

Income tax expense is provided on an interim basis based upon our estimate of the annual effective income tax rate. In determining the estimated annual effective income tax rate, we analyze various factors, including projections of our annual earnings and the taxing jurisdictions where the earnings will occur, the impact of state and local taxes, our ability to utilize tax credits and net operating loss carryforwards and available tax planning alternatives.

Our effective tax rates were 36.8 % and 34.6% for the three and six months ended June 30, 2022, respectively, compared to 31.0% and 29.3% for the three and six months ended June 30, 2021, respectively.

Income tax expense for the three months ended June 30, 2022 differed from the statutory rate primarily due to a net increase in the valuation allowance, the impact of the foreign rate differential, and global intangible low-tax income (“GILTI”). The increase in the valuation allowance was attributable to the limitation on the deductibility of interest expense and the impairment of the investment in Auralux. Provision for income tax expense for the three months ended June 30, 2021 was offset by a discrete item, which reversed the valuation allowance on deferred tax assets related to certain asset retirement obligations.

Income tax expense for the six months ended June 30, 2022 differed from the statutory rate primarily due to a net increase in the valuation allowance, the impact of the foreign rate differential, and GILTI. Provision for income tax expense for the six months ended June 30, 2021 was offset by an additional discrete item in the first quarter of 2021, which reversed the valuation allowance on deferred tax assets related to certain asset retirement obligations.

11. Employee Benefits

The Company sponsors various post-employment benefit plans including, in certain countries outside the U.S., defined benefit and defined contribution pension plans, retirement compensation arrangements, and plans that provide extended health care coverage to retired employees, the majority of which relate to Nordion.

Defined benefit pension plan

The interest cost, expected return on plan assets and amortization of net actuarial loss are recorded in “Other expense (income), net” and the service cost component is included in the same financial statement line item as the applicable employee’s wages in the Consolidated Statements of Operations and Comprehensive Income (Loss). The components of net periodic pension cost for the defined benefit plan for the three and six months ended June 30, 2022 and 2021 were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
(thousands of U.S. dollars)	**2022**	**2021**	**2022**	**2021**
Service cost	**$ 247**	$ 307	**$ 496**	$ 605
Interest cost	**1,889**	1,662	**3,792**	3,275
Expected return on plan assets	**(3,676)**	(3,665)	**(7,380)**	(7,222)
Amortization of net actuarial loss	**—**	275	**—**	542
Net periodic benefit	**$ (1,540)**	$ (1,421)	**$ (3,092)**	$ (2,800)

Other benefit plans

Other benefit plans include a supplemental retirement arrangement, a retirement and termination allowance, and post-retirement benefit plans, which include contributory health and dental care benefits and contributory life insurance coverage. All but one, non-pension post-employment benefit plans are unfunded. The components of net periodic pension cost for the other benefit plans for the three and six months ended June 30, 2022 and 2021 were as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
(thousands of U.S. dollars)	**2022**	**2021**	**2022**	**2021**
Service cost	**$ 4**	$ 7	**$ 8**	$ 14
Interest cost	**65**	61	**130**	120
Amortization of net actuarial (gain) loss	**(2)**	9	**(4)**	17
Net periodic benefit cost	**$ 67**	$ 77	**$ 134**	$ 151

We currently expect funding requirements of approximately $3.1 million in each of the next five years to fund the regulatory solvency deficit, as defined by Canadian federal regulation, which require solvency testing on defined benefit pension plans.

The Company may obtain a qualifying letter of credit for solvency payments, up to 15% of the market value of solvency liabilities as determined on the valuation date, instead of paying cash into the pension fund. As of June 30, 2022, and December 31, 2021, we had letters of credit outstanding relating to the defined benefit plans totaling $46.9 million and $46.2 million, respectively. The actual funding requirements over the five-year period will be dependent on subsequent annual actuarial valuations. These amounts are estimates, which may change with actual investment performance, changes in interest rates, any pertinent changes in Canadian government regulations and any voluntary contributions.

12. Related Parties

We do business with a number of companies affiliated with Warburg Pincus and GTCR, which we refer to collectively as the “Sponsors”. All transactions with these companies have been conducted in the ordinary course of our business and are not material to our operations.

13. Other Comprehensive Income (Loss)

Amounts in accumulated other comprehensive income (loss) are presented net of the related tax. Foreign currency translation is not adjusted for income taxes.

Changes in our accumulated other comprehensive income (loss) balances, net of applicable tax, were as follows:

(thousands of U.S. dollars)	Defined Benefit Plans	Foreign Currency Translation	Interest Rate Derivatives	Total
Beginning balance – April 1, 2022	**$ (17,855)**	**$ (51,414)**	**$ 6,583**	**$ (62,686)**
Other comprehensive income (loss) before reclassifications	**534**	**(46,038)**	**3,178**	**(42,326)**
Amounts reclassified from accumulated other comprehensive income (loss)	**(2)** (a)	**—**	**—**	**(2)**
Net current-period other comprehensive income (loss)	**532**	**(46,038)**	**3,178**	**(42,328)**
Ending balance – June 30, 2022	**$ (17,323)**	**$ (97,452)**	**$ 9,761**	**$ (105,014)**
Beginning balance – January 1, 2022	**$ (17,581)**	**$ (66,389)**	**$ 404**	**(83,566)**
Other comprehensive income (loss) before reclassifications	**262**	**(31,063)**	**9,357**	**(21,444)**
Amounts reclassified from accumulated other comprehensive income (loss)	**(4)** (a)	**—**	**—**	**(4)**
Net current-period other comprehensive income (loss)	**258**	**(31,063)**	**9,357**	**(21,448)**
Ending balance – June 30, 2022	**$ (17,323)**	**$ (97,452)**	**$ 9,761**	**$ (105,014)**

(thousands of U.S. dollars)	Defined Benefit Plans	Foreign Currency Translation	Interest Rate Derivatives	Total
Beginning balance – April 1, 2021	$ (44,392)	$ (52,770)	$ —	$ (97,162)
Other comprehensive income (loss) before reclassifications	(705)	20,115	—	19,410
Amounts reclassified from accumulated other comprehensive income (loss)	284 (a)	—	—	284
Net current-period other comprehensive income (loss)	(421)	20,115	—	19,694
Ending balance – June 30, 2021	$ (44,813)	$ (32,655)	$ —	$ (77,468)
Beginning balance – January 1, 2021	$ (44,143)	$ (49,699)	$ —	$ (93,842)
Other comprehensive income (loss) before reclassifications	(1,229)	17,044	—	15,815
Amounts reclassified from accumulated other comprehensive income (loss)	559 (a)	—	—	559
Net current-period other comprehensive income (loss)	(670)	17,044	—	16,374
Ending balance – June 30, 2021	$ (44,813)	$ (32,655)	$ —	$ (77,468)

(a) For defined benefit pension plans, amounts reclassified from accumulated other comprehensive income (loss) are recorded to “Other expense (income), net” within the Consolidated Statements of Operations and Comprehensive Income (Loss).

14. Share-Based Compensation

Pre-IPO Awards

Restricted stock distributed in respect of pre-IPO Class B-1 time vesting units vests on a daily basis pro rata over a five-year vesting period (20% per year) beginning on the original vesting commencement date of the corresponding Class B-1 time vesting units, subject to the grantee’s continued services through each vesting date. Upon the occurrence of a change in control of the Company, all then outstanding unvested shares of our common stock distributed in respect of Class B-1 Units will become vested as of the date of consummation of such change in control, subject to the grantee’s continued services through the consummation of the change in control.

Restricted stock distributed in respect of pre-IPO Class B-2 Units (which were considered performance vesting units) are scheduled to vest only upon satisfaction of certain thresholds. These units generally vest as of the first date on which (i) our Sponsors have received actual cash proceeds in an amount equal to or in excess of at least two and one-half times their invested capital in Sotera Health Topco Parent, L.P. (of which the Company was a direct wholly owned subsidiary prior to the IPO) and (ii) the Sponsors’ internal rate of return exceeds twenty percent, subject to such grantee’s continued services through such date. In the event of a change in control of the Company, any outstanding shares of our common stock distributed in respect of Class B-2 Units that remain unvested immediately following the consummation of such a change in control of the Company shall be immediately canceled and forfeited without compensation. Stock based compensation expense attributed to the pre-IPO Class B-2 awards was recorded in the fourth quarter of 2020 as the related performance conditions were considered probable of achievement and the implied service conditions were met. As of June 30, 2022, these awards remain unvested.

We recognized $0.5 million and $0.7 million of share-based compensation expense related to the pre-IPO Class B-1 awards for the three months ended June 30, 2022 and 2021, respectively, and $1.1 million and $1.3 million for the six months ended June 30, 2022 and 2021, respectively.

A summary of the activity for the six months ended June 30, 2022 related to the restricted stock awards distributed to the Company service providers in respect of the pre-IPO awards (Class B-1 and B-2 Units) is presented below:

	Restricted Stock - Pre-IPO B-1	**Restricted Stock - Pre-IPO B-2**
Unvested at December 31, 2021	1,206,089	2,023,959
Forfeited	(32,614)	(136,252)
Vested	(251,639)	—
Unvested at June 30, 2022	**921,836**	**1,887,707**

2021 Omnibus Incentive Plan

We maintain a long-term incentive plan (the “2020 Omnibus Incentive Plan” or the “2020 Plan”) that allows for grants of incentive stock options to employees (including employees of any of our subsidiaries), nonstatutory stock options, restricted stock awards (“RSAs”), restricted stock units (“RSUs”) and other cash-based, equity-based or equity-related awards to employees, directors, and consultants, including employees or consultants of our subsidiaries.

We recognized $5.3 million ($2.2 million for stock options and $3.1 million for RSUs) and $2.8 million ($1.3 million for stock options and $1.5 million for RSUs) of share-based compensation expense for these awards for the three months ended June 30, 2022 and 2021, respectively. We recognized $9.2 million ($3.7 million for stock options and $5.5 million for RSUs) and $5.6 million ($2.5 million for stock options and $3.1 million for RSUs) for the six months ended June 30, 2022 and 2021, respectively, in our Consolidated Statements of Operations and Comprehensive Income (Loss), in “Selling, general and administrative expenses.”

Stock Options

Stock options generally vest ratably over a period of three or four years. They have an exercise price equal to the fair market value of a share of common stock on the date of grant, and a contractual term of 10 years. The following table summarizes our stock option activity for the six months ended June 30, 2022:

	Number of Shares	Weighted-average Exercise Price
At December 31, 2021	2,423,256	$ 23.02
Granted	1,416,967	20.03
Forfeited	(61,393)	22.78
Exercised	—	—
At June 30, 2022	**3,778,830**	**$ 21.90**

As of June 30, 2022, there were 0.6 million stock options vested.

RSUs

RSUs generally vest ratably over a period of one to four years and are valued based on our market price on the date of grant. The following table summarizes our unvested RSUs activity for the six months ended June 30, 2022:

	Number of Shares	Weighted-average Grant Date Fair Value
Unvested at December 31, 2021	640,122	$ 23.19
Granted	923,137	20.70
Forfeited	(37,499)	22.68
Vested	(88,459)	24.13
Unvested at June 30, 2022	**1,437,301**	**$ 21.55**

15. Earnings Per Share

Basic earnings per share represents the amount of income attributable to each common share outstanding. Diluted earnings per share represents the amount of income attributable to each common share outstanding adjusted for the effects of potentially dilutive common shares. Potentially dilutive common shares include stock options and other stock-based awards. In the periods where the effect would be antidilutive, potentially dilutive common shares are excluded from the calculation of diluted earnings per share.

In periods in which the Company has net income, earnings per share is calculated using the two-class method. This method is required as unvested restricted stock distributed in respect of pre-IPO Class B-1 and B-2 awards have the right to receive non-forfeitable dividends or dividend equivalents if the Company were to declare dividends on its common stock. Pursuant to the two-class method, earnings for each period are allocated on a pro-rata basis to common stockholders and unvested pre-IPO Class B-1 and B-2 restricted stock awards. Diluted earnings per share is computed using the more dilutive of (a) the two-class method, or (b) treasury stock method, as applicable, to the potentially dilutive instruments.

Our basic and diluted earnings per common share are calculated as follows:

in thousands of U.S. dollars and share amounts (except per share amounts)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Earnings:				
Net income	**$ 30,418**	$ 42,615	**$ 61,059**	$ 53,680
Less: Net income attributable to noncontrolling interests	**—**	16	**—**	239
Less: Allocation to participating securities	**308**	574	**645**	746
Net income attributable to Sotera Health Company common shareholders	**$ 30,110**	$ 42,025	**$ 60,414**	$ 52,695
Weighted Average Common Shares:				
Weighted-average common shares outstanding - basic	**279,990**	279,078	**279,910**	278,953
Dilutive effect of potential common shares	**181**	136	**128**	125
Weighted-average common shares outstanding - diluted	**280,171**	279,214	**280,038**	279,078
Earnings per Common Share:				
Net income per common share attributable to Sotera Health Company common shareholders - basic	**$ 0.11**	$ 0.15	**$ 0.22**	$ 0.19
Net income per common share attributable to Sotera Health Company common shareholders - diluted	**0.11**	0.15	**0.22**	0.19

Diluted earnings per share does not consider the following potential common shares as the effect would be anti-dilutive:

in thousands of share amounts	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Stock options	3,780	2,404	3,337	2,404
RSUs	11	4	17	4
Total anti-dilutive securities	3,791	2,408	3,354	2,408

16. Commitments and Contingencies

From time to time, we may be subject to various lawsuits and other claims, as well as gain contingencies, in the ordinary course of our business. In addition, from time to time, we receive communications from government or regulatory agencies concerning investigations or allegations of noncompliance with laws or regulations in jurisdictions in which we operate.

We establish reserves for specific liabilities in connection with regulatory and legal actions that we determine to be both probable and reasonably estimable. No material amounts have been accrued in our consolidated financial statements with respect to any loss contingencies. In certain of the matters described below, we are not able to make a reasonable estimate of any liability because of the uncertainties related to the outcome and/or the amount or range of loss. While it is not possible to determine the ultimate disposition of each of these matters, we do not expect that the ultimate resolution of pending regulatory and legal matters in future periods, including the matters described below, will have a material effect on our financial condition or results of operations. Despite the above, the Company may incur material defense and settlement costs, diversion of management resources and other adverse effects on our business, financial condition, or results of operations.

Ethylene Oxide Tort Litigation

Sterigenics and other medical supply sterilization companies have been subjected to personal injury and related tort lawsuits alleging various injuries caused by low-level environmental exposure to EO emissions from sterilization facilities. Those lawsuits, as detailed further below, are individual claims, as opposed to class actions.

Illinois

Approximately 780 plaintiffs have filed lawsuits against subsidiaries of the Company and other parties, alleging personal injuries including cancer and other diseases, or wrongful death, resulting from purported emissions and releases of EO from Sterigenics U.S., LLC's former Willowbrook facility. Additional derivative claims are alleged on behalf of other individuals related to some of these personal injury plaintiffs. Each plaintiff seeks damages in an amount to be determined by the trier of fact. The lawsuits were consolidated for pre-trial purposes by the Cook County Circuit Court, Illinois (the "Consolidated Case"). Plaintiffs have not yet made any specific damages claims.

Fact discovery in the Consolidated Case concluded on February 1, 2022. On June 28, 2022 the Court granted summary judgment, dismissing plaintiffs' ultrahazardous activity / strict liability claims and denying the remainder of the motions. Three of the individual cases included in the Consolidated Case have been scheduled for trials in 2022. Plaintiffs in those three cases have been granted permission to seek punitive damage awards against subsidiaries of the Company and another party. The first trial is now expected to begin on August 12, 2022. The next two individual trials are scheduled to begin in the third and fourth quarters of 2022, followed by five individual trials scheduled to occur consecutively, beginning in the first quarter of 2023. Additional trial dates are expected to be announced on September 7, 2022.

Georgia

Since August 17, 2020, approximately 300 plaintiffs have filed lawsuits against subsidiaries of the Company and other parties in the State Court of Cobb County, Georgia and the State Court of Gwinnett County, Georgia alleging that they suffered personal injuries resulting from emissions and releases of EO from Sterigenics' Atlanta facility. Additional derivative claims are alleged on behalf of other individuals related to some of these personal injury plaintiffs. Our subsidiaries are also defendants in two lawsuits alleging that the Atlanta facility has devalued and harmed plaintiffs' use of real properties they own in Smyrna, Georgia and caused other damages. These personal injury and property devaluation plaintiffs seek various forms of relief including damages. All but two of the personal injury lawsuits pending in Cobb County have been consolidated for pretrial purposes. The Court has entered a phased case management schedule for a "pool" of ten of the consolidated cases by which threshold general causation issues will be decided in Phase 1, followed by specific causation issues in Phase 2 as to any of the pooled cases that survive Phase 1. The Court has stayed the remainder of the consolidated personal injury cases pending in Cobb County and an immediate appeal of a discrete procedural issue is being pursued by the defendants. One personal injury case is pending in Gwinnett County and is scheduled for trial in June 2023. The remaining two personal injury cases and two property devaluation cases are in various stages of pleadings and motions practice and fact discovery.

Georgia Facility Operations Litigation

In October 2019, while Sterigenics had voluntarily suspended the facility's operations to install emissions reduction enhancements at its Atlanta facility, Cobb County, Georgia officials asserted that the facility had an incorrect "certificate of occupancy" and could not resume operations without obtaining a new certificate of occupancy after a third-party code compliance review. On March 30, 2020 Sterigenics filed suit against Cobb County, Georgia and certain of its officials for wrongfully interfering with operations of the facility. On April 1, 2020 Sterigenics won a Temporary Restraining Order prohibiting Cobb County officials from interfering with the facility's normal operations, which relief has been extended until entry of a final judgment in the case. The parties are conducting expert discovery, which is scheduled to end in September 2022. A Modified Scheduling Order was entered on July 14, 2022, including that trial will take place no later than March 2023.

New Mexico Attorney General Litigation

On December 22, 2020, the New Mexico Attorney General filed a lawsuit in the Third Judicial District Court, Doña Ana County, New Mexico against the Company and certain subsidiaries alleging that emissions of EO from Sterigenics' sterilization facility in Santa Teresa, New Mexico have deteriorated the air quality in Santa Teresa and surrounding communities and materially contributed to increased health risks suffered by residents of those communities. The Complaint asserts claims for public nuisance, negligence, strict liability, violations of New Mexico's Public Nuisance Statute and Unfair Practices Act and seeks various forms of relief including a temporary restraining order and preliminary injunctive relief and damages. On June 29, 2021, the Court entered an Order Granting Preliminary Injunction (the "Order"). The Order does not require closure of the facility, but prohibits Sterigenics from allowing any uncontrolled emission or release of EO from the facility. On December 20, 2021 the Court entered an order identifying a protocol to monitor Sterigenics' compliance with the Order. A motion challenging the Court's jurisdiction over the Company and certain other defendants has been held in abeyance until the completion of jurisdictional discovery, and all other motions to dismiss have been denied. The parties are conducting fact discovery.

* * *

Our insurance for litigation related to alleged environmental liabilities, like the litigation pending in Illinois, Georgia and New Mexico described above has limits of $10.0 million per occurrence and $20.0 million in the aggregate. The per occurrence limit related to the Willowbrook, Illinois litigation was fully utilized by June 30, 2020. The remaining $10.0 million limit is currently being utilized for occurrences related to the EO litigation in Georgia and New Mexico described above. As of June 30, 2022, we have utilized approximately $6.0 million of the remaining $10.0 million limit. Our insurance for future alleged environmental liabilities excludes coverage for EO claims.

In addition, we are pursuing other insurance coverage for EO tort litigation. In 2021, Sterigenics U.S., LLC filed an insurance coverage lawsuit in the U.S. District Court for the Northern District of Illinois relating to two commercial general liability policies issued in the 1980s. On August 3, 2022, the Court issued a Memorandum Opinion and Order concluding that the insurer owes Sterigenics U.S., LLC and another insured party a duty to defend the Willowbrook, Illinois litigation, which may allow us to recover defense costs related to that litigation.

17. Financial Instruments and Financial Risk

Derivative Instruments

We do not use derivatives for trading or speculative purposes and are not a party to leveraged derivatives.

Derivatives Designated in Hedge Relationships

From time to time, the Company utilizes interest rate derivatives designated in hedge relationships to manage interest rate risk associated with our variable rate borrowings. These instruments are measured at fair value with changes in fair value recorded as a component of "Accumulated other comprehensive income (loss)" on our Consolidated Balance Sheets.

In May 2022, we entered into two interest rate cap agreements with a combined notional amount of $1,000.0 million for a total option premium of $4.1 million. The interest rate caps have a forward start date of July 31, 2023 and expire on July 31, 2024. We have designated these interest rate caps as cash flow hedges designed to hedge the variability of cash flows attributable to changes in the benchmark interest rate of our Term Loan. Under the current terms of the loan agreement, the benchmark interest rate index is expected to transition from LIBOR to the term Secured Overnight Financing Rate ("SOFR") at the earlier of June 30, 2023 or the Company's election to "early opt-in" to SOFR. Accordingly, the interest rate cap agreements hedge the variability of cash flows attributable to changes in SOFR by limiting our cash flow exposure related to the term SOFR under a portion of our variable rate borrowings to 3.5%.

In October 2021, we entered into two interest rate cap agreements with a combined notional amount of $1,000.0 million for a total option premium of $1.8 million. Both interest rate caps have a forward start date of December 31, 2022 and expire on July 31, 2023. These interest rate caps are designated as cash flow hedges and are designed to hedge the variability of cash flows attributable to changes in LIBOR (or its successor), the benchmark interest rate being hedged, by limiting our cash flow exposure related to the LIBOR base rate under a portion of our variable rate borrowings to 1.0%.

Derivatives Not Designated in Hedge Relationships

Additionally, from time to time, the Company enters into interest rate derivatives to manage economic risks associated with our variable rate borrowings that are not designated in hedge relationships. These instruments are recorded at fair value on the Consolidated Balance Sheets, with any changes in the value recorded in "Interest expense, net" in the Consolidated Statements of Operations and Comprehensive Income (Loss).

In June 2020, SHH entered into two interest rate cap agreements with notional amounts of $1,000.0 million and $500.0 million, respectively, for a total option premium of $0.3 million. These instruments were initially scheduled to terminate on August 31, 2021 and February 28, 2022, respectively. The interest rate caps limit our cash flow exposure related to the LIBOR base rate under a portion of our variable rate borrowings to 1%. In February 2021, we amended the two interest rate cap agreements referenced above to reduce the strike rate from 1% to 0.5%. Premiums paid to amend the interest rate caps were immaterial.

We also entered into two additional interest rate cap agreements in February 2021 with a combined notional amount of $1,000.0 million, for a total option premium of $0.4 million. These instruments were effective September 30, 2021, and will terminate on December 31, 2022. The amended and new interest rate caps limit our cash flow exposure related to LIBOR under a portion of our variable rate borrowings to 0.5%.

The Company also entered into foreign currency forward contracts to manage foreign currency exchange rate risk of our intercompany loans in certain of our international subsidiaries. The foreign currency forward contracts expire on a monthly basis. The fair value of the outstanding foreign currency forward contracts was zero as of June 30, 2022 and December 31, 2021, respectively.

Embedded Derivatives

We have embedded derivatives in certain of our customer and supply contracts as a result of the currency of the contract being different from the functional currency of the parties involved. Changes in the fair value of the embedded derivatives are recognized in “Other expense (income), net” in the Consolidated Statements of Operations and Comprehensive Income (Loss).

The following table provides a summary of the notional and fair values of our derivative instruments:

	June 30, 2022			December 31, 2021		
(in U.S. Dollars; notional in millions, fair value in thousands)		Fair Value			Fair Value	
	Notional Amount	**Derivative Assets**	**Derivative Liabilities**	**Notional Amount**	**Derivative Assets**	**Derivative Liabilities**
Derivatives designated as hedging instruments:						
Interest rate caps	**$ 2,000.0** (a)	**$ 19,144**	**$ —**	$ 1,000.0	$ 2,322	$ —
Derivatives not designated as hedging instruments:						
Interest rate caps	**$ 1,000.0**	**$ 11,100**	**$ —**	$ 1,500.0	$ 1,654	$ —
Embedded derivatives	**190.7** (b)	**1,389**	**2,322**	144.4	496	—
Total	**$ 3,190.7**	**$ 31,633**	**$ 2,322**	$ 2,644.4	$ 4,472	$ —

(a) $1,000.0 million and $1,000.0 million notional amount of interest rate caps designated as hedging instruments have forward start dates beginning on December 31, 2022 and July 31, 2023, respectively.
(b) Represents the total notional amounts for certain of the Company’s supply and sales contracts accounted for as embedded derivatives.

Embedded derivative assets and interest rate caps are included in “Prepaid expenses and other current assets” and “Other assets,” respectively, on the Consolidated Balance Sheets depending upon their respective maturity dates. Embedded derivative liabilities are included in “Accrued liabilities” on the Consolidated Balance Sheets.

The following tables summarize the activities of our derivative instruments for the periods presented, and the line item they are recorded in the Consolidated Statements of Operations and Comprehensive Income (Loss):

(thousands of U.S. dollars)	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Unrealized (gain) loss on interest rate caps recorded in interest expense, net	**$ (3,100)**	$ 293	**$ (9,446)**	$ 383
Realized gain on interest rate caps recorded in interest expense, net	**(1,279)**	—	**(1,279)**	—
Unrealized loss (gain) on embedded derivatives recorded in other expense (income), net	**2,435**	(761)	**1,417**	(1,614)
Realized loss (gain) on foreign currency forward contracts recorded in foreign exchange (gain) loss	**1,035**	231	**(495)**	(2,143)

The following table summarizes the net gains on our cash flow hedges recognized in “Other comprehensive income (loss)” during the period:

(thousands of U.S. dollars)	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Unrealized gain on interest rate derivatives recorded in other comprehensive income (loss), net of tax	**$ 3,178**	$ —	**$ 9,357**	$ —

We expect to reclassify approximately $12.5 million of after-tax net gains on derivative instruments from accumulated other comprehensive income (loss) to income during the next 12 months associated with our cash flow hedges.

Credit Risk

Certain of our financial assets, including cash and cash equivalents, are exposed to credit risk.

We are also exposed, in our normal course of business, to credit risk from our customers. As of June 30, 2022 and December 31, 2021, accounts receivable was net of an allowance for uncollectible accounts of $1.8 million and $1.3 million, respectively.

Credit risk on financial instruments arises from the potential for counterparties to default on their contractual obligations to us. We are exposed to credit risk in the event of non-performance, but do not anticipate non-performance by any of the counterparties to our financial instruments. We limit our credit risk by dealing with counterparties that are considered to be of high credit quality. In the event of non-performance by counterparties, the carrying value of our financial instruments represents the maximum amount of loss that would be incurred.

Our credit team evaluates and regularly monitors changes in the credit risk of our customers. We routinely assess the collectability of accounts receivable and maintain an adequate allowance for uncollectible accounts to address potential credit losses. The process includes a review of customer financial information and credit ratings, current market conditions as well as the expected future economic conditions that may impact the collection of trade receivables. We regularly review our customers' past due amounts through an analysis of aged accounts receivables, specific customer past due aging amounts, and the history of trade receivables written off. Upon concluding that a receivable balance is not collectible, the balance is written off against the allowance for uncollectible accounts.

Fair Value Hierarchy

The fair value of our financial instruments is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The valuation techniques we would use to determine such fair values are described as follows: Level 1—fair values determined by inputs utilizing quoted prices in active markets for identical assets or liabilities; Level 2—fair values based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable; Level 3—fair values determined by unobservable inputs reflecting our own assumptions, consistent with reasonably available assumptions made by other market participants.

The following table discloses the fair value of our financial assets and liabilities:

As of June 30, 2022			Fair Value	
(thousands of U.S. dollars)	Carrying Amount	Level 1	Level 2	Level 3
Derivatives designated as hedging instruments[a]				
Derivative assets - interest rate caps	**$ 19,144**	**$ —**	**$ 19,144**	**$ —**
Derivatives not designated as hedging instruments[b]				
Derivative assets - interest rate caps	**11,100**	**—**	**11,100**	**—**
Embedded derivative assets	**1,389**	**—**	**1,389**	**—**
Embedded derivative liabilities	**2,322**	**—**	**2,322**	**—**
Long-Term Debt[c]				
Term loan, due 2026	**1,745,102**	**—**	**1,679,353**	**—**
Other long-term debt	**446**	**—**	**446**	**—**
Finance Lease Obligations (with current portion)[d]	**58,755**	**—**	**58,755**	**—**

As of December 31, 2021			Fair Value	
(thousands of U.S. dollars)	Carrying Amount	Level 1	Level 2	Level 3
Derivatives designated as hedging instruments[a]				
Derivative assets - interest rate caps	$ 2,322	$ —	$ 2,322	$ —
Derivatives not designated as hedging instruments[b]				
Derivative assets - interest rate caps	1,654	—	1,654	—
Embedded derivative liabilities	496	—	496	—
Long-Term Debt[c]				
Term loan, due 2026	1,743,090	—	1,754,285	—
Other long-term debt	444	—	444	—
Finance Lease Obligations (with current portion)[d]	42,037	—	42,037	—

(a) Derivatives designated as hedging instruments are measured at fair value with changes in fair value recorded as a component of accumulated other comprehensive income (loss). Interest rate caps are valued using pricing models that incorporate observable market inputs including interest rate and yield curves.

(b) Derivatives that are not designated as hedging instruments are measured at fair value with gains or losses recognized immediately in the Consolidated Statements of Operations and Comprehensive Income (Loss). Interest rate caps are valued using pricing models that incorporate observable market inputs including interest rate and yield curves. Embedded derivatives are valued using internally developed models that rely on observable market inputs including foreign currency forward curves.

(c) Carrying amounts of long-term debt instruments are reported net of discounts and debt issuance costs. The estimated fair value of these instruments is based upon quoted prices for the Term Loan due 2026 in inactive markets as provided by an independent fixed income security pricing service. Fair value approximates carrying value for "Other long-term debt."

(d) Fair value approximates carrying value.

18. Segment Information

We identify our operating segments based on the way we manage, evaluate and internally report our business activities for purposes of allocating resources and assessing performance. We have three reportable segments: Sterigenics, Nordion and Nelson Labs. We have determined our reportable segments based upon an assessment of organizational structure, service types, and internally prepared financial statements. Our chief operating decision maker evaluates performance and allocates resources based on net revenues and segment income after the elimination of intercompany activities. The accounting policies of our reportable segments are the same as those described in Note 1, “Significant Accounting Policies” of our 2021 Form 10-K.

Sterigenics

Sterigenics provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets using three major technologies: gamma irradiation, EO processing and E-beam irradiation.

Nordion

Nordion is a leading global provider of Co-60 used in the sterilization and irradiation processes for the medical device, pharmaceutical, food safety, and high-performance materials industries, as well as in the treatment of cancer. In addition, Nordion is a leading global provider of gamma irradiation systems.

Nelson Labs

Nelson Labs provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries.

For the three months ended June 30, 2022, four customers reported within the Nordion segment individually represented 10% or more of the segment’s total net revenues. These customers represented 21.7%, 15.4%, 13.2%, and 15.9% of the total segment’s external net revenues for the three months ended June 30, 2022. For the three months ended June 30, 2021, two customers reported within the Nordion segment individually represented 10% or more of the segment’s total net revenues. These customers represented 17.9% and 16.1% of the total segment’s external net revenues for the three months ended June 30, 2021.

For the six months ended June 30, 2022, four customers reported within the Nordion segment individually represented 10% or more of the segment’s total net revenues. These customers represented 18.8%, 15.5%, 12.8%, and 10.6% of the total segment’s external net revenues for the six months ended June 30, 2022. For the six months ended June 30, 2021, four customers reported within the Nordion segment individually represented 10% or more of the segment’s total net revenues. These customers represented 14.8%, 13.1%, 12.6%, and 10.5% of the total segment's external net revenues for the six months ended June 30, 2021.

Financial information for each of our segments is presented in the following table:

	Three Months Ended June 30,		Six Months Ended June 30,	
(thousands of U.S. dollars)	**2022**	**2021**	**2022**	**2021**
Segment revenues[(a)]				
Sterigenics	**$ 157,792**	$ 145,182	**$ 307,254**	$ 276,333
Nordion	**50,478**	49,125	**84,480**	75,043
Nelson Labs	**58,369**	57,610	**111,659**	112,689
Total net revenues	**$ 266,639**	$ 251,917	**$ 503,393**	$ 464,065
Segment income[(b)]				
Sterigenics	**$ 85,098**	$ 79,569	**$ 164,501**	$ 148,030
Nordion	**29,982**	31,168	**48,885**	44,954
Nelson Labs	**21,055**	23,826	**38,098**	46,896
Total segment income	**$ 136,135**	$ 134,563	**$ 251,484**	$ 239,880

(a) Revenues are reported net of intersegment sales. Our Nordion segment recognized $15.8 million and $7.0 million in revenues from sales to our Sterigenics segment for the three months ended June 30, 2022 and 2021, and $31.3 million and $17.5 million in revenues from sales to our Sterigenics segment for the six months ended June 30, 2022 and 2021, respectively, that is not reflected in net revenues in the table above. Intersegment sales for Sterigenics and Nelson Labs are immaterial for these periods.

(b) Segment income is only provided on a net basis to the chief operating decision maker and is reported net of intersegment profits.

Corporate operating expenses for executive management, accounting, information technology, legal, human resources, treasury, corporate development, tax, purchasing, and marketing not directly incurred by a segment are allocated to the segments based on total net revenue. Corporate operating expenses that are directly incurred by a segment are reflected in each segment's income.

Capital expenditures by segment for the six months ended June 30, 2022 and 2021 were as follows:

	Six Months Ended June 30,	
(thousands of U.S. dollars)	**2022**	**2021**
Sterigenics	**$ 55,065**	$ 35,851
Nordion	**10,741**	6,376
Nelson Labs	**5,836**	2,562
Total capital expenditures	**$ 71,642**	$ 44,789

Total assets and depreciation and amortization expense by segment are not readily available and are not reported separately to the chief operating decision maker.

A reconciliation of segment income to consolidated income before taxes is as follows:

(thousands of U.S. dollars)	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	**2021**	**2022**	**2021**
Segment income	**$ 136,135**	$ 134,563	**$ 251,484**	$ 239,880
Less adjustments:				
Interest expense, net[(a)]	**17,144**	19,163	**33,894**	40,445
Depreciation and amortization[(b)]	**36,939**	37,461	**72,988**	75,122
Share-based compensation[(c)]	**5,801**	3,493	**10,339**	6,942
Gain on foreign currency and derivatives not designated as hedging instruments, net[(d)]	**(1,430)**	(660)	**(7,982)**	(996)
Acquisition and divestiture related charges, net[(e)]	**691**	844	**531**	659
Business optimization project expenses[(f)]	**470**	275	**574**	536
Plant closure expenses[(g)]	**478**	756	**1,149**	1,298
Impairment of investment in unconsolidated affiliate[(h)]	**9,613**	—	**9,613**	—
Loss on extinguishment of debt[(i)]	**—**	—	**—**	14,312
Professional services relating to EO sterilization facilities[(j)]	**17,678**	10,644	**35,737**	24,043
Accretion of asset retirement obligation[(k)]	**598**	602	**1,118**	1,153
COVID-19 expenses[(l)]	**45**	188	**148**	487
Consolidated income before taxes	**$ 48,108**	$ 61,797	**$ 93,375**	$ 75,879

(a) The three and six months ended June 30, 2022 excludes $3.1 million and $9.4 million, respectively, of unrealized gains on interest rate derivatives not designated as hedging instruments.
(b) Includes depreciation of Co-60 held at gamma irradiation sites.
(c) Represents non-cash share-based compensation expense.
(d) Represents the effects of (i) fluctuations in foreign currency exchange rates, (ii) non-cash mark-to-fair value of embedded derivatives relating to certain customer and supply contracts at Nordion, and (iii) unrealized gains on interest rate caps not designated as hedging instruments.
(e) Represents (i) certain direct and incremental costs related to the acquisitions of RCA, the noncontrolling interests in our China subsidiaries, BioScience Labs in 2021, the first quarter 2021 gain on the mandatorily redeemable noncontrolling interest in Nelson Labs Fairfield (as described in Note 4, "Acquisitions"), and certain related integration efforts as a result of those acquisitions, (ii) the earnings impact of fair value adjustments (excluding those recognized within

amortization expense) resulting from the businesses acquired, and (iii) transition services income and non-cash deferred lease income associated with the terms of the divestiture of the Medical Isotopes business in 2018.

(f) Represents professional fees, contract termination and exit costs, severance and other payroll costs, and other costs associated with business optimization and cost savings projects relating to the integration of acquisitions, operating structure realignment and other process enhancement projects.

(g) Represents professional fees, severance and other payroll costs, and other costs including ongoing lease and utility expenses associated with the closure of the Willowbrook, Illinois facility.

(h) Represents an impairment charge on our equity method investment in Auralux. Refer to Note 1, “Basis of Presentation”.

(i) Represents expenses incurred in connection with the repricing of our Term Loan in January 2021, including accelerated amortization of prior debt issuance and discount costs.

(j) Represents litigation and other professional fees associated with our EO sterilization facilities. See Note 16, “Commitments and Contingencies”.

(k) Represents non-cash accretion of asset retirement obligations related to Co-60 and gamma processing facilities, which are based on estimated site remediation costs for any future decommissioning of these facilities (without regard for whether the decommissioning services would be performed by employees of Nordion, instead of by a third party) and are accreted over the life of the asset.

(l) Represents non-recurring costs associated with the COVID-19 pandemic, including incremental costs to implement workplace health and safety measures.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis in conjunction with our consolidated financial statements and related notes included in Part I, Item 1 of this Quarterly Report on Form 10-Q, as well as the audited consolidated financial statements and notes and Management's Discussion and Analysis of Financial Condition and Results of Operations contained in our 2021 Form 10-K. This discussion and analysis contains forward-looking statements that are based on management's current expectations, estimates and projections about our business and operations. Our actual results may differ materially from those currently anticipated and expressed in such forward-looking statements as a result of various factors, including the factors we describe in the section entitled Part II, Item 1A, "Risk Factors" in this Quarterly Report on Form 10-Q, as well as Part I, Item 1A, "Risk Factors" in our 2021 Form 10-K.

OVERVIEW

We are a leading global provider of mission-critical end-to-end sterilization solutions, lab testing and advisory services for the healthcare industry. We are driven by our mission: Safeguarding Global Health®. We provide end-to-end sterilization as well as microbiological and analytical lab testing and advisory services to help ensure that medical, pharmaceutical and food products are safe for healthcare practitioners, patients and consumers in the United States and around the world. Our services are an essential aspect of our customers' manufacturing process and supply chains, helping to ensure sterilized medical products reach healthcare practitioners and patients. Most of these services are necessary for our customers to satisfy applicable government requirements.

We serve our customers throughout their product lifecycles, from product design to manufacturing and delivery, helping to ensure the sterility, effectiveness and safety of their products for the end user. We operate across two core businesses: sterilization services and lab services. The combination of Sterigenics, our terminal sterilization business, and Nordion, our Co-60 supply business, makes us the only vertically integrated global gamma sterilization provider in the sterilization industry. For financial reporting purposes, our sterilization services business consists of two reportable segments, Sterigenics and Nordion, and our lab services business consists of one reportable segment, Nelson Labs.

For the three and six months ended June 30, 2022, respectively, we recorded net revenues of $266.6 million and $503.4 million, net income of $30.4 million and $61.1 million, Adjusted Net Income of $75.8 million and $136.1 million, and Adjusted EBITDA of $136.1 million and $251.5 million. For the definition of Adjusted Net Income and Adjusted EBITDA and the reconciliation of these non-GAAP measures from net income, please see "Non-GAAP Financial Measures."

STRATEGIC DEVELOPMENTS AND KEY FACTORS AFFECTING OUR RESULTS OF OPERATIONS

The following summarizes strategic developments and key factors that impacted our operating results for the three and six months ended June 30, 2022 and may continue to affect our performance and financial condition in future periods.

- **Business and market conditions**. During the three and six months ended June 30, 2022, Sterigenics and Nordion continued to benefit from a sustained demand for sterilization services. Although the decline in pandemic-related testing stabilized in the second quarter, the competitive labor market, broad inflationary impacts, supply chain constraints and regulatory update delays remained an ongoing challenge for Nelson Labs. As discussed in more detail in our most recent Form 10-K, a portion of our supply of Co-60 is generated by Russian nuclear reactors. We continue to monitor the potential for disruption in the supply of Co-60 from Russian nuclear reactors; to date there has been no material impact on our supply or revenue.
- **Investment initiatives.** We remain focused on our investments in capacity expansions and facility improvements as well as our efforts to strengthen our Co-60 supply chain. For the six months ended June 30, 2022, we increased capital expenditures by $26.9 million compared to the six months ended June 30, 2021.
- **Disciplined and strategic M&A activity**. We remain committed to our highly disciplined acquisition strategy and continue to seek suitable acquisition targets in 2022. On November 4, 2021, we acquired Regulatory Compliance Associates Inc. ("RCA") headquartered in Pleasant Prairie, Wisconsin. RCA is an industry leader in providing life sciences consulting focused on quality, regulatory, and technical consulting for the pharmaceutical, medical device and combination device industries. RCA expands and strengthens the technical consulting and expert advisory capabilities of Nelson Labs. On March 8, 2021, we acquired BioScience Laboratories, LLC ("BioScience Labs") based in Bozeman, Montana, bringing expertise in antimicrobial and virology testing to our Nelson Labs segment.

- **Litigation costs**. In connection with the ongoing litigation related to our Willowbrook, Illinois, Atlanta, Georgia and Santa Teresa, New Mexico facilities, as described in Note 16, “Commitments and Contingencies”, we recorded costs of $17.7 million and $35.7 million for the three and six months ended June 30, 2022, respectively. Insurance coverage has been available for some of our costs in this ethylene oxide (“EO”) tort litigation in the past and as of June 30, 2022 we have approximately $4.0 million of such coverage remaining. Our insurance for future alleged environmental liabilities excludes coverage for EO claims. See Note 16, “Commitments and Contingencies”. In addition, we are pursuing other insurance coverage for EO tort litigation. In 2021, Sterigenics U.S., LLC filed an insurance coverage lawsuit in the U.S. District Court for the Northern District of Illinois relating to two commercial general liability policies issued in the 1980s. On August 3, 2022, the Court issued a Memorandum Opinion and Order concluding that the insurance company owes Sterigenics U.S., LLC and another party a duty to defend the Willowbrook, Illinois litigation, which may allow us to recover defense costs related to that litigation.

CONSOLIDATED RESULTS OF OPERATIONS

Three Months Ended June 30, 2022 as compared to Three Months Ended June 30, 2021

The following table sets forth the components of our results of operations for the three months ended June 30, 2022 and 2021.

(thousands of U.S. dollars)	2022	2021	$ Change	% Change
Total net revenues	**$ 266,639**	$ 251,917	$ 14,722	5.8 %
Total cost of revenues	**116,243**	108,156	8,087	7.5 %
Total operating expenses	**78,901**	65,489	13,412	20.5 %
Operating income	**71,495**	78,272	(6,777)	(8.7)%
Net income	**30,418**	42,615	(12,197)	(28.6)%
Adjusted Net Income[(a)]	**75,825**	71,672	4,153	5.8 %
Adjusted EBITDA[(a)]	**136,135**	134,563	1,572	1.2 %

(a) Adjusted Net Income and Adjusted EBITDA are non-GAAP financial measures. For more information regarding our calculation of Adjusted Net Income and Adjusted EBITDA, including information about their limitations as tools for analysis and a reconciliation of net income, the most directly comparable financial measure calculated and presented in accordance with GAAP, to Adjusted Net Income and Adjusted EBITDA, please see the reconciliation included below in “Non-GAAP Financial Measures.”

Total Net Revenues

The following table compares our revenues by type for the three months ended June 30, 2022 to the three months ended June 30, 2021.

(thousands of U.S. dollars)

Net revenues for the three months ended June 30,	2022	2021	$ Change	% Change
Service	**$ 221,529**	$ 208,710	$ 12,819	6.1 %
Product	**45,110**	43,207	1,903	4.4 %
Total net revenues	**$ 266,639**	$ 251,917	$ 14,722	5.8 %

Net revenues were $266.6 million in the three months ended June 30, 2022, an increase of $14.7 million, or 5.8%, as compared with the three months ended June 30, 2021. Excluding the impact of foreign currency exchange rates, net revenues in the three months ended June 30, 2022 increased approximately 8.5% compared with the three months ended June 30, 2021.

Service revenues

Service revenues increased $12.8 million, or 6.1%, to $221.5 million in the three months ended June 30, 2022 as compared to $208.7 million in the three months ended June 30, 2021. The increase in net service revenue was driven by favorable pricing of $8.9 million and $3.1 million in the Sterigenics and Nelson Labs segments, respectively, and sales volume growth of $7.3 million in the Sterigenics segment. The RCA acquisition also contributed $3.3 million to service revenue growth. Partially offsetting these factors was an overall decline of $2.9 million in pandemic-related testing revenue in the Nelson Labs segment.

Service revenue growth was also offset by a $5.3 million unfavorable impact from changes in foreign currency exchange rates across all segments.

Product revenues

Product revenues increased $1.9 million, or 4.4%, to $45.1 million in the three months ended June 30, 2022 as compared to $43.2 million in the three months ended June 30, 2021. The increase in product revenues was attributable to favorable pricing of $3.0 million partially offset by a $1.3 million unfavorable impact from changes in foreign currency exchange rates.

Total Cost of Revenues

The following table compares our cost of revenues by type for the three months ended June 30, 2022 to the three months ended June 30, 2021.

(thousands of U.S. dollars)

Cost of revenues for the three months ended June 30,	2022	2021	$ Change	% Change
Service	**$ 98,407**	$ 91,391	$ 7,016	7.7 %
Product	**17,836**	16,765	1,071	6.4 %
Total cost of revenues	**$ 116,243**	$ 108,156	$ 8,087	7.5 %

Total cost of revenues accounted for approximately 43.6% and 42.9% of our consolidated net revenues for the three months ended June 30, 2022 and 2020, respectively.

Cost of service revenues

Cost of service revenues increased $7.0 million, or 7.7%, for the three months ended June 30, 2022 as compared to the three months ended June 30, 2021. The increase was attributable to $6.5 million of increased costs arising from inflationary pressures, mainly on labor and the cost of energy. Cost of sales was also impacted by an incremental contribution of $2.3 million from the RCA acquisition in the Nelson Labs segment. Partially offsetting the total increase was a $2.7 million impact from changes in foreign currency exchange rates.

Cost of product revenues

Cost of product revenues increased $1.1 million, or 6.4%, for the three months ended June 30, 2022 as compared to the three months ended June 30, 2021. The increase reflects incremental costs due to product mix offset by changes in foreign currency exchange rates.

Operating Expenses

The following table compares our operating expenses for the three months ended June 30, 2022 to the three months ended June 30, 2021:

(thousands of U.S. dollars)

Operating expenses for the three months ended June 30,	2022	2021	$ Change	% Change
Selling, general and administrative expenses	**$ 63,132**	$ 49,828	$ 13,304	26.7 %
Amortization of intangible assets	**15,769**	15,661	108	0.7 %
Total operating expenses	**$ 78,901**	$ 65,489	$ 13,412	20.5 %

Operating expenses accounted for approximately 29.6% and 26.0% of our consolidated net revenues for the three months ended June 30, 2022 and 2021, respectively.

SG&A

SG&A increased $13.3 million, or 26.7%, for the three months ended June 30, 2022 as compared to the three months ended June 30, 2021. The increase was driven primarily by the following factors:

- $7.0 million increase in litigation and other professional services expense associated with EO sterilization facilities;

- $2.3 million increase in share-based compensation expense related to our 2020 Omnibus Incentive Plan; and
- $2.6 million increase in selling and administrative personnel and post-COVID-19 travel costs in support of our general business growth.

Amortization of intangible assets

Amortization of intangible assets was $15.8 million for the three months ended June 30, 2022, or 0.7% above the three months ended June 30, 2021. The increase was due mainly to changes in foreign currency exchange rates.

Interest Expense, Net

Interest expense, net decreased $5.1 million, or 26.7%, for the three months ended June 30, 2022 as compared to the three months ended June 30, 2021. The decrease was primarily driven by a $4.4 million reduction to interest expense attributable to the favorable change in fair value and quarterly settlement of interest rate derivatives not designated as hedging instruments. The decrease was also driven by a decline in interest expense on outstanding borrowings of $0.9 million, due largely to a lower average outstanding debt balance for the three months ended June 30, 2022 compared to the three months ended June 30, 2021. The weighted average interest rate on our outstanding debt was 3.81% and 3.45% at June 30, 2022 and 2021, respectively.

Impairment of Investment in Unconsolidated Affiliate

During the three months ended June 30, 2022, we recorded an impairment charge of $9.6 million related to a joint venture investment in Auralux Enterprises Ltd. ("Auralux") which was acquired as part of the 2020 Iotron acquisition. Due to a shift in business strategy, the joint venture will not proceed, and our joint venture partner will continue to rely on our other existing operating facilities. Based on these facts and circumstances, we concluded that the investment was impaired as of June 30, 2022.

Foreign Exchange Loss (Gain)

Foreign exchange gain was $0.8 million for the three months ended June 30, 2022 as compared to a loss of $0.1 million in the three months ended June 30, 2021. The change in foreign exchange loss (gain) in our Consolidated Statements of Operations and Comprehensive Income (Loss) mainly relates to short-term losses (offset by short-term gains) on sales denominated in currencies other than the functional currency of our operating entities. As described in Note 17, "Financial Instruments and Financial Risk" we enter into monthly U.S. dollar-denominated foreign currency forward contracts to manage foreign currency exchange rate risk of our intercompany loans in certain of our international subsidiaries.

Other Expense (Income), Net

Other expense (income), net was $0.5 million for the three months ended June 30, 2022 compared to $(2.8) million for the three months ended June 30, 2021. The fluctuation was mainly driven by unfavorable changes in the fair value of Nordion's embedded derivatives in the three months ended June 30, 2022.

Provision for Income Taxes

Provision for income tax decreased $1.5 million to a net provision of $17.7 million for the three months ended June 30, 2022 as compared to $19.2 million in the three months ended June 30, 2021. The change was primarily attributable to lower pre-tax income for the three months ended June 30, 2022 compared to the three months ended June 30, 2021.

Provision for income taxes for the three months ended June 30, 2022 and the three months ended June 30, 2022 differed from the statutory rate primarily due to an increase in the valuation allowance, the impact of the foreign rate differential, and tax on Global Intangible Low Taxed Income ("GILTI"). The increase in the valuation allowance was attributable to the limitation on the deductibility of interest expense and the impairment of the investment in Auralux. Provision for income taxes for the three months ended June 30, 2021 was partially offset by a discrete item, which reversed the valuation allowance on deferred tax assets related to certain asset retirement obligations.

Net Income, Adjusted Net Income and Adjusted EBITDA

Net income for the three months ended June 30, 2022 was $30.4 million, as compared to net income of $42.6 million for the three months ended June 30, 2021. Adjusted Net Income was $75.8 million for the three months ended June 30, 2022, as compared to $71.7 million for the three months ended June 30, 2021, due to the factors described above. Adjusted EBITDA was $136.1 million for the three months ended June 30, 2022, as compared to $134.6 million for the three months ended June 30, 2021, due to the factors described above. Please see "Non-GAAP Financial Measures" below for a reconciliation of

Adjusted Net Income and Adjusted EBITDA to their most directly comparable financial measure calculated and presented in accordance with GAAP.

Six Months Ended June 30, 2022 as compared to Six Months Ended June 30, 2021

The following table sets forth the components of our results of operations for the six months ended June 30, 2022 and 2021.

(thousands of U.S. dollars)	2022	2021	$ Change	% Change
Total net revenues	**$ 503,393**	$ 464,065	$ 39,328	8.5 %
Total cost of revenues	**224,122**	204,932	19,190	9.4 %
Total operating expenses	**154,284**	134,497	19,787	14.7 %
Operating income	**124,987**	124,636	351	0.3 %
Net income	**61,059**	53,680	7,379	13.7 %
Adjusted Net Income[(a)]	**136,079**	123,178	12,901	10.5 %
Adjusted EBITDA[(a)]	**251,484**	239,880	11,604	4.8 %

(a) Adjusted Net Income and Adjusted EBITDA are non-GAAP financial measures. For more information regarding our calculation of Adjusted Net Income and Adjusted EBITDA, including information about their limitations as tools for analysis and a reconciliation of net income, the most directly comparable financial measure calculated and presented in accordance with GAAP, to Adjusted Net Income and Adjusted EBITDA, please see the reconciliation included below in "Non-GAAP Financial Measures."

Total Net Revenues

The following table compares our revenues by type for the six months ended June 30, 2022 to the six months ended June 30, 2021.

(thousands of U.S. dollars)

Net revenues for the six months ended June 30,	2022	2021	$ Change	% Change
Service	**$ 427,747**	$ 397,408	$ 30,339	7.6 %
Product	**75,646**	66,657	8,989	13.5 %
Total net revenues	**$ 503,393**	$ 464,065	$ 39,328	8.5 %

Net revenues were $503.4 million in the six months ended June 30, 2022, an increase of $39.3 million, or 8.5%, as compared with the six months ended June 30, 2021. Excluding the impact of foreign currency exchange rates, net revenues in the six months ended June 30, 2022 increased approximately 10.4% compared with the six months ended June 30, 2021.

Service revenues

Service revenues increased $30.3 million, or 7.6%, to $427.7 million in the six months ended June 30, 2022 as compared to $397.4 million in the six months ended June 30, 2021. The increase in net service revenue was driven by sales volume growth of $20.2 million in the Sterigenics segment and $15.9 million and $5.4 million from favorable pricing in the Sterigenics and Nelson Labs segments, respectively. The BioScience Labs and RCA acquisitions also contributed $8.0 million to service revenue growth. Partially offsetting these factors was an overall decline of $8.8 million in pandemic-related testing revenue as well as a decrease in volumes in other testing categories in the Nelson Labs segment. Service revenue growth was offset by a $7.7 million unfavorable impact from changes in foreign currency exchange rates across all segments.

Product revenues

Product revenues increased $9.0 million, or 13.5%, to $75.6 million in the six months ended June 30, 2022 as compared to $66.7 million in the six months ended June 30, 2021. The expansion in product revenues was attributable to $5.6 million of growth in sales volume coupled with $4.8 million from favorable pricing in our Nordion segment. Partially offsetting this increase was a $1.3 million unfavorable impact from changes in foreign currency exchange rates.

Total Cost of Revenues

The following table compares our cost of revenues by type for the six months ended June 30, 2022 to the six months ended June 30, 2021.

(thousands of U.S. dollars)

Cost of revenues for the six months ended June 30,	2022	2021	$ Change	% Change
Service	**$ 192,983**	$ 176,427	$ 16,556	9.4 %
Product	**31,139**	28,505	2,634	9.2 %
Total cost of revenues	**$ 224,122**	$ 204,932	$ 19,190	9.4 %

Total cost of revenues accounted for approximately 44.5% and 44.2% of our consolidated net revenues for the six months ended June 30, 2022 and 2021, respectively.

Cost of service revenues

Cost of service revenues increased $16.6 million, or 9.4%, for the six months ended June 30, 2022 as compared to the six months ended June 30, 2021. The increase was attributable to approximately $14.0 million of increased costs arising from inflationary pressures, mainly on labor and the cost of energy. Cost of sales was also impacted by an incremental contribution of $5.9 million from the RCA and BioScience Labs acquisitions in the Nelson Labs segment. Partially offsetting this increase was a $3.9 million impact from changes in foreign currency exchange rates.

Cost of product revenues

Cost of product revenues increased $2.6 million, or 9.2%, for the six months ended June 30, 2022 as compared to the six months ended June 30, 2021. The increase reflects incremental costs due to product mix, offset by impacts from changes in foreign currency exchanges rates.

Operating Expenses

The following table compares our operating expenses for the six months ended June 30, 2022 to the six months ended June 30, 2021:

(thousands of U.S. dollars)

Operating expenses for the six months ended June 30,	2022	2021	$ Change	% Change
Selling, general and administrative expenses	**$ 122,674**	$ 102,293	$ 20,381	19.9 %
Amortization of intangible assets	**31,610**	32,204	(594)	(1.8)%
Total operating expenses	**$ 154,284**	$ 134,497	$ 19,787	14.7 %

Operating expenses accounted for approximately 30.6% and 29.0% of our consolidated net revenues for the six months ended June 30, 2022 and 2021, respectively.

SG&A

SG&A increased $20.4 million, or 19.9%, for the six months ended June 30, 2022 as compared to the six months ended June 30, 2021. The increase was driven primarily by the following factors:

- $11.7 million increase in litigation and other professional services expense associated with EO sterilization facilities;
- $5.2 million increase in selling and administrative personnel and post-COVID-19 travel costs in support of our general business growth; and
- $3.4 million increase in share-based compensation expense related to our 2020 Omnibus Incentive Plan.

Amortization of intangible assets

Amortization of intangible assets was $31.6 million for the six months ended June 30, 2022, or 1.8% below the six months ended June 30, 2021. The change was due mainly to a reduction in amortization expense related to certain intangible assets that were fully amortized by December 31, 2021, offset by changes in foreign currency exchange rates.

Interest Expense, Net

Interest expense, net decreased $16.0 million, or 39.6%, for the six months ended June 30, 2022 as compared to the six months ended June 30, 2021. The decrease was driven by a $10.7 million reduction to interest expense attributable to the favorable change in fair value and quarterly settlement of interest rate caps not designated as hedging instruments. The decrease was also driven by a decline in interest expense on outstanding borrowings of $5.3 million, due largely to a lower average outstanding debt balance for the six months ended June 30, 2022 compared to the six months ended June 30, 2021 and a lower interest rate on our Term Loan following the January 20, 2021 repricing amendment. The weighted average interest rate on our outstanding debt was 3.81% and 3.45% at June 30, 2022 and 2021, respectively.

Impairment of Investment in Unconsolidated Affiliate

During the six months ended June 30, 2022, we recorded an impairment charge of $9.6 million related to a joint venture investment in Auralux, which was acquired as part of the 2020 Iotron acquisition. Due to a shift in business strategy, the joint venture will not proceed, and our joint venture partner will continue to rely on our other existing operating facilities. Based on these facts and circumstances, we concluded that the investment was impaired as of June 30, 2022.

Foreign Exchange Loss (Gain)

Foreign exchange loss was $0.03 million for the six months ended June 30, 2022 as compared to a loss of $0.7 million in the six months ended June 30, 2021. The change in foreign exchange loss in our Consolidated Statements of Operations and Comprehensive Income (Loss) mainly relates to short-term losses (offset by short-term gains) on sales denominated in currencies other than the functional currency of our operating entities. As described in Note 17, “Financial Instruments and Financial Risk” we enter into monthly U.S. dollar-denominated foreign currency forward contracts to manage foreign currency exchange rate risk of our intercompany loans in certain of our international subsidiaries.

Other Expense (Income), Net

Other expense (income), net was $(2.5) million for the six months ended June 30, 2022 compared to $(6.7) million for the six months ended June 30, 2021. The fluctuation was mainly driven by changes in the fair value of the embedded derivatives in Nordion’s sales and purchase contracts. In addition, for the six months ended June 30, 2021, we recorded $1.2 million of other income related to the gain on our purchase of the 15% mandatorily redeemable noncontrolling interest of Nelson Labs Fairfield as compared to the amount previously accrued.

Provision for Income Taxes

Provision for income tax increased $10.1 million to a net provision of $32.3 million for the six months ended June 30, 2022 as compared to a $22.2 million in the six months ended June 30, 2021. The change was principally attributable to pre-tax income of $93.4 million in the six months ended June 30, 2022 compared to pretax income of $75.9 million for the six months ended June 30, 2021. In addition, income tax expense for the six months ended June 30, 2021 was lower due to a discrete item that reversed the valuation allowance on deferred tax assets related to certain asset retirement obligations.

Provision for income taxes for the six months ended June 30, 2022 and for the six months ended June 30, 2021 differed from the statutory rate primarily due to an increase in the valuation allowance, the impact of the foreign rate differential, and tax on GILTI. The increase in the valuation allowance was attributable to the limitation on the deductibility of interest expense and the impairment of the investment in Auralux. Provision for income taxes for the six months ended June 30, 2021 was partially offset by a discrete item, which reversed the valuation allowance on deferred tax assets related to certain asset retirement obligations.

Net Income, Adjusted Net Income and Adjusted EBITDA

Net income for the six months ended June 30, 2022 was $61.1 million, as compared to net income of $53.7 million for the six months ended June 30, 2021. Adjusted Net Income was $136.1 million for the six months ended June 30, 2022, as compared to $123.2 million for the six months ended June 30, 2021, due to the factors described above. Adjusted EBITDA was $251.5 million for the six months ended June 30, 2022, as compared to $239.9 million for the six months ended June 30, 2021, due to the factors described above. Please see “Non-GAAP Financial Measures” below for a reconciliation of Adjusted Net Income and Adjusted EBITDA to their most directly comparable financial measure calculated and presented in accordance with GAAP.

NON-GAAP FINANCIAL MEASURES

To supplement our consolidated financial statements presented in accordance with U.S. Generally Accepted Accounting Principles ("GAAP"), we consider Adjusted Net Income and Adjusted EBITDA, financial measures that are not based on any standardized methodology prescribed by GAAP.

We define Adjusted Net Income as net income before amortization and certain other adjustments that we do not consider in our evaluation of our ongoing operating performance from period to period as discussed further below. We define Adjusted EBITDA as Adjusted Net Income before interest expense, depreciation (including depreciation of Co-60 used in our operations) and income tax provision applicable to Adjusted Net Income.

We use Adjusted Net Income and Adjusted EBITDA, non-GAAP financial measures, as the principal measures of our operating performance. Management believes Adjusted Net Income and Adjusted EBITDA are useful because they allow management to more effectively evaluate our operating performance and compare the results of our operations from period to period without the impact of certain non-cash items and non-routine items that we do not expect to continue at the same level in the future and other items that are not core to our operations. We believe that these measures are useful to our investors because they provide a more complete understanding of the factors and trends affecting our business than could be obtained absent this disclosure. In addition, we believe Adjusted Net Income and Adjusted EBITDA will assist investors in making comparisons to our historical operating results and analyzing the underlying performance of our operations for the periods presented. Our management also uses Adjusted Net Income and Adjusted EBITDA in their financial analysis and operational decision-making, and Adjusted EBITDA serves as the basis for the metric we utilize to determine attainment of our primary annual incentive program. Adjusted Net Income and Adjusted EBITDA may be calculated differently from, and therefore may not be comparable to, a similarly titled measure used by other companies.

Adjusted Net Income and Adjusted EBITDA should not be considered in isolation from, or as a substitute for, financial information prepared in accordance with GAAP. There are a number of limitations related to the use of Adjusted Net Income and Adjusted EBITDA rather than net income, the nearest GAAP equivalent. For example, Adjusted Net Income and Adjusted EBITDA exclude:

- certain recurring non-cash charges such as depreciation of fixed assets, although these assets may have to be replaced in the future, as well as amortization of acquired intangible assets and asset retirement obligations;
- costs of acquiring and integrating businesses, which will continue to be a part of our growth strategy;
- non-cash gains or losses from fluctuations in foreign currency exchange rates and the mark-to-fair value of derivatives not designated as hedging instruments, which includes the embedded derivatives relating to certain customer and supply contracts at Nordion;
- impairment charges on long-lived assets, intangible assets and investments accounted for under the equity method;
- loss on extinguishment of debt incurred in connection with refinancing or early extinguishment of long-term debt;
- expenses and charges related to the litigation and other activities associated with our EO sterilization facilities, including those related to Willowbrook, Illinois, Atlanta, Georgia and Santa Teresa, New Mexico, even though that litigation remains ongoing;
- in the case of Adjusted EBITDA, interest expense or the cash requirements necessary to service interest or principal payments on our indebtedness; and
- share-based compensation expense, which has been, and will continue to be for the foreseeable future, a significant recurring expense and an important part of our compensation strategy.

In evaluating Adjusted Net Income and Adjusted EBITDA, you should be aware that in the future, we will incur expenses similar to the adjustments in the table below. Our presentations of Adjusted Net Income and Adjusted EBITDA should not be construed as suggesting that our future results will be unaffected by these expenses or any unusual or non-recurring items. When evaluating our performance, you should consider Adjusted Net Income and Adjusted EBITDA alongside other financial performance measures, including our net income and other GAAP measures.

The following table presents a reconciliation of net income, the most directly comparable financial measure calculated and presented in accordance with GAAP to Adjusted Net Income and Adjusted EBITDA, for each of the periods indicated:

	Three Months Ended June 30,		Six Months Ended June 30,	
(thousands of U.S. dollars)	**2022**	2021	**2022**	2021
Net income	**$ 30,418**	$ 42,615	**$ 61,059**	$ 53,680
Amortization of intangibles	**21,195**	21,778	**41,377**	44,060
Share-based compensation[(a)]	**5,801**	3,493	**10,339**	6,942
Gain on foreign currency and derivatives not designated as hedging instruments[(b)]	**(1,430)**	(660)	**(7,982)**	(996)
Acquisition and divestiture related charges, net[(c)]	**691**	844	**531**	659
Business optimization project expenses[(d)]	**470**	275	**574**	536
Plant closure expenses[(e)]	**478**	756	**1,149**	1,298
Impairment of investment in unconsolidated affiliate[(f)]	**9,613**	—	**9,613**	—
Loss on extinguishment of debt[(g)]	**—**	—	**—**	14,312
Professional services relating to EO sterilization facilities[(h)]	**17,678**	10,644	**35,737**	24,043
Accretion of asset retirement obligations[(i)]	**598**	602	**1,118**	1,153
COVID-19 expenses[(j)]	**45**	188	**148**	487
Income tax benefit associated with pre-tax adjustments[(k)]	**(9,732)**	(8,863)	**(17,584)**	(22,996)
Adjusted Net Income	**75,825**	71,672	**136,079**	123,178
Interest expense, net[(l)]	**17,144**	19,163	**33,894**	40,445
Depreciation[(m)]	**15,744**	15,683	**31,611**	31,062
Income tax provision applicable to Adjusted Net Income[(n)]	**27,422**	28,045	**49,900**	45,195
Adjusted EBITDA[(o)]	**$ 136,135**	$ 134,563	**$ 251,484**	$ 239,880

(a) Represents non-cash share-based compensation expense.

(b) Represents the effects of (i) fluctuations in foreign currency exchange rates, (ii) non-cash mark-to-fair value of embedded derivatives relating to certain customer and supply contracts at Nordion, and (iii) unrealized gains on interest rate caps not designated as hedging instruments.

(c) Represents (i) certain direct and incremental costs related to the acquisitions of RCA, the noncontrolling interests in our China subsidiaries, BioScience Labs in 2021, the first quarter 2021 gain on the mandatorily redeemable noncontrolling interest in Nelson Labs Fairfield (as described in Note 4, “Acquisitions”), and certain related integration efforts as a result of those acquisitions, (ii) the earnings impact of fair value adjustments (excluding those recognized within amortization expense) resulting from the businesses acquired, and (iii) transition services income and non-cash deferred lease income associated with the terms of the divestiture of the Medical Isotopes business in 2018.

(d) Represents professional fees, contract termination and exit costs, severance and other payroll costs, and other costs associated with business optimization and cost savings projects relating to the integration of acquisitions, operating structure realignment and other process enhancement projects.

(e) Represents professional fees, severance and other payroll costs, and other costs including ongoing lease and utility expenses associated with the closure of the Willowbrook, Illinois facility.

(f) Represents an impairment charge on our equity method investment in Auralux. Refer to Note 1, “Basis of Presentation”.

(g) Represents expenses incurred in connection with the repricing of our Term Loan in January 2021, including accelerated amortization of prior debt issuance and discount costs.

(h) Represents litigation and other professional fees associated with our EO sterilization facilities. See Note 16, “Commitments and Contingencies”.

(i) Represents non-cash accretion of asset retirement obligations related to Co-60 and gamma processing facilities, which are based on estimated site remediation costs for any future decommissioning of these facilities (without regard for whether the decommissioning services would be performed by employees of Nordion, instead of by a third party) and are accreted over the life of the asset.

(j) Represents non-recurring costs associated with the COVID-19 pandemic, including incremental costs to implement workplace health and safety measures.

(k) Represents the income tax impact of adjustments calculated based on the tax rate applicable to each item. We eliminate the effect of tax rate changes as applied to tax assets and liabilities and unusual items from our presentation of adjusted net income.

(l) The three and six months ended June 30, 2022 excludes $3.1 million and $9.4 million, respectively, of unrealized gains on interest rate derivatives not designated as hedging instruments.

(m) Includes depreciation of Co-60 held at gamma irradiation sites.

(n) Represents the difference between the income tax provision as determined under U.S. GAAP and the income tax benefit associated with pre-tax adjustments described in footnote (k).

(o) $20.9 million and $21.8 million of the adjustments for the three months ended June 30, 2022 and 2021, respectively, and $40.7 million and $42.5 million of the adjustments for the six months ended June 30, 2022 and 2021, respectively, are included in cost of revenues, primarily consisting of amortization of intangibles, depreciation, and accretion of asset retirement obligations.

SEGMENT RESULTS OF OPERATIONS

We have three reportable segments: Sterigenics, Nordion and Nelson Labs. Our chief operating decision maker evaluates performance and allocates resources within our business based on Segment Income, which excludes certain items which are included in income before tax as determined in our Consolidated Statements of Operations and Comprehensive Income (Loss). The accounting policies for our reportable segments are the same as those for the consolidated Company.

Our Segments

Sterigenics

Sterigenics provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets using three major technologies: gamma irradiation, EO processing and E-beam irradiation.

Nordion

Nordion is a leading global provider of Co-60 used in the sterilization and irradiation processes for the medical device, pharmaceutical, food safety, and high-performance materials industries, as well as in the treatment of cancer. In addition, Nordion is a leading global provider of gamma irradiation systems.

As a result of the time required to meet regulatory and logistics requirements for delivery of radioactive products, combined with accommodations made to our customers to minimize disruptions to their operations during the installation of Co-60, Nordion sales patterns can often vary significantly from one quarter to the next. However, timing-related impacts on our sales performance tend to be resolved within several quarters, resulting in more consistent performance over longer periods of time. In addition, sales of gamma irradiation systems occur infrequently and tend to be for larger amounts.

Results for our Nordion segment are also impacted by Co-60 supplier mix, harvest schedules and product and service mix.

Nelson Labs

Nelson Labs provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries.

For more information regarding our reportable segments please refer to Note 18, “Segment Information” to our consolidated financial statements.

Segment Results for the Three Months Ended June 30, 2022 and 2021

The following tables compare segment net revenue and segment income for the three months ended June 30, 2022 to the three months ended June 30, 2021:

(thousands of U.S. dollars)	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	$ Change	% Change
Net Revenues				
Sterigenics	**$ 157,792**	$ 145,182	$ 12,610	8.7 %
Nordion	**50,478**	49,125	1,353	2.8 %
Nelson Labs	**58,369**	57,610	759	1.3 %
Segment Income				
Sterigenics	**$ 85,098**	$ 79,569	$ 5,529	6.9 %
Nordion	**29,982**	31,168	(1,186)	(3.8)%
Nelson Labs	**21,055**	23,826	(2,771)	(11.6)%
Segment Income margin				
Sterigenics	**53.9 %**	54.8 %		
Nordion	**59.4 %**	63.4 %		
Nelson Labs	**36.1 %**	41.4 %		

Net Revenues by Segment

Sterigenics net revenues were $157.8 million for the three months ended June 30, 2022, an increase of $12.6 million, or 8.7%, as compared to the three months ended June 30, 2021. The increase reflects a 6.1% favorable impact from pricing, and volume growth of 5.1%, partially offset by unfavorable impacts from changes in foreign currency exchange rates of 2.5%.

Nordion net revenues were $50.5 million for the three months ended June 30, 2022, an increase of $1.4 million, or 2.8%, as compared to the three months ended June 30, 2021. The increase was primarily attributable to favorable pricing of 6.1% partially offset by a 3.1% unfavorable impact from changes in foreign currency exchange rates.

Nelson Labs net revenues were $58.4 million for the three months ended June 30, 2022, an increase of $0.8 million, or 1.3%, as compared to the three months ended June 30, 2021. Revenue from the RCA acquisition contributed 5.7% and favorable pricing represented 5.4%. Partially offsetting these increases was a 5.0% decline in revenue from reduced demand for pandemic-related testing. In addition, revenue growth was negatively impacted by 2.6% due to changes in foreign currency exchanges rates.

Segment Income

Sterigenics segment income was $85.1 million for the three months ended June 30, 2022, an increase of $5.5 million, or 6.9%, as compared to the three months ended June 30, 2021. The increase in segment income was primarily a result of favorable customer pricing and sales volume growth, as referenced above.

Nordion segment income was $30.0 million for the three months ended June 30, 2022, a decrease of $1.2 million, or 3.8%, as compared to the three months ended June 30, 2021. The decrease in segment income and segment income margin was driven by an unfavorable product mix and changes in foreign currency exchanges rates.

Nelson Labs segment income was $21.1 million for the three months ended June 30, 2022, a decrease of $2.8 million, or 11.6%, as compared to the three months ended June 30, 2021, primarily attributable to the decline in higher margin pandemic-related testing. This decrease was partially offset by the incremental contribution of the RCA acquisition and favorable customer pricing. The 5.3% decrease in segment income margin was driven by recent acquisitions and an unfavorable mix associated with reduced demand for pandemic-related testing.

Segment Results for the Six Months Ended June 30, 2022 and 2021

The following tables compare segment net revenue and segment income for the six months ended June 30, 2022 to the six months ended June 30, 2021:

	Six Months Ended June 30,			
(thousands of U.S. dollars)	2022	2021	$ Change	% Change
Net Revenues				
Sterigenics	**$ 307,254**	$ 276,333	$ 30,921	11.2 %
Nordion	**84,480**	75,043	9,437	12.6 %
Nelson Labs	**111,659**	112,689	(1,030)	(0.9)%
Segment Income				
Sterigenics	**$ 164,501**	$ 148,030	$ 16,471	11.1 %
Nordion	**48,885**	44,954	3,931	8.7 %
Nelson Labs	**38,098**	46,896	(8,798)	(18.8)%
Segment Income margin				
Sterigenics	**53.5 %**	53.6 %		
Nordion	**57.9 %**	59.9 %		
Nelson Labs	**34.1 %**	41.6 %		

Net Revenues by Segment

Sterigenics net revenues were $307.3 million for the six months ended June 30, 2022, an increase of $30.9 million, or 11.2%, as compared to the six months ended June 30, 2021. The increase reflects volume growth of 7.3% and a 5.8% favorable impact from pricing, offset by unfavorable impacts from changes in foreign currency exchange rates of 1.9%.

Nordion net revenues were $84.5 million for the six months ended June 30, 2022, an increase of $9.4 million, or 12.6%, as compared to the six months ended June 30, 2021. The increase was driven by volume growth of 8.4% and a favorable impact from pricing of 6.4%, partially offset by foreign currency impacts of 2.2%.

Nelson Labs net revenues were $111.7 million for the six months ended June 30, 2022, a decrease of $1.0 million, or 0.9%, as compared to the six months ended June 30, 2021. The decrease was mainly attributable to a 7.8% decline in revenue from reduced demand for pandemic-related testing coupled with a decrease in volumes across other testing categories. In addition, revenue was unfavorably impacted by 2.0% due to changes in foreign currency exchanges rates. Partially offsetting this decline was revenue growth from the 2021 acquisitions of RCA and BioScience Labs of 7.0% and a favorable impact from pricing of 4.8%.

Segment Income

Sterigenics segment income was $164.5 million for the six months ended June 30, 2022, an increase of $16.5 million, or 11.1%, as compared to the six months ended June 30, 2021. The increase in segment income was primarily a result of sales volume growth and favorable customer pricing, as referenced above.

Nordion segment income was $48.9 million for the six months ended June 30, 2022, an increase of $3.9 million, or 8.7%, as compared to the six months ended June 30, 2021. The increase in segment income was due to the favorable impacts of volume growth and customer pricing, as referenced above. The decrease in segment income margin was due to an unfavorable product mix.

Nelson Labs segment income was $38.1 million for the six months ended June 30, 2022, a decrease of $8.8 million, or 18.8%, as compared to the six months ended June 30, 2021, primarily attributable to the decline in pandemic-related testing. This decrease was partially offset by the incremental contribution of the BioScience Labs and RCA acquisitions and favorable customer pricing. The 7.5% decrease in segment income margin was driven by unfavorable mix associated with reduced demand for pandemic-related testing, supply chain pressures, labor market constraints, which were compounded by the surge of the Omicron variant in the first quarter of 2022, and dilution resulting from the 2021 Nelson Labs acquisitions.

LIQUIDITY AND CAPITAL RESOURCES

The primary sources of liquidity for our business are cash flows from operations and borrowings under our credit facilities. We expect that our primary liquidity requirements will be to make capital expenditures, including investments in fixed assets to build and/or expand existing facilities, to fund suitable business acquisitions, service our debt, and make expenditures for other general corporate purposes.

As of June 30, 2022, we had $140.6 million of cash and cash equivalents. This is an increase of $33.7 million from the balance at December 31, 2021. Our foreign subsidiaries held cash of approximately $114.7 million at June 30, 2022 and $87.9 million at December 31, 2021. No material restrictions exist to accessing cash held by our foreign subsidiaries notwithstanding any potential tax consequences.

Our capital expenditure program is a component of our long-term strategy. This program includes, among other things, investments in new and existing facilities, business expansion projects, Co-60 used by Sterigenics at its gamma irradiation facilities, Co-60 development projects and information technology enhancements. During the six months ended June 30, 2022, our capital expenditures amounted to $71.6 million, compared to $44.8 million for the six months ended June 30, 2021.

We expect that cash on hand, operating cash flows and amounts available under our credit facilities will provide sufficient working capital to operate our business, meet foreseeable liquidity requirements, including debt service on our long-term debt, make expected capital expenditures including investments in fixed assets to build and/or expand existing facilities, and meet litigation costs for at least the next twelve months. Our primary long-term liquidity requirements beyond the next twelve months will be to service our debt, make capital expenditures, and fund suitable business acquisitions. As of June 30, 2022, there were no outstanding borrowings on the Revolving Credit Facility. We expect any excess cash provided by operations will be allocated to fund capital expenditures, potential acquisitions, or for other general corporate purposes. Our ability to meet future working capital, capital expenditures and debt service requirements will depend on our future financial performance, which will be affected by a range of macroeconomic, competitive and business factors, including interest rate changes and changes in our industry, many of which are outside of our control. As of June 30, 2022, our interest rate caps limit our cash flow exposure related to LIBOR for the majority of the principal amount outstanding on our variable rate borrowings under the Term Loan. Refer to Note 17, “Financial Instruments and Financial Risk” under the heading “Derivative Instruments” for additional information regarding the interest rate caps used to manage economic risks associated with our variable rate borrowings.

Cash Flow Information

(thousands of U.S. dollars)	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Net Cash Provided by (Used in):		
Operating activities	**$ 108,256**	$ 134,256
Investing activities	**(71,192)**	(70,974)
Financing activities	**(1,083)**	(12,090)
Effect of foreign currency exchange rate changes on cash and cash equivalents	**(2,287)**	2,578
Net increase in cash and cash equivalents, including restricted cash, during the period	**$ 33,694**	$ 53,770

Operating activities

Cash flows provided by operating activities decreased $26.0 million to net cash provided of $108.3 million in the six months ended June 30, 2022 compared to $134.3 million for the six months ended June 30, 2021. The decrease in cash flows from operating activities in the six months ended June 30, 2022 compared to the six months ended June 30, 2021 was driven primarily by an increase in cash paid for taxes of $14.6 million and a $5.4 million increase in cash paid for interest.

Investing activities

Cash used by investing activities increased $0.2 million to net cash used of $71.2 million in the six months ended June 30, 2022 compared to $71.0 million for the six months ended June 30, 2022. Capital expenditures increased $26.9 million in the six months ended June 30, 2022 compared to the six months ended June 30, 2021. 2021 included cash paid for acquisitions of $26.2 million which did not recur in 2022. In 2021, we acquired BioScience Labs for a net purchase price of approximately $13.8 million and we completed the acquisition of the remaining 15% ownership of Nelson Labs Fairfield for $12.4 million.

Financing activities

Cash used for financing activities decreased $11.0 million to net cash used of $1.1 million for the six months ended June 30, 2022 compared to $12.1 million for the six months ended June 30, 2021. The difference was attributable to the payment of $3.7 million of debt issuance costs in the six months ended June 30, 2021 in connection with our January 2021 refinancing of the Senior Secured Credit Facilities (as described in "Debt Facilities" below) and a $7.7 million payment for the acquisition of our Chinese subsidiaries noncontrolling interests.

Debt Facilities

Senior Secured Credit Facilities

On December 13, 2019, Sotera Health Holdings, LLC ("SHH"), our wholly owned subsidiary, entered into senior secured first lien credit facilities (the "Senior Secured Credit Facilities"), consisting of both a prepayable senior secured first lien term loan (the "Term Loan") and a senior secured first lien revolving credit facility (the "Revolving Credit Facility") pursuant to a first lien credit agreement (the "Credit Agreement"). The Revolving Credit Facility and Term Loan mature on June 13, 2026 and December 13, 2026, respectively. The total borrowing capacity under the Revolving Credit Facility is $347.5 million. The Senior Secured Credit Facilities also provide SHH the right at any time and under certain conditions to request incremental term loans or incremental revolving credit commitments based on a formula defined in the Senior Secured Credit Facilities. As of June 30, 2022 and December 31, 2021, total borrowings under the Term Loan were $1,763.1 million, respectively, and there were no borrowings outstanding on the Revolving Credit Facility. The weighted average interest rate on borrowings under the Term Loan for the three months ended June 30, 2022 and June 30, 2021 was 3.53% and 3.25%, respectively, and 3.39% and 3.64% for the six months ended June 30, 2022 and June 30, 2021, respectively.

On January 20, 2021, we closed on an amendment repricing our Term Loan. The interest rate spread over the London Interbank Offered Rate ("LIBOR") on the facility was reduced from 450 basis points to 275 basis points, and the facility's LIBOR floor was reduced from 100 basis points to 50 basis points. The changes resulted in an effective reduction in current interest rates of 225 basis points. In connection with this amendment, we wrote off $11.3 million of unamortized debt issuance and discount costs and incurred an additional $2.9 million of expense related to debt issuance costs attributable to the refinancing. These costs were recorded to "Loss on extinguishment of debt" in our Consolidated Statements of Operations and Comprehensive Income (Loss).

On March 26, 2021, we amended the Revolving Credit Facility, to (i) decrease the Applicable Rate (as defined in the Credit Agreement) related to any Revolving Loans (as defined in the Credit Agreement) from a rate per annum that ranged from an alternative base rate ("ABR") plus 2.50% to ABR plus 3.00% depending on SHH's Senior Secured First Lien Net Leverage Ratio to ABR plus 1.75%; and in the case of Eurodollar Loans (as defined in the Credit Agreement) from a rate per annum which ranged from the Adjusted LIBOR plus 3.50% to the Adjusted LIBOR plus 4.00% depending on SHH's Senior Secured First Lien Net Leverage Ratio (as defined in the Credit Agreement), to the Adjusted LIBOR (as defined in the Credit Agreement) plus 2.75% and (ii) extend the maturity date of the Revolving Facility from December 13, 2024 to June 13, 2026. The other material terms of the Credit Agreement remain unchanged and the amendment does not change the capacity of our Revolving Credit Facility. No unamortized debt issuance costs associated with the Revolving Credit Facility were written off and direct fees and costs incurred in connection with the amendment were immaterial.

As of June 30, 2022 and December 31, 2021, capitalized debt issuance costs totaled $2.4 million and $2.7 million, respectively, and debt discounts totaled $15.6 million and $17.3 million, respectively, related to the Senior Secured Credit Facilities. Such costs are recorded as a reduction of debt on our Consolidated Balance Sheets and amortized as a component of interest expense over the term of the debt agreement.

The Senior Secured Credit Facilities contain additional covenants that, among other things, restrict, subject to certain exceptions, our ability and the ability of our restricted subsidiaries to engage in certain activities, such as incur indebtedness or permit to exist any lien on any property or asset now owned or hereafter acquired, as specified in the Senior Secured Credit Facilities. The Senior Secured Credit Facilities also contain certain customary affirmative covenants and events of default, including upon a change of control. As of June 30, 2022, we were in compliance with all the Senior Secured Credit Facilities covenants.

All of SHH’s obligations under the Senior Secured Credit Facilities are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of the Company, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the Senior Secured Credit Facilities, and the guarantees of such obligations, are secured by substantially all assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Senior Secured Credit Facilities.

Outstanding letters of credit are collateralized by encumbrances against the Revolving Credit Facility and the collateral pledged thereunder, or by cash placed on deposit with the issuing bank. As of June 30, 2022, the Company had $70.1 million of letters of credit issued against the Revolving Credit Facility, resulting in total availability under the Revolving Credit Facility of $277.4 million.

Term Loan Interest Rate Risk Management

The Company utilizes interest rate derivatives to reduce the variability of cash flows in the interest payments associated with the Term Loan due to changes in LIBOR (or its successor). For additional information on the derivative instruments described above, refer to Note 17, “Financial Instruments and Financial Risk”, *“Derivatives Instruments.”*

First Lien Notes

On July 31, 2020, SHH issued $100.0 million aggregate principal amount of senior secured first lien notes due 2026 (the “First Lien Notes”), which were scheduled to mature on December 13, 2026. On August 27, 2021 SHH redeemed in full the $100.0 million aggregate principal amount of the First Lien Notes. In connection with this redemption, the Company paid a $3.0 million early redemption premium, in accordance with the terms of the First Lien Notes Indenture, and wrote off $3.4 million of debt issuance and discount costs. The Company recognized these expenses within “Loss on extinguishment of debt” in our Consolidated Statements of Operations and Comprehensive Income (Loss) for the year ended December 31, 2021.

Prior to the redemption, the First Lien Notes bore interest at a rate equal to LIBOR subject to a 1.00% floor plus 6.00% per annum. Interest was payable on a quarterly basis with no principal due until maturity. The weighted average interest rate on the First Lien Notes during 2021 up to the August 27, 2021 redemption date was 7.00%.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of consolidated financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, estimates and assumptions at a specific point in time and in certain circumstances that affect amounts reported in the accompanying consolidated financial statements. In preparing these consolidated financial statements, management has made its best estimates and judgments of certain amounts, giving due consideration to materiality. The application of accounting policies involves the exercise of judgment and use of assumptions as to future uncertainties and, as a result, actual results could differ from these estimates.

A comprehensive discussion of the Company’s critical accounting policies and management estimates made in connection with the preparation of the financial statements is included in Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2021. There have been no significant changes in critical accounting policies, management estimates or accounting policies since the year ended December 31, 2021.

NEW ACCOUNTING PRONOUNCEMENTS

For a description of recent accounting pronouncements applicable to our business, see Note 2, “Recent Accounting Standards”.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Market risks are described within “Quantitative and Qualitative Disclosures About Market Risk” in Part II, Item 7A of our Annual Report on Form 10-K for the year ended December 31, 2021. These market risks have not materially changed for the three and six months ended June 30, 2022.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the Company's "disclosure controls and procedures," (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended ("Exchange Act")). Based upon their evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of the end of the period covered by this Quarterly Report on Form 10-Q, our disclosure controls and procedures are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission ("SEC"), and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Changes in Internal Control

During the three and six months ended June 30, 2022, there were no changes in our internal control over financial reporting that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Part II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we may be subject to various legal proceedings arising in the ordinary course of our business, including claims relating to personal injury, property damage, workers' compensation and employee safety. In addition, from time to time, we receive communications from government or regulatory agencies concerning investigations or allegations of noncompliance with laws or regulations in jurisdictions in which we operate. At this time, and except as is noted herein, we are unable to predict the outcome of, and cannot reasonably estimate the impact of, any pending litigation matters, matters concerning allegations of non-compliance with laws or regulations and matters concerning other allegations of other improprieties, or the incidence of any such matters in the future. Information regarding our legal proceedings is included below.

Legal Proceedings Described in Note 16 "Commitments and Contingencies" of Our Consolidated Financial Statements

Note 16, "Commitments and Contingencies" to our consolidated financial statements for the three and six months ended June 30, 2022 contained in this Quarterly Report on Form 10-Q includes information on legal proceedings that constitute material contingencies for financial reporting purposes that could have a material effect on our financial condition or results of operations. This item should be read in conjunction with Note 16 "Commitments and Contingencies" for information regarding the following legal proceedings, which information is incorporated into this item by reference:

- Ethylene Oxide Tort Litigation – Illinois and Georgia
- Georgia Facility Operations Litigation; and
- New Mexico Attorney General Litigation

Legal Proceedings That Are Not Described in Note 16 "Commitments and Contingencies" to Our Consolidated Financial Statements

In addition to the matters that are identified in Note 16 to our consolidated financial statements for the three and six months ended June 30, 2022 contained in this Quarterly Report on Form 10-Q, and incorporated into this item by reference, the following matter also constitutes a material pending legal proceeding, other than ordinary course litigation incidental to our business, to which we are or any of our subsidiaries is a party.

Zoetermeer, Holland Criminal Proceedings and Criminal Financial Investigation

In 2010, the Dutch Public Prosecution Service started criminal proceedings against DEROSS Holding B.V. ("DEROSS"), in relation to alleged environmental permit violations for EO emissions in the period from 2004 to 2009 at its Zoetermeer processing facility. On the basis of the final indictment issued in April 2017, assuming a rarely applied increasing mechanism is not applied in this case, fines in the amount of €0.8 million (US$0.8 million) may be imposed. We have also agreed to defend and indemnify the two individuals overseeing environmental compliance during the time period of the alleged claims by the Public Prosecutor. Assuming a rarely applied increasing mechanism is not applied in this case, the possible monetary penalties relating to the individuals currently are estimated at a maximum of €0.2 million (US$0.2 million).

In November 2010, the Public Prosecution Service also started a criminal financial investigation against DEROSS to determine whether it obtained illegal advantages by committing the alleged criminal offenses noted above. Any illegally obtained advantage could then be recovered from DEROSS in subsequent confiscation proceedings. The Public Prosecution Service estimates the illegally obtained advantage by DEROSS to be €0.6 million (US$0.6 million).

In February 2018, DEROSS and the two individuals received favorable judgments from the trial court, which did not hold any of them responsible for the alleged criminal offenses. In March 2018, the Public Prosecutor filed an appeal against the favorable judgments. The appeal procedure is still pending.

An escrow account was established in 2011 to satisfy indemnity claims for losses related to this matter. The balance of the special escrow at June 30, 2022, was approximately US$1.8 million and the cash collateral held by ABN Amro to provide security for the claims against us was approximately €2.4 million (US$2.5 million) as of June 30, 2022. These amounts are available to satisfy claims relating to the ongoing matter through its anticipated resolution. At this time, we expect that the appeal of this matter will likely take several years to resolve; however, we believe the indemnification receivable continues to be recoverable and plan to ensure escrow funds remain in place to cover outcomes of an appeal.

It is possible that individuals living in the vicinity of our former Zoetermeer facility may file civil claims at some time in the future. While we have received letters from a small number of individuals claiming to live or work in the vicinity of the Zoetermeer facility, no civil claims have been filed against DEROSS or us. We have not provided for a contingency reserve in connection with any civil claims as we are unable to determine the likelihood of an unfavorable outcome and no reasonable estimate of a loss or range of losses, if any, can be made.

Item 1A. Risk Factors.

There have been no material changes to the risk factors previously disclosed in our 2021 Form 10-K. Refer to Part I, Item 1A of our 2021 Form 10-K for a detailed discussion of risk factors affecting us.

Item 6. Exhibits.

The exhibits listed in the following Exhibit Index are filed, furnished, or incorporated by reference as part of this Quarterly Report on Form 10-Q.

		Incorporated by Reference				
Exhibit No	Description of Exhibits	Form	File No.	Exhibit	Filing Date	Furnished/Filed Herewith
31.1	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					*
31.2	Certification of Principal Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					*
32.1	Certifications of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					**
101.INS	Inline XBRL Instance Document - The XBRL Instance Document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document					*
101.SCH	Inline XBRL Taxonomy Extension Schema Document					*
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					*
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					*
101.LAB	Inline XBRL Taxonomy Label Linkbase Document					*
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					*
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)					*

* Filed Herewith
** Furnished Herewith

SIGNATURES

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

SOTERA HEALTH COMPANY

By:	/s/ Michael F. Biehl
Name:	Michael F. Biehl
Title:	Interim Chief Financial Officer (Principal Financial Officer)

Date: August 4, 2022

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael B. Petras, Jr., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Sotera Health Company;

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 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 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: August 4, 2022

/s/ Michael B. Petras, Jr.
Michael B. Petras, Jr.
Chairman and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael F. Biehl, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Sotera Health Company;

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 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 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 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: August 4, 2022

/s/ Michael F. Biehl
Michael F. Biehl
Interim Chief Financial Officer
(Principal Financial Officer)

CERTIFICATIONS OF PRINCIPAL EXECUTIVE OFFICER AND PRINCIPAL FINANCIAL OFFICER

PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code), each of the undersigned officers of Sotera Health Company (the "Company"), do hereby certify, to each such officer's knowledge, that the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 4, 2022	/s/ Michael B. Petras, Jr. Michael B. Petras, Jr. Title: Chairman and Chief Executive Officer *(Principal Executive Officer)*
Dated: August 4, 2022	/s/ Michael F. Biehl Michael F. Biehl Title: Interim Chief Financial Officer *(Principal Financial Officer)*

The foregoing certifications are furnished and are not deemed filed with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (Exchange Act), and are not deemed to be incorporated by reference into any filing of Sotera Health Company under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that Sotera Health Company specifically incorporates them by reference.