

Labor Market Analysis: 0954.00 – Chemical Technology

Chemical Technician

Los Angeles Center of Excellence, October 2024

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25 th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations¹ or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there appears to be a supply gap for the three identified middle-skill occupations and one emerging occupation in the region. While entry-level wages are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, more than one-third of current workers in the field have completed some college or an associate degree as their highest level of educational attainment.

Recommendation: Due to two of three program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.

Key Findings

Supply Gap

- 3,647 annual job openings are projected in the region through 2028. This number is substantially greater than the three-year average of 10 awards conferred by educational institutions in the region.
 - The *inspectors, testers, sorters, samplers, and weighers* SOC code includes various production occupations. Since the SOC code does not solely represent chemical technology occupations, **the number of annual job openings is likely overstated.**

¹ Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree. The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

- Over the past 12 months, there were **10,719 online job postings related to middle-skill chemical technology occupations**. The highest number of job postings were for quality control inspectors, quality inspectors, laboratory technicians, laboratory assistants, and quality control technicians.

Living Wage

- All three occupations have entry-level wages **below** Los Angeles County’s self-sufficiency standard hourly wage (\$24.03/hour).²

Educational Attainment

- 70% of the annual job openings typically require a high school diploma or equivalent for middle-skill occupations related to chemical technology in the LA/OC region.
- 36%-38% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

Community college supply

- 3 community colleges issued awards related to chemical technology in the greater LA/OC region.
- 10 awards (degrees and certificates) were conferred on average each year between 2021 and 2023.

Other postsecondary supply

- No educational institutions in the LA/OC region have conferred sub-baccalaureate awards in programs related to chemical technology over the past three years.

TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market and postsecondary supply data related to three middle-skill occupations and one emerging occupation. [For full occupation descriptions, please see Appendix.](#)

- **Chemical Technicians (19-4031)**³
- **Quality Control Analysts (19-4099.01)**⁴
- **Clinical Laboratory Technologists and Technicians (29-2010)** This aggregate occupation includes the 2018 SOC detailed occupations:⁵
 - **Medical and Clinical Laboratory Technologists (29-2011)**⁶
 - **Medical and Clinical Laboratory Technicians (29-2012)**⁷
- **Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)**⁸

² Center for Women’s Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024*. <http://selfsufficiencystandard.org/California>.

³ [Chemical Technicians \(bls.gov\)](https://www.bls.gov/occupations/19-4031)

⁴ [Quality Control Analysts \(onetonline.org\)](https://www.onetonline.org/occupation/19-4099.01)

⁵ [Clinical Laboratory Technologists and Technicians \(bls.gov\)](https://www.bls.gov/occupations/29-2010)

⁶ [Medical and Clinical Laboratory Technologists \(onetonline.org\)](https://www.onetonline.org/occupation/29-2011)

⁷ [Medical and Clinical Laboratory Technicians \(onetonline.org\)](https://www.onetonline.org/occupation/29-2012)

⁸ [Inspectors, Testers, Sorters, Samplers, and Weighers \(bls.gov\)](https://www.bls.gov/occupations/51-9061)

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these middle-skill chemical technology occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by less than 1% through 2028. There will be more than 3,600 job openings per year through 2028 due to job growth and replacements. It is important to note that the *inspectors, testers, sorters, samplers, and weighers (51-9061)* SOC code includes various production occupations and not solely chemical technology occupations. Therefore, the data in Exhibit 1 is likely overstated for middle-skill chemical technology occupations. The majority of jobs in 2023 for these middle-skill chemical technology occupations (68%) were located in Los Angeles County.

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties⁹

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	23,975	23,734	(241)	(1%)	2,421
Orange	11,371	11,734	363	3%	1,226
Total	35,345	35,468	122	0%	3,647

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. Positive scores for automation resilience¹⁰ reflect a lower-than-average threat of the occupation(s) being replaced by automation, while negative scores reflect a greater-than-average risk of automation. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; occupations with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of impending retirements. On average, 81% of workers across all occupations in California are employed full-time.

Exhibit 2: Detailed employment and occupational demand, Los Angeles County¹¹

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Auto-mation Resilience	% Aged 55 and older	% Full Time Workers
Chemical Technicians	1,634	1,609	(2%)	187	(4.6)	27%	100%
Clinical Laboratory Technologists and Technicians	7,334	7,716	5%	553	2.1	23%	100%

⁹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

¹⁰ Automation risk is calculated based on the percentage of time spent on high-risk compared to low-risk work, the number of high-risk jobs in compatible occupations, and the overall industry automation risk.

¹¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Auto-mation Resilience	% Aged 55 and older	% Full Time Workers
Inspectors, Testers, Sorters, Samplers, and Weighers	15,006	14,409	(4%)	1,681	(6.1)	34%	91%
Total	23,975	23,734	(1%)	2,421	-	-	-

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill chemical technology occupations in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

Los Angeles County

All three occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between \$18.35 and \$22.35. (Exhibit 3). Experienced workers can expect to earn wages between \$29.24 and \$36.77, which are higher than the self-sufficiency standard.

Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Chemical Technicians	\$21.64	\$24.82	\$31.57	\$51,600
Clinical Laboratory Technologists and Technicians	\$22.35	\$28.82	\$36.77	\$60,000
Inspectors, Testers, Sorters, Samplers, and Weighers	\$18.35	\$22.74	\$29.24	\$47,300

*Rounded to the nearest \$100

Orange County

All three occupations have entry-level wages below the self-sufficiency standard wage for one adult (\$27.13 in Orange County). Typical entry-level hourly wages are in a range between \$18.88 and \$23.63 (Exhibit 4). Experienced workers can expect to earn wages between \$30.01 and \$38.87, which are higher than the self-sufficiency standard.

Exhibit 4: Earnings for occupations in Orange County

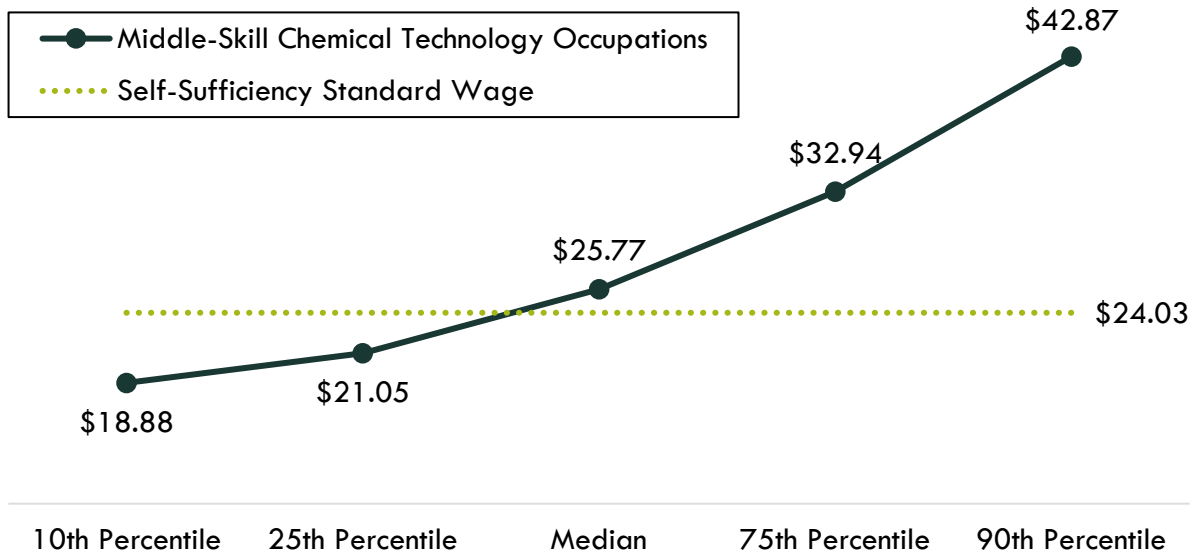
Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Chemical Technicians	\$22.39	\$25.68	\$32.66	\$53,400
Clinical Laboratory Technologists and Technicians	\$23.63	\$30.46	\$38.87	\$63,400

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Inspectors, Testers, Sorters, Samplers, and Weighers	\$18.88	\$23.38	\$30.01	\$48,600

*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are \$21.05; this is below the living wage for one single adult in Los Angeles County (\$24.03). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

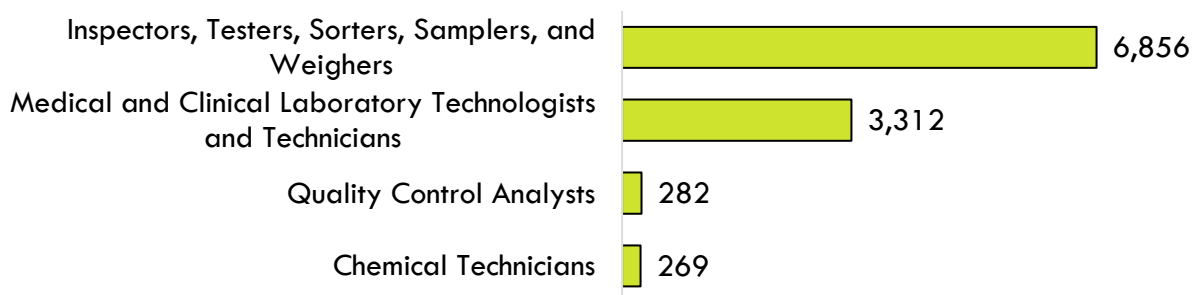
Exhibit 5: Average hourly earnings for middle-skill chemical technology occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 10,719 online job postings related to chemical technology listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (64%) were for *inspectors, testers, sorters, samplers, and weighers*, followed by *medical and clinical laboratory technologists and technicians* (31%) and *quality control analysts* (3%).

Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> Quality control inspectors Quality inspectors Laboratory technicians Laboratory assistants Quality control technicians Quality assurance technicians Quality assurance specialists 	<ul style="list-style-type: none"> Auditing Calipers & micrometers Good Manufacturing Practices Laboratory equipment Quality management & quality management systems Chemistry 	<ul style="list-style-type: none"> Actalent* Aerotek* University of California Kelly Services* Quest Diagnostics Volt* Express Employment* Adecco*

*Staffing companies

In the greater Los Angeles/Orange County region, 61% of the middle-skill chemical technology job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

Exhibit 8: Education levels requested in job postings for middle-skill chemical technology occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	1,892	29%
Associate degree	665	10%
High school diploma or vocational training	4,019	61%

EDUCATIONAL ATTAINMENT

In the greater Los Angeles/Orange County region, the majority of annual job openings (70%) typically require a high school diploma or equivalent (Exhibit 9). However, the national-level data indicates between 36% and 38% of workers in the field have completed some college or an associate degree as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Clinical Laboratory Technologists and Technicians	Bachelor's degree
Chemical Technicians	Associate degree
Inspectors, Testers, Sorters, Samplers, and Weighers	High school diploma or equivalent

EDUCATIONAL SUPPLY

Community College Supply

Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in the related TOP codes: Chemical Technology (0954.00) and Laboratory Science Technology (0955.00). The colleges with the most completions in the region are LA Trade-Tech and Mt. San Antonio. Currently, there are no other postsecondary institutions in the greater LA/OC region that have conferred awards for related CIP programs in the past three years:

- Biology Technician/Biotechnology Laboratory Technician (41.0101)
- Chemical Technology/Technician (41.0301)

Exhibit 10: Regional community college awards (certificates and degrees), 2021-2023

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
0954.00	Chemical Technology	East LA	3	2	1	2
		LA Trade-Tech	3	11	-	5
		LA Subtotal	6	13	1	7
0955.00	Laboratory Science Technology	Mt San Antonio	5	4	2	4
		LA Subtotal	5	4	2	4
Supply Subtotal/Average			5	4	2	4
Supply Total/Average			11	17	3	10

APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- **Chemical Technicians (19-4031)** Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials for research and development of new products or processes, quality control, maintenance of environmental standards, and other work involving experimental, theoretical, or practical application of chemistry and related sciences.¹²
- **Quality Control Analysts (19-4099.01)** Conduct tests to determine quality of raw materials, bulk intermediate and finished products. May conduct stability sample tests.¹³
- **Clinical Laboratory Technologists and Technicians (29-2010)** This occupation includes the 2018 SOC occupations: Medical and Clinical Laboratory Technologists (29-2011) and Medical and Clinical Laboratory Technicians (29-2012).¹⁴
 - **Medical and Clinical Laboratory Technologists (29-2011)** Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.¹⁵
 - **Medical and Clinical Laboratory Technicians (29-2012)** Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.¹⁶
- **Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061)** Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.¹⁷

¹² [Chemical Technicians \(bls.gov\)](https://www.bls.gov/occupations/19-4031)

¹³ [Quality Control Analysts \(onetonline.org\)](https://www.onetonline.org/occupation/19-4099.01)

¹⁴ [Clinical Laboratory Technologists and Technicians \(bls.gov\)](https://www.bls.gov/occupations/29-2010)

¹⁵ [Medical and Clinical Laboratory Technologists \(onetonline.org\)](https://www.onetonline.org/occupation/29-2011)

¹⁶ [Medical and Clinical Laboratory Technicians \(onetonline.org\)](https://www.onetonline.org/occupation/29-2012)

¹⁷ [Inspectors, Testers, Sorters, Samplers, and Weighers \(bls.gov\)](https://www.bls.gov/occupations/51-9061)

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DATA SOURCES

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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