



Talent Gap Analysis Report: Preparing Our Workforce for the Evolving Life Science Industry

ADDENDUM



In December 2008, the Delaware Valley Innovation Network (DVIN) released the *Talent Gap Analysis Report: Preparing Our Workforce for the Evolving Life Science Industry*, which was designed to identify, evaluate, and prioritize current and anticipated gaps in the region’s life science workforce. The Talent Gap Analysis included a forecast of employment, from 2008-2013, across 8 sectors within the life sciences industry for 88 key life sciences-related occupations within the 14-county DVIN region. The employment forecast, conducted by New Economy Strategies, LLC, calculated employment at the detailed industry level utilizing data from the U.S. Bureau of Labor Statistics, economy.com, and the workforce agencies in the states of Delaware, New Jersey, and Pennsylvania.

In December of 2009, DVIN had New Economy Strategies, LLC, update the *Talent Gap Analysis Report* employment forecast using the most recent available data so that the forecast would reflect the impact of the recession on life science employment in the DVIN region, and reflect the post-recession expectations for the industry. This addendum provides an update of the forecast for the original years 2008-2013, a new forecast for the next 5-year period 2010-2015, and the combined 7-year period 2008-2015.

DVIN’s Life Sciences Industry Definition

NAICS Code	3254	334510	334516	334517	3391	54138	541711	541712
	Pharmaceutical and Medicine Manufacturing	Electromedical and Electrotherapeutic Apparatus Manufacturing	Analytical Laboratory Instrument Manufacturing	Irradiation Apparatus Manufacturing	Medical Equipment and Supplies Manufacturing	Testing Laboratories	Research and Development in Biotechnology	Physical, engineering, and biological research (except Biotechnology)



REVISED FORECAST FOR 2008-2013

Despite the dramatic job losses registered across the U.S., the life science industry has fared better than many large industrial sectors. The outlook for life science remains bright, bolstered by renewed national emphasis on health care, the aging of the baby-boomer population, and continuous scientific discoveries. The region's life sciences industry will return to growth at the end of 2010, and is expected to rebound dramatically in the years thereafter.

The revised forecast for 2008-2013 shows that net job growth for the period is expected to be flat – just 0.2% growth with 100 net new jobs created. R&D employment (which includes pharmaceutical research) is expected to create the most new jobs, but all other sectors are expected to remain flat or lose jobs. Medical Equipment manufacturing is expected to lose the most jobs, 400, over the period. However, the life science industry is still expected to outperform the rest of the regional economy.

Table 1: Employment Growth Trends, 2003-2013

		Number of Jobs			2008-2013	
		2003	2008	2013	Growth	Net New Jobs
3254	Pharmaceutical and Medicine Manufacturing	24,800	18,200	18,000	-1.1%	-200
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	1,500	1,700	1,600	-5.9%	-100
334516	Analytical Laboratory Instrument Manufacturing	900	800	800	0.0%	0
334517	Irradiation Apparatus Manufacturing	300	300	300	0.0%	0
3391	Medical Equipment and Supplies Manufacturing	8,600	8,500	8,100	-4.7%	-400
54138	Testing Laboratories	3,100	3,700	3,600	-2.7%	-100
54171	Research & Development	27,900	32,500	33,400	2.8%	900
	All Life Sciences Industries	66,900	65,700	65,800	0.2%	100
	All Industries	3,389,200	3,494,300	3,480,600	-0.4%	-13,700

Note: Totals on all tables may not add due to rounding (i.e., totals shown are actual numbers rounded, not the sum of the rounded parts).

The net result of the revised forecast has been a downward revision of growth for the 2008-2013 period, as well as a downward revision of life sciences employment in 2008. Job creation for the industry was forecasted to be 4.2% for the period 2008-2013, but the revised forecasts now point to a 0.2% total growth rate from 2008 to 2013.

Table 2: Comparison of Forecasts

	Life Sciences Employment		Growth
	2008	2013	
Previous Forecast	66,600	69,400	4.2%
Revised Forecast	65,700	65,800	0.2%

Bio/Chemistry/Physics occupations remain the largest category of life sciences-related occupations in the industry, and are expected to create the most jobs over the 2008-2013 period (300 net new jobs). While Production/Repair occupations were previously forecasted to create the second-highest number of jobs, the revised forecast shows that this category is in last place and is expected to lose more jobs than any



other category. Overall, life sciences-related technical positions will grow faster than other non-technical positions employed by the industry.

Table 3: Forecast of Occupations, 2008-2013

Forecast of Occupations, 2008-2013						
Life Sciences Related Occupations	Employment		Net New Jobs	Replace-ment Jobs*	Total Job Openings*	% Growth '08-'13*
	2008	2013				
Bio/Chemistry/Physics	10,100	10,400	300	1,700	2,000	3.0%
Industrial/Electro/Mechanical Engineers	5,600	5,800	200	800	1,000	3.6%
Computer/Software	5,000	5,100	100	600	700	2.0%
Clerks/Writers	1,400	1,400	0	200	200	0.0%
Math/Statistics	500	500	0	100	100	0.0%
Technicians (Lab/Clinical)	2,000	1,900	-100	100	0	-5.0%
Production/Repair	9,400	9,100	-300	500	200	-3.2%
Total Life Sciences-Related Occupations	34,000	34,300	300	4,000	4,300	0.9%
All Occupations in the Life Sciences Industry	65,700	65,800	100	7,500	7,600	0.2%

*Net new jobs represent the overall growth in the number of positions in an occupation

** Replacement jobs represent the number of people leaving the occupation due to career advancement, retirement, or career change

***Total job openings are a combination of net new jobs and replacement jobs between 2008 and 2013

As shown in Table 4 below, with the revised forecast, computer positions advanced in importance. Computer software engineers moved up slightly in their ranking of forecasted net new jobs, and database administrators moved from 28th position to 10th position. Biomedical engineers advanced from 16th position to 9th position, and industrial engineering technicians advanced from 17th position to 9th position. Together, these 10 high-demand occupations will create 514 net new jobs and grow 6% over the period 2008-2013. Three occupations were removed from the Top 10 list – chemists, chemical technicians, and team assemblers.

Table 4: Top Ten Job Creators, 2008-2013

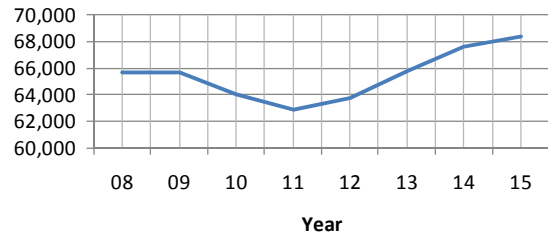
Rank	Occupations	Employment	Growth	Net New	Replace-	Total Job	Previous
		2008	'08-'13	Jobs	ment Jobs	Openings	
1	15-1031 Computer software engineers, applications	883	2.0%	91	37	128	2
2	17-2112 Industrial engineers	815	2.0%	86	104	190	3
3	19-1042 Medical scientists, except epidemiologists	2,005	0.8%	85	202	287	1
4	19-4021 Biological technicians	1,615	0.9%	71	283	354	4
5	15-1032 Computer software engineers, systems software	1,044	1.1%	59	44	103	5
6	15-1051 Computer systems analysts	702	1.1%	41	76	117	7
7	19-1021 Biochemists and biophysicists	761	0.9%	33	122	155	8
8	17-2031 Biomedical engineers	306	1.2%	19	32	51	16
9	17-3026 Industrial engineering technicians	250	1.2%	15	24	39	17
10	15-1061 Database administrators	217	1.3%	14	18	32	28
TOTAL		8,598	6.0%	514	942	1,456	



LOOKING AHEAD TO THE NEXT 5 YEARS: REVISED FORECAST FOR 2010-2015

While the region’s life science industry has suffered job losses during the current economic recession, the revised forecast points to a strong rebound starting in 2011. By 2014, industry employment will reach its highest level in 10 years: 68,000 jobs.

Table 5: Total Life Sciences Employment



The life science industry is expected to create 4,200 jobs over the next five years, 2010-2015 (slightly better than the previous five year job creation forecast), which translates to a 6.6% growth for the period. The R&D sector continues to lead job creation, creating 3,300 net new jobs over the period. Despite this high growth forecast for the industry, the larger regional economy is expected to rebound at a slightly higher growth rate, 7.2%.

Table 6: Employment Growth Trends, 2005-2015

		Number of Jobs			2010-15	
		2005	2010	2015	Growth	Net New Jobs
3254	Pharmaceutical and Medicine Manufacturing	19,800	18,200	18,500	1.6%	300
334510	Electromedical and Electrotherapeutic Apparatus Manufacturing	1,700	1,500	1,700	13.3%	200
334516	Analytical Laboratory Instrument Manufacturing	800	700	800	14.3%	100
334517	Irradiation Apparatus Manufacturing	300	300	300	0.0%	0
3391	Medical Equipment and Supplies Manufacturing	8,700	8,100	8,300	2.5%	200
54138	Testing Laboratories	3,400	3,500	3,700	5.7%	200
54171	Research & Development	30,200	31,700	35,000	10.4%	3,300
	All Life Sciences Industries	64,800	64,100	68,300	6.6%	4,200
	All Industries	3,409,400	3,380,200	3,622,200	7.2%	242,000

As with the revised 2008-2013 forecast, production/repair occupations have fallen in their job creation ranking. The top 3 occupational groups for highest job creation over the 2010-2015 period include Bio/Chemistry/Physics, Computer/Software, and Industrial/Electro/Mechanical Engineers. All groups are expected to create jobs over the period, with Computer/Software occupations growing at the fastest rate. As with the previous forecast, life sciences-related technical positions are expected to grow faster than other non-technical positions employed by the industry for the 2010-2015 period.



Table 7: Forecast of Occupations, 2010-2015

Life Sciences Related Occupations	Employment		Net New Jobs	Replacement Jobs	Total Job Openings	% Growth '05-'10
	2010	2015				
Bio/Chemistry/Physics	10,000	10,900	900	1,400	2,300	9.0%
Computer/Software	4,900	5,400	500	400	900	10.2%
Industrial/Electro/Mechanical Engineers	5,500	6,000	500	700	1,200	9.1%
Production/Repair	9,100	9,400	300	800	1,100	3.3%
Clerks/Writers	1,400	1,500	100	200	300	7.1%
Technicians (Lab/Clinical)	1,900	2,000	100	200	300	5.3%
Math/Statistics	500	500	0	100	100	0.0%
Total Life Sciences-Related Occupations	33,300	35,700	2,400	3,700	6,100	7.2%
All Occupations in the Life Sciences Industry	64,100	68,300	4,200	7,300	11,500	6.6%

As shown in Table 8 below, with the forecast for 2010-2015, biological technicians advanced from 4th highest growth to 3rd, while industrial engineers moved from 3rd to 5th. Computer software engineers (systems software) moved from 5th to 4th and chemical technicians moved from 10th to 9th. One new position emerged on the top 10 list: mechanical engineers (moving from 18th to 10th), replacing team assemblers. Together, these 10 high-demand occupations will create over 1,200 net new jobs and grow 10.7% over the period 2010-2015.

Table 8: Top Ten Job Creators, 2010-2015

Rank	Occupations	Employment 2010	Growth '10-'15	Net New Jobs	Replacement Jobs	Total Job Openings	Previous Ranking
1	19-1042 Medical scientists, except epidemiologists	1,993	10.3%	206	201	407	1
2	15-1031 Computer software engineers, applications	883	19.0%	168	37	205	2
3	19-4021 Biological technicians	1,604	10.4%	167	281	448	4
4	15-1032 Computer software engineers, systems software	1,028	14.0%	144	43	187	5
5	17-2112 Industrial engineers	828	16.8%	139	106	245	3
6	19-2031 Chemists	1,917	5.5%	105	317	422	6
7	15-1051 Computer systems analysts	698	13.1%	91	75	166	7
8	19-1021 Biochemists and biophysicists	758	10.4%	79	122	201	8
9	19-4031 Chemical technicians	1,039	6.8%	70	104	174	10
10	17-2141 Mechanical engineers	731	7.8%	57	94	151	18
		11,479	10.7%	1,226	1,380	2,606	



**A COMPLETE LOOK OVER THE 7-YEAR PERIOD:
REVISED FORECAST FOR 2008-2015**

For the expanded period 2008-2015, the life sciences industry is expected to create 2,600 net new jobs, growing 4.0%, slightly ahead of the overall economy’s growth of 3.7%. As with the previous forecast, most jobs will be created by R&D companies (which includes pharmaceutical research). The pharmaceutical manufacturing sector is forecasted to recover from previous job losses to see a small net increase in jobs by 2015.

Table 9: Industry Employment Growth Trends, 2003-2015s

NAICS	Industry Description	Number of Jobs			2008-2015	
		2003	2008	2015	Growth	Net New Jobs
3254	Pharmaceutical and Medicine Manufacturing	24,800	18,200	18,500	1.6%	300
334510	Medical Equipment and Supplies Manufacturing	1,500	1,700	1,700	0.0%	0
334516	Electromedical and Electrotherapeutic Apparatus Manufacturing	900	800	800	0.0%	0
334517	Analytical Laboratory Instrument Manufacturing	300	300	300	0.0%	0
3391	Irradiation Apparatus Manufacturing	8,600	8,500	8,300	-2.4%	-200
54138	Testing Laboratories	3,100	3,700	3,700	0.0%	0
54171	Research & Development	27,900	32,500	35,000	7.7%	2,500
	All Life Sciences Industries	66,900	65,700	68,300	4.0%	2,600
	All Industries	3,389,200	3,494,300	3,622,200	3.7%	127,900

As with the revised 2008-2013 forecast, production/repair occupations have fallen in their job creation ranking. The top 3 occupational groups for highest job creation over the 2010-2015 period include Bio/Chemistry/Physics, Computer/Software, and Industrial/Electro/Mechanical Engineers. All groups are expected to create jobs over the period, with Computer/Software occupations growing at the fastest rate, 8.0%. As with the previous forecast, life sciences-related technical positions are expected to grow faster than other non-technical positions employed by the industry for the 2010-2015 period.



Table 10: Forecast of Occupations, 2010-2015

Life Sciences Related Occupations	Employment		Net New 2008-15	Replace-ment Jobs	Total Job Openings	% Growth '08-'15
	2008	2015				
Bio/Chemistry/Physics	10,100	10,900	800	2,000	2,800	7.9%
Computer/Software	5,000	5,400	400	600	1,000	8.0%
Industrial/Electro/Mechanical Engineers	5,600	6,000	400	1,000	1,400	7.1%
Clerks/Writers	1,400	1,500	100	200	300	7.1%
Math/Statistics	500	500	0	100	100	0.0%
Production/Repair Technicians (Lab/Clinical)	9,400	9,400	0	1,100	1,100	0.0%
	2,000	2,000	0	300	300	0.0%
Total Life Sciences-Related Occupations	34,000	35,700	1,700	5,300	7,000	5.0%
All Occupations in the Life Sciences Industry	65,700	68,300	2,600	10,400	13,000	4.0%

Forecasted employment by occupation was also revised. As shown in Table 11 below, high-demand occupations for the life sciences industry require advanced, technical skills. The most in-demand occupations for the life sciences industry include medical scientists, computer analysts, and bio-related engineers and technicians. Half of the Top 10 occupations increased their rankings versus the previous forecast: biological technicians, computer systems analysts, biochemists and biophysicists, chemical technicians, and biomedical engineers. One occupation was removed from the Top 10 list – team assemblers – which reflects a continuing shift in the regional industry away from production. In total, these Top 10 occupations are expected to create 1,100 net new jobs and have 3,000 total job openings by 2015.

Table 11: Top Ten Job Creators, 2008-2015

Rank	Occupations	Employment 2008	Growth '08-'15	Net New Jobs	Replace-ment Jobs	Total Job Openings	Previous Ranking
1	19-1042 Medical scientists, except epidemiologists	883	1.9%	194	283	477	1
2	15-1031 Computer software engineers, applications	815	3.6%	169	52	221	2
3	19-4021 Biological technicians	2,005	1.9%	156	396	552	4
4	17-2112 Industrial engineers	1,615	3.5%	152	146	298	3
5	15-1032 Computer software engineers, systems software	1,044	2.3%	128	61	189	5
6	15-1051 Computer systems analysts	702	2.4%	88	106	194	7
7	19-1021 Biochemists and biophysicists	761	1.9%	76	171	247	8
8	19-2031 Chemists	306	0.7%	71	452	523	6
9	19-4031 Chemical technicians	250	1.0%	56	148	204	10
10	17-2031 Biomedical engineers	217	2.4%	38	44	82	16
		8,598	13.1%	1,128	1,861	2,989	

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