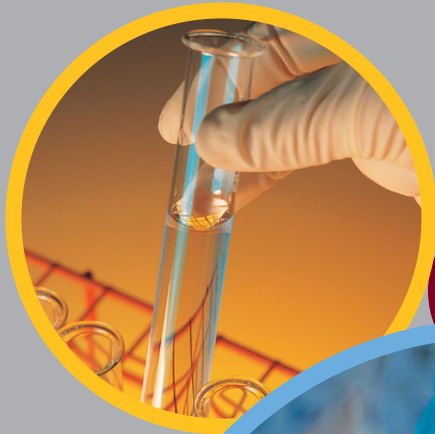




Department of
Job and Family Services

TO STRENGTHEN OHIO'S FAMILIES WITH SOLUTIONS TO TEMPORARY CHALLENGES

Polymers and Chemicals Industry Cluster



Ohio Employment Trends

June 2016

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Executive Summary

- The polymers and chemicals industry cluster is comprised of seven manufacturing industries that are involved in the production of a variety of products, including pesticides, fertilizer, paint, soap and rubber.
- In 2014, the polymers and chemicals cluster employed nearly 1 percent of Ohio's total employment, more than 51,000 workers. During the 2007 to 2009 recession, employment for this cluster declined 13 percent, compared to Ohio total employment declining 6.8 percent.
- Within the polymers and chemicals cluster, rubber product manufacturing has the largest share of employment (26 percent) and the largest number of establishments (196).
- Overall, the polymers and chemicals cluster is expected to decline by 5,600 jobs from 2012 to 2022.
- The only industry with expected growth is resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing, which could add 910 jobs (16.2 percent). The remaining industries in the cluster are projected to decline, with rubber product manufacturing losing the most employment (-23.6 percent).
- About 54 percent of workers in this cluster are age 45 or older, compared to 45 percent for all Ohio workers. Businesses in the polymers and chemicals industry cluster may need to replace retiring workers sooner than businesses in other industries.
- Typical education at entry for 14 of the 25 most concentrated occupations in the polymers and chemicals cluster is a high school diploma, and most of these occupations require on-the-job training.

Introduction

The polymers and chemicals industry cluster consists of seven manufacturing industries. Figure 1 shows employment figures for the industries in the polymers and chemicals cluster, displayed according to their North American Industry Classification System (NAICS) codes. In 2014, the polymers and chemicals cluster employed more than 51,400 workers, about 1 percent of Ohio's total employment.

Figure 1. > Polymers and Chemicals Cluster Industries

NAICS Code	Industry Title	2014 Employment
3251	Basic Chemical Manufacturing	9,332
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	5,840
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	2,037
3255	Paint, Coating, and Adhesive Manufacturing	7,804
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	8,239
3259	Other Chemical Product and Preparation Manufacturing	5,043
3262	Rubber Product Manufacturing	13,121

Source: Quarterly Census of Employment and Wages

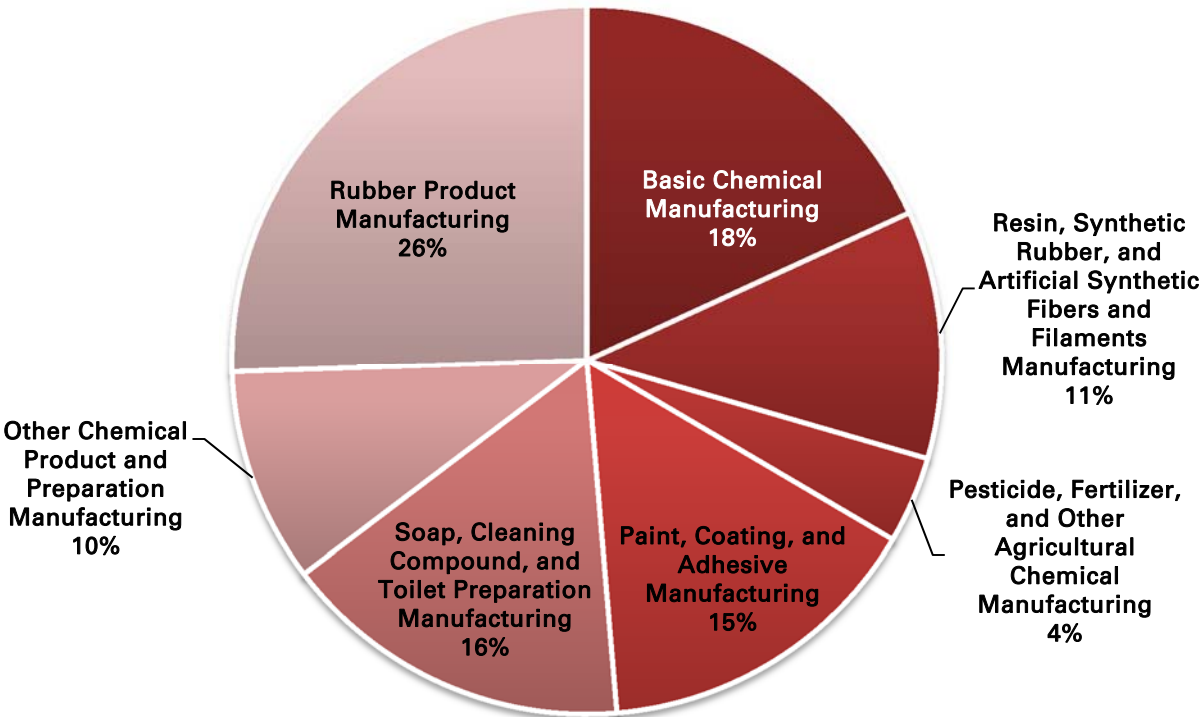
Seventy-five of Ohio's 88 counties have at least one polymer industry establishment. The advantages of locating in Ohio include proximity to customers and suppliers (of both raw materials and production machinery), a well-developed multi-modal transportation network, and a knowledgeable workforce. In addition, Ohio's Third Frontier program helps link the research capabilities of universities with entrepreneurial efforts in the development of new materials and technologies.¹

¹ Ohio Department of Development, Ohio's Polymers Industry, Rubber and Plastic Resin Products, and Related Machinery (2015).

Cluster Composition

Figure 2 shows each industry's share of the polymers and chemicals cluster's total private employment in 2014. Rubber product manufacturing had the largest share of polymers and chemicals employment, at 26 percent. It was followed by basic chemical manufacturing (18 percent); soap, cleaning compound, and toilet preparation manufacturing (16 percent); paint, coating, and adhesive manufacturing (15 percent); resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing (11 percent); other chemical product and preparation manufacturing (10 percent); and pesticide, fertilizer, and other agricultural chemical manufacturing (4 percent).

Figure 2. Industry Shares of Polymers and Chemicals Employment, 2014



Source: Quarterly Census of Employment and Wages

Industry Employment Concentration

An industry's location quotient is a measure of how significant that industry is to a particular region's economy. Figure 3 lists the polymers and chemicals industries and their location quotients for Ohio. Values greater than 1.2 mean the industry's concentration of employment in Ohio is significantly greater than the U.S. average. This suggests that these establishments serve polymers and chemicals demand beyond their local areas. In 2014, all seven industries had location quotients greater than 1.2.

Figure 3. > Industry Location Quotients, 2014

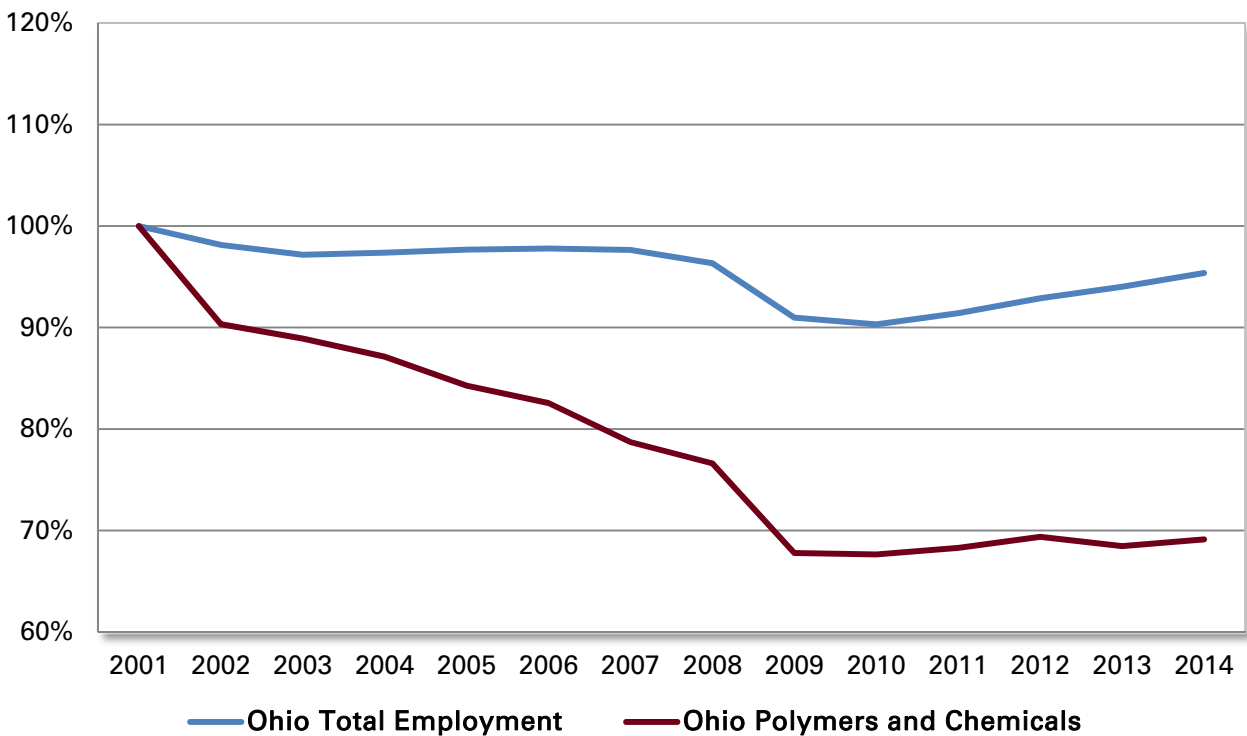
NAICS code	Industry Title	Location Quotient
3255	Paint, coating, and adhesive manufacturing	3.36
3262	Rubber product manufacturing	2.56
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	2.05
3251	Basic chemical manufacturing	1.67
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	1.62
3259	Other chemical product and preparation manufacturing	1.58
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	1.43

Source: U.S. Bureau of Labor Statistics

Cluster Employment Trends

Figure 4 shows the percent change in annual employment for the polymers and chemicals cluster and for Ohio total employment from 2001 to 2014. Both experienced declines following the 2001 recession. While total Ohio employment has nearly recovered since the recession of 2007 to 2009, employment in the polymers and chemicals industry cluster has experienced only modest gains and still is well below its pre-recession levels.

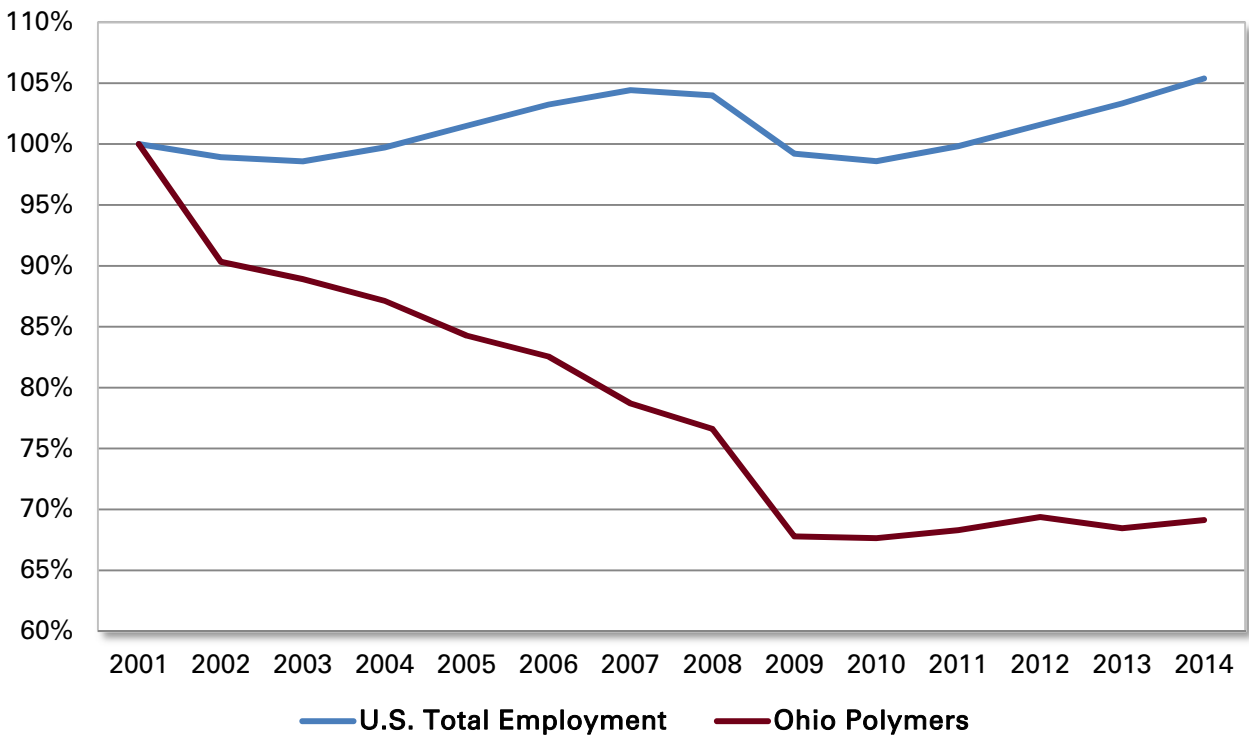
Figure 4. Ohio Polymers and Chemicals Cluster and Ohio Total Employment as a Percentage of 2001 Employment, 2001 - 2014



Source: Quarterly Census of Employment and Wages

Figure 5 shows the percent change in annual Ohio polymers and chemicals cluster employment and U.S. total employment from 2001 to 2014. The Ohio polymers and chemicals cluster lost more employment overall compared to U.S. total employment. Employment in the Ohio polymers and chemicals cluster has not returned to 2001 employment levels, whereas U.S. total employment started to exceed those levels in 2012.

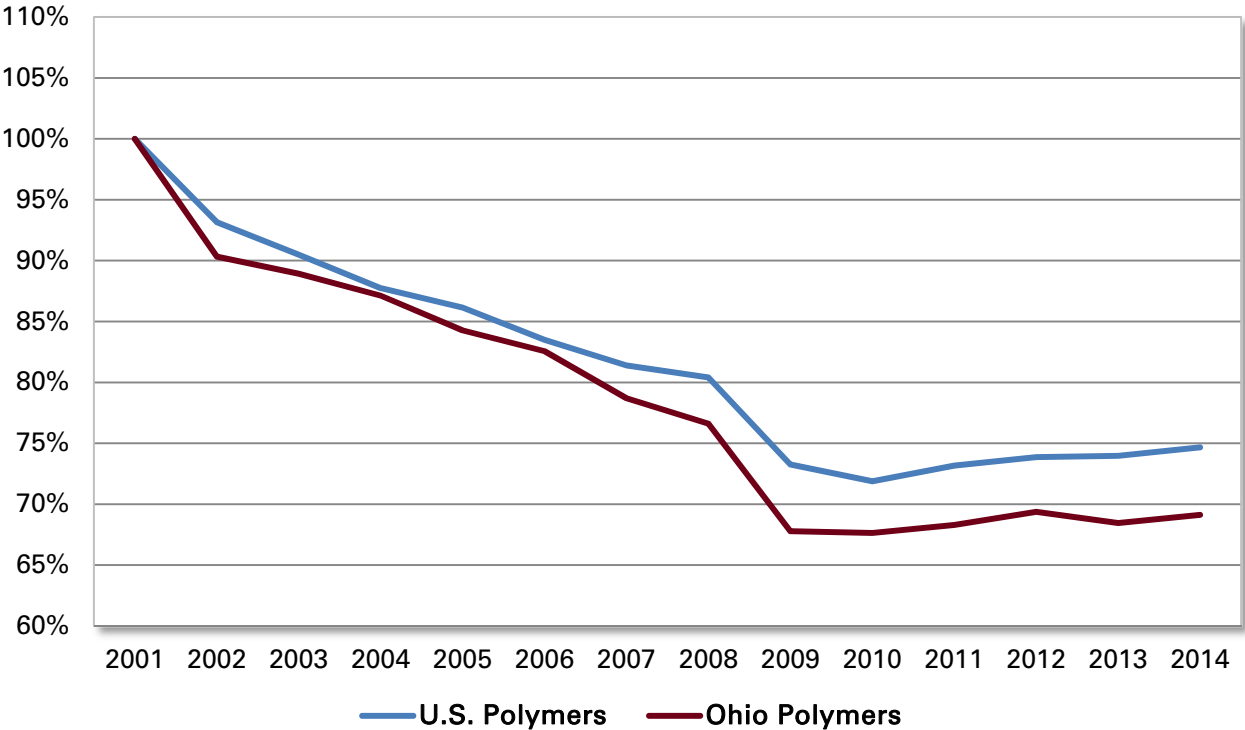
Figure 5. U.S. Total Employment and Ohio Polymers and Chemicals Employment as a Percentage of 2001 Employment, 2001 - 2014



Source: U.S. Bureau of Labor Statistics

Figure 6 shows the percent change in annual employment from 2001 to 2014 for the Ohio polymers and chemicals cluster and the U.S. polymers and chemicals cluster. Employment for both has declined since 2001; the Ohio polymers and chemicals cluster has declined a bit more. Ohio was affected more by the recession of 2007 to 2009, when the state’s polymers and chemicals employment declined by 13.9 percent. At the same time, U.S. polymers and chemicals employment declined by 10 percent. From the end of that recession through 2014, Ohio polymers and chemicals employment recovered by 2.2 percent; U.S. polymers and chemicals employment recovered by 3.9 percent.

Figure 6. U.S. and Ohio Polymers and Chemicals Employment as a Percentage of 2001 Employment, 2001 - 2014



Source: U.S. Bureau of Labor Statistics

Industry Employment Trends

This section presents annual employment data from 2000 through 2014 for each of the industries in the polymers and chemicals cluster. During this period, the nation experienced two recessions: one in 2001 and another from 2007 to 2009. Each polymers and chemicals industry responded differently to each recession.

Basic Chemical Manufacturing: NAICS 3251

This industry group comprises establishments primarily engaged in manufacturing chemicals using basic processes, such as thermal cracking and distillation. Chemicals manufactured in this industry group usually are separate chemical elements or separate chemically defined compounds.²

This industry lost 3,185 jobs from 2000 to 2014, a 25 percent decline. However, at the same time the industry added 12 establishments, a 6.9 percent increase.

Figure 7. Basic Chemical Manufacturing

Year	Establishments	Employment
2000	173	12,517
2001	169	11,774
2002	165	11,438
2003	168	11,189
2004	164	10,815
2005	167	10,484
2006	175	10,348
2007	188	10,438
2008	196	10,820
2009	192	10,117
2010	188	10,170
2011	188	10,097
2012	186	10,203
2013	182	9,178
2014	185	9,332
Net Change	12	-3,185
Percent Change	6.90%	-25.40%

Source: Quarterly Census of Employment and Wages

² All industry descriptions are taken from the U.S. Office of Management and Budget, North American Industry Classification System, United States, 2012 (Lanham, MD: Bernan Press, 2012).

Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing: NAICS 3252

This industry group comprises establishments primarily engaged in (1) manufacturing synthetic resins, plastics materials, and non-vulcanizable elastomers and mixing and blending resins on a custom basis; (2) manufacturing non-customized synthetic resins; (3) manufacturing synthetic rubber; (4) manufacturing cellulosic (i.e., rayon and acetate) and non-cellulosic (i.e., nylon, polyolefin and polyester) fibers and filaments in the forms of monofilament, filament yarn, staple or tow; or (5) manufacturing and texturizing cellulosic and non-cellulosic fibers and filaments.

This industry suffered job losses after the 2001 recession, then regained those losses before losing a similar amount in the 2007 to 2009 recession. It since has recovered and is near the 2000 employment levels. The number of establishments has slowly but steadily increased 40 percent over the last 15 years.

Figure 8. Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing

Year	Establishments	Employment
2000	90	5,902
2001	97	5,544
2002	105	5,353
2003	104	5,291
2004	99	5,301
2005	104	5,355
2006	104	5,819
2007	112	6,086
2008	117	6,053
2009	116	5,303
2010	116	5,273
2011	116	5,327
2012	118	5,635
2013	124	5,812
2014	126	5,840
Net Change	36	-62
Percent Change	40.00%	-1.10%

Source: Quarterly Census of Employment and Wages

Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing: NAICS 3253

This industry group comprises establishments primarily engaged in (1) manufacturing nitrogenous or phosphatic fertilizer materials; (2) manufacturing fertilizers from sewage or animal waste; (3) manufacturing nitrogenous or phosphatic materials and mixing with other ingredients into fertilizers; (4) mixing ingredients made elsewhere into fertilizers; and (5) formulating and preparing pesticides and other agricultural chemical manufacturing.

While this industry did not experience sharp declines during the two recessions, it lost 547 jobs between 2000 and 2014. The number of establishments rose sharply in 2008, dropped during the end of the 2007 to 2009 recession, and gained back only some of the numbers of establishments.

Figure 9.

Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing

Year	Establishments	Employment
2000	30	2,580
2001	31	2,431
2002	30	2,429
2003	30	2,364
2004	30	2,310
2005	31	2,136
2006	31	2,062
2007	32	2,084
2008	56	2,004
2009	52	2,228
2010	50	2,280
2011	44	2,224
2012	45	2,223
2013	46	2,119
2014	47	2,033
Net Change	17	-547
Percent Change	56.70%	-21.20%

Source: Quarterly Census of Employment and Wages

Paint, Coating, and Adhesive Manufacturing: NAICS 3255

This industry group comprises establishments primarily engaged in (1) mixing pigments, solvents, and binders into paints and other coatings; (2) manufacturing such allied paint products as putties, removers and cleaners; and (3) manufacturing adhesives, glues and caulking compounds.

This industry experienced a 26 percent decline in employment from 2000 to 2009 and has recovered only some of those jobs in the past five years. Establishments declined 9.7 percent in 15 years.

Figure 10. Paint, Coating, and Adhesive Manufacturing

Year	Establishments	Employment
2000	144	8,951
2001	144	8,257
2002	137	7,850
2003	130	8,017
2004	130	8,071
2005	134	8,013
2006	130	7,843
2007	130	7,251
2008	130	7,240
2009	124	6,572
2010	120	6,696
2011	124	7,175
2012	123	7,411
2013	127	7,670
2014	130	7,804
Net Change	-14	-1,147
Percent Change	-9.70%	-12.80%

Source: Quarterly Census of Employment and Wages

Soap, Cleaning Compound, and Toilet Preparation Manufacturing: NAICS 3256

This industry group comprises establishments primarily engaged in (1) manufacturing and packaging soap, detergents, polish, surface active agents, leather finishing agents, and other sanitation goods; and (2) manufacturing toilet preparations. Examples of products manufactured include dishwashing detergents, toothpaste gels, tooth powders, natural glycerin, specialty cleaning preparations, wetting agents, emulsifiers, perfumes, shaving preparations, face creams, lotions, sunscreens, etc.

This industry has witnessed a loss of 1,190 jobs (12.6 percent) in the last 15 years. However, it has gained 21 establishments, an increase of 20 percent.

Figure 11. Soap, Cleaning Compound, and Toilet Preparation Manufacturing

Year	Establishments	Employment
2000	105	9,429
2001	105	9,404
2002	107	9,169
2003	106	9,179
2004	105	9,204
2005	99	9,293
2006	97	9,134
2007	90	8,876
2008	112	8,381
2009	118	8,542
2010	120	8,522
2011	123	8,214
2012	125	7,953
2013	121	7,918
2014	126	8,239
Net Change	21	-1,190
Percent Change	20.00%	-12.60%

Source: Quarterly Census of Employment and Wages

Other Chemical Product and Preparation Manufacturing: NAICS 3259

This industry group comprises establishments primarily engaged in manufacturing chemical products (except basic chemicals; resins, synthetic rubber, cellulosic and noncellulosic fibers and filaments; pesticides, fertilizers, and other agricultural chemicals; pharmaceuticals and medicines; paints, coatings, and adhesives; soaps and cleaning compounds; and toilet preparations).

This industry lost 47.8 percent of its employment from 2000 to 2010, totaling nearly 4,500 jobs. It has gained only a small number of those back in the last four years. Overall, the number of establishments has fallen 17.9 percent.

Figure 12. Other Chemical Product and Preparation Manufacturing

Year	Establishments	Employment
2000	195	9,385
2001	189	8,733
2002	184	8,356
2003	182	8,155
2004	184	7,841
2005	179	6,645
2006	188	6,621
2007	181	6,587
2008	181	6,260
2009	170	4,946
2010	171	4,890
2011	166	4,945
2012	166	5,078
2013	164	5,129
2014	160	5,043
Net Change	-35	-4,342
Percent Change	-17.90%	-46.30%

Source: Quarterly Census of Employment and Wages

Rubber Product Manufacturing: NAICS 3262

This industry group comprises establishments primarily engaged in processing natural, synthetic or reclaimed rubber materials into intermediate or final products using such processes as vulcanizing, cementing, molding, extruding and lathe-cutting.

This industry lost more than 56 percent of its employment, or 16,730 jobs, from 2000 to 2014. The number of establishments fell nearly 25 percent, from 261 in 2000 to 196 in 2014.

Figure 13. Rubber Product Manufacturing

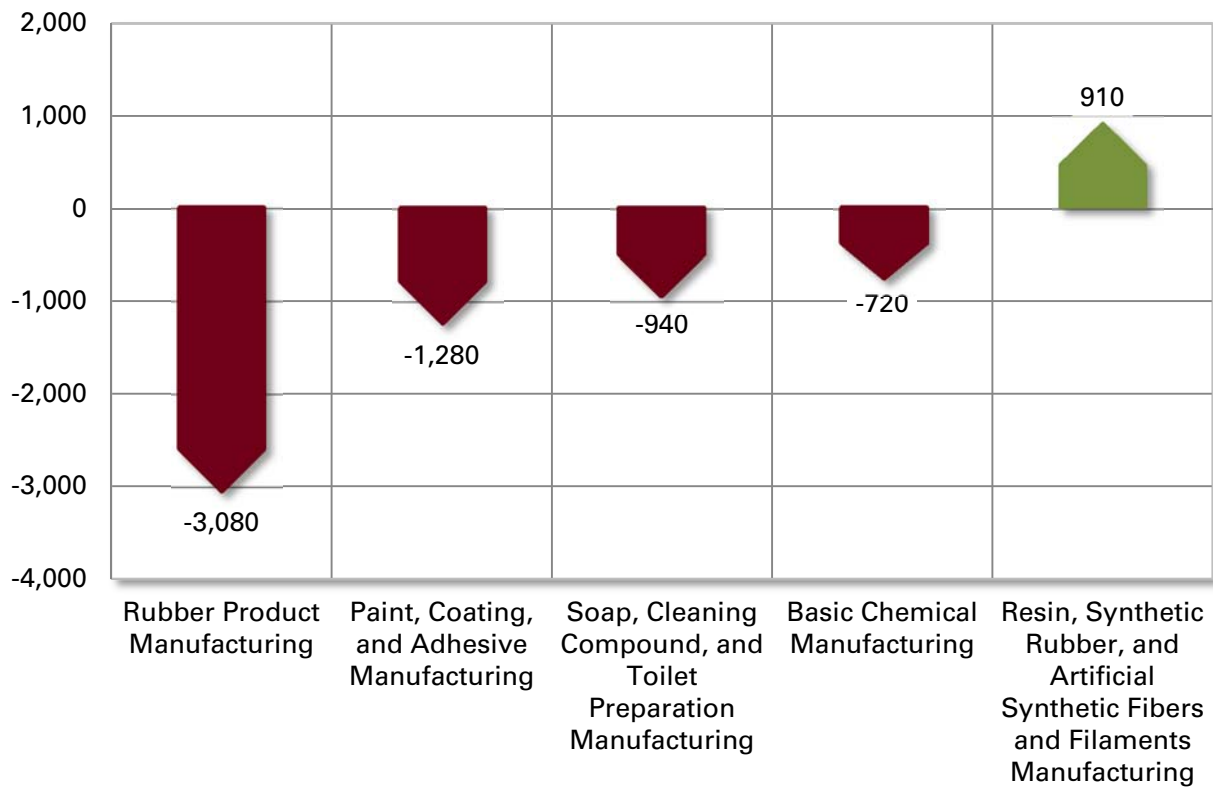
Year	Establishments	Employment
2000	261	29,838
2001	261	28,235
2002	261	22,593
2003	272	21,939
2004	259	21,261
2005	249	20,754
2006	249	19,578
2007	233	17,219
2008	233	16,228
2009	220	12,707
2010	205	12,480
2011	210	12,814
2012	201	13,096
2013	197	13,092
2014	196	13,108
Net Change	-65	-16,730
Percent Change	-24.90%	-56.10%

Source: Quarterly Census of Employment and Wages

Projected Employment Change, 2012-2022

Figure 14 shows the long-term employment projections for five industries in the polymers and chemicals cluster. Overall, the cluster is expected to decline by 5,600 jobs from 2012 to 2022. The only industry with growth is resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing, which could add 910 jobs (16.2 percent). The remaining industries in the cluster are projected to decline, with rubber product manufacturing losing the most employment (-23.6 percent).

Figure 14. Long-Term Employment Projections, 2012-2022

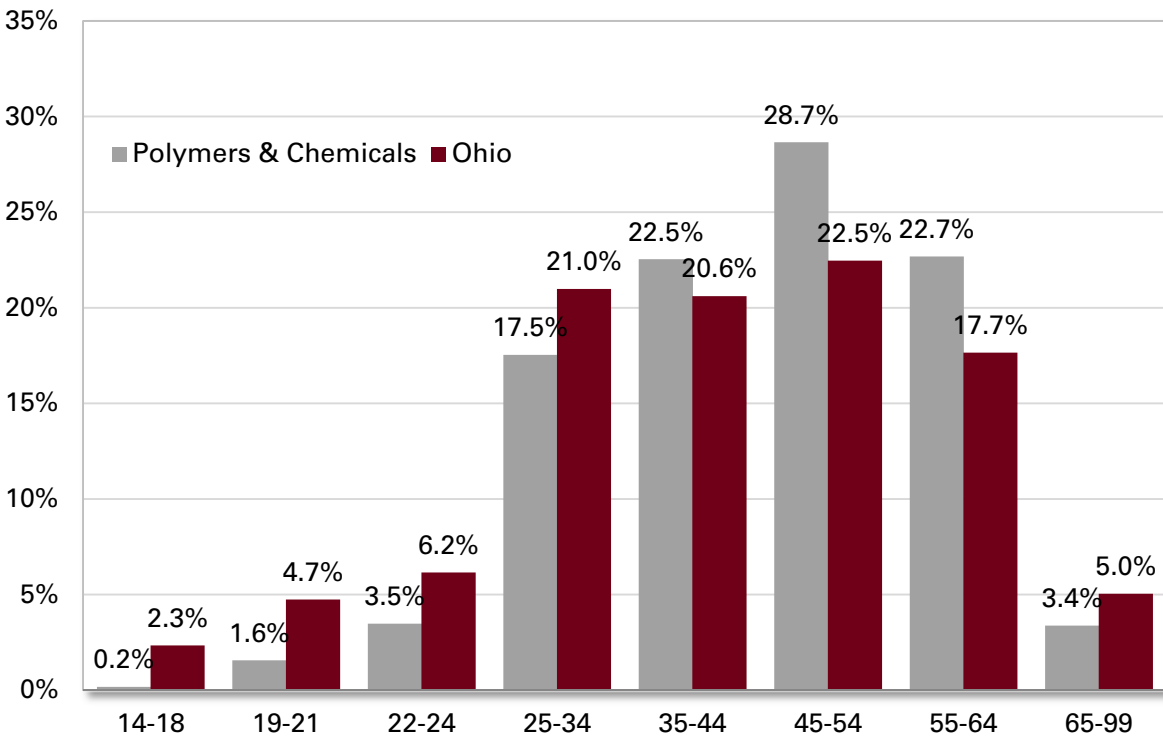


Source: Ohio Bureau of Labor Market Information

Age Distribution of Ohio Workers

Figure 15 shows the age distribution of workers in the polymers and chemicals cluster compared to all Ohio workers for the fourth quarter of 2014. Workers tend to be older in this cluster than all Ohio workers. About 54 percent of workers in this cluster are age 45 or older, compared to 45 percent for all Ohio workers.

Figure 15. Age Distribution of Workers, 2014



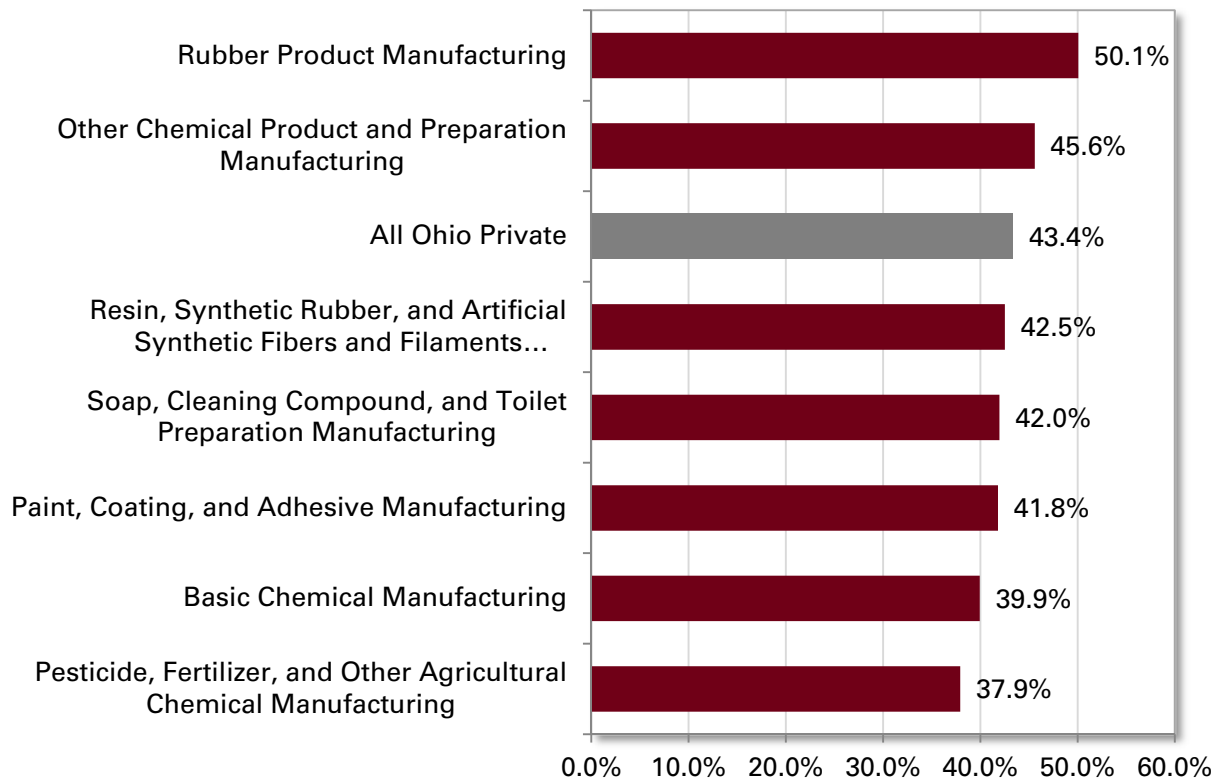
Source: U.S. Census of Quarterly Workforce Indicators, 2014 Q4

Polymers and Chemicals Education and Training Needs

Figure 16 shows the educational attainment of workers within the polymers and chemicals industry cluster, specifically the percentage of workers 25 and older with a high school diploma or less.

Across all Ohio private industries, an average of 43.4 percent of workers had a high school diploma or less in 2014. Two polymers and chemicals cluster industries had a higher percentage of employees with a high school diploma or less: rubber product manufacturing (50.1 percent) and other chemical product and preparation manufacturing (45.6 percent). The remaining five industries had fewer workers with a high school diploma or less, ranging from 42.5 percent (resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing) to 37.9 percent (pesticide, fertilizer, and other agricultural chemical manufacturing).

Figure 16. Percent of Polymer and Chemical Workers 25+ with a High School Diploma or Less, 2014



Source: U.S. Census of Quarterly Workforce Indicators, 2014 Q4

Figure 17 shows the typical education levels, on-the-job training (OJT) and related work experience associated with the 25 largest occupations in the polymers and chemicals industry cluster. Eleven of these occupations require a high school diploma or less. Fourteen require only short-term or moderate-term OJT.³ A number of the jobs in the polymers and chemicals cluster require higher education. These jobs may be hard to fill without a properly educated workforce.

Figure 17. Typical Entry Education, OJT and Related Work Experience Needs for the 25 Most Concentrated Occupations in Polymers and Chemicals

SOC code	Occupation Title	Typical Education Level at Entry	OJT / Related Experience
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	High school diploma or equivalent	Moderate-term OJT
51-9111	Packaging and Filling Machine Operators and Tenders	High school diploma or equivalent	Moderate-term OJT
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	High school diploma or equivalent	Moderate-term OJT
51-1011	FirstLine Supervisors of Production and Operating Workers	Postsecondary non-degree award	None
51-9011	Chemical Equipment Operators and Tenders	High school diploma or equivalent	Moderate-term OJT
51-8091	Chemical Plant and System Operators	High school diploma or equivalent	Long-term OJT
53-7051	Industrial Truck and Tractor Operators	Less than high school	Short-term OJT
49-9041	Industrial Machinery Mechanics	High school diploma or equivalent	Long-term OJT
51-2092	Team Assemblers	High school diploma or equivalent	Moderate-term OJT
19-4031	Chemical Technicians	Associate's degree	Moderate-term OJT
19-2031	Chemists	Bachelor's degree	None
49-9071	Maintenance and Repair Workers, General	High school diploma or equivalent	Long-term OJT
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	High school diploma or equivalent	Moderate-term OJT
11-3051	Industrial Production Managers	Bachelor's degree	None
53-7064	Packers and Packagers, Hand	Less than high school	Short-term OJT
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	High school diploma or equivalent	Moderate-term OJT
43-5071	Shipping, Receiving, and Traffic Clerks	High school diploma or equivalent	Short-term OJT
51-9198	Helpers Production Workers	Less than high school	Short-term OJT
11-1021	General and Operations Managers	Bachelor's degree	None
51-9197	Tire Builders	High school diploma or equivalent	Moderate-term OJT
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	Less than high school	Short-term OJT
51-9199	Production Workers, All Other	High school diploma or equivalent	Moderate-term OJT
43-4051	Customer Service Representatives	High school diploma or equivalent	Short-term OJT
43-9061	Office Clerks, General	High school diploma or equivalent	Short-term OJT
17-2112	Industrial Engineers	Bachelor's degree	None

Source: U.S. Bureau of Statistics

³ Short-term OJT lasts less than one month. Moderate-term OJT lasts one to 12 months and may include informal training. Long-term OJT lasts more than 12 months and combines work experience with formal classroom instruction.

Polymers and Chemicals Industry Staffing Patterns

A staffing pattern refers to the mix of occupations that are commonly found in a particular industry. The following staffing patterns show the most common occupations and their projected employment for the industries that make up the polymers and chemicals cluster. Some industries are not presented here due to limited data. The occupations below are described by their Standard Occupational Classification (SOC) number.

Basic Chemical Manufacturing: NAICS 3251

Chemical equipment operators and tenders (SOC 51-9011) is the largest occupation in this industry. Of the top largest occupations, only industrial machinery mechanics (SOC 49-9041) is expected to grow in the next 10 years.

Figure 18. Ohio Staffing Pattern for Basic Chemical Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9011	Chemical Equipment Operators and Tenders	816	750	-66	-8.1%
51-8091	Chemical Plant and System Operators	814	748	-66	-8.1%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	536	493	-43	-8.0%
51-1011	First-Line Supervisors of Production and Operating Workers	450	415	-35	-7.8%
49-9041	Industrial Machinery Mechanics	447	494	47	10.5%
51-9111	Packaging and Filling Machine Operators and Tenders	446	411	-35	-7.8%
19-4031	Chemical Technicians	439	403	-36	-8.2%

Source: Ohio Bureau of Labor Market Information

**Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments
Manufacturing: NAICS 3252**

Mixing and blending machine setters, operators, and tenders (SOC 51-9023) has the greatest number of employees for this industry. All of the top largest occupations have projected 10-year growth. Industrial machinery mechanics (SOC 49-9041) has the largest growth projection, at 38.5 percent.

Figure 19. Ohio Staffing Pattern for Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	665	768	103	15.5%
51-8091	Chemical Plant and System Operators	601	694	93	15.5%
49-9041	Industrial Machinery Mechanics	382	529	147	38.5%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	228	263	35	15.4%
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators	205	228	23	11.2%
51-1011	First-Line Supervisors of Production and Operating Workers	195	225	30	15.4%
51-9011	Chemical Equipment Operators and Tenders	188	216	28	14.9%

Source: Ohio Bureau of Labor Market Information

Paint, Coating, and Adhesive Manufacturing: NAICS 3255

The largest occupation in this industry – mixing and blending machine setters, operators, and tenders (SOC 51-9032) – is projected to decline 17.8 percent over the next 10 years. The remaining largest occupations also are expected to decline.

Figure 20. Ohio Staffing Pattern for Paint, Coating, and Adhesive Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	1,214	998	-216	-17.8%
51-9011	Chemical Equipment Operators and Tenders	473	388	-85	-18.0%
19-2031	Chemists	412	371	-41	-10.0%
19-4031	Chemical Technicians	338	278	-60	-17.8%
51-9111	Packaging and Filling Machine Operators and Tenders	306	237	-69	-22.5%
51-1011	First-Line Supervisors of Production and Operating Workers	297	245	-52	-17.5%
43-5071	Shipping Receiving and Traffic Clerks	250	206	-44	-17.6%

Source: Ohio Bureau of Labor Market Information

Soap, Cleaning Compound, and Toilet Preparation Manufacturing: NAICS 3256

All of the largest occupations in this industry are projected to decline over the next 10 years, with industrial truck and tractor operators (SOC 53-7051) declining at the steepest rate of 19.8 percent.

Figure 21. Ohio Staffing Pattern for Soap, Cleaning Compound, and Toilet Preparation Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9111	Packaging and Filling Machine Operators and Tenders	1,152	965	-187	-16.2%
53-7051	Industrial Truck and Tractor Operators	832	667	-165	-19.8%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	558	498	-60	-10.8%
51-1011	First-Line Supervisors of Production and Operating Workers	280	250	-30	-10.7%
51-9198	Helpers--Production Workers	265	237	-28	-10.6%
19-2031	Chemists	247	220	-27	-10.9%
49-9071	Maintenance and Repair Workers General	196	175	-21	-10.7%

Source: Ohio Bureau of Labor Market Information

Other Chemical Product and Preparation Manufacturing: NAICS 3259

Among the largest occupations in this industry, extruding and drawing machine setters, operators, and tenders, metal and plastic (SOC 51-4021) had the largest projected 10-year decline in employment, at 13.1 percent. The remaining large occupations for this industry also are expected to decline.

Figure 22. Ohio Staffing Pattern for Other Chemical Product and Preparation Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	864	839	-25	-2.9%
51-9011	Chemical Equipment Operators and Tenders	264	255	-9	-3.4%
41-4012	Sales Representatives Wholesale and Manufacturing, Except Technical and Scientific Products	232	225	-7	-3.0%
51-1011	First-Line Supervisors of Production and Operating Workers	208	201	-7	-3.4%
51-9111	Packaging and Filling Machine Operators and Tenders	159	154	-5	-3.1%
43-5071	Shipping, Receiving, and Traffic Clerks	133	128	-5	-3.8%
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	122	106	-16	-13.1%

Source: Ohio Bureau of Labor Market Information

Rubber Product Manufacturing: NAICS 3262

Nearly all of the largest occupations for this industry are projected to decline by about 23 percent, with the exception of inspectors, testers, sorters, samplers and weighers (SOC 51-9061), which is expected to decline at 7.6 percent through 2022.

Figure 23. Ohio Staffing Pattern for Rubber Product Manufacturing

SOC Code	Occupational Title	2012	2022	Numeric Change	Percent Change
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters	2,206	1,686	-520	-23.6%
51-2092	Team Assemblers	865	661	-204	-23.6%
51-9197	Tire Builders	797	610	-187	-23.5%
51-1011	First-Line Supervisors of Production and Operating Workers	638	488	-150	-23.5%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	298	227	-71	-23.8%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	289	267	-22	-7.6%
51-9198	Helpers--Production Workers	277	212	-65	-23.5%

Source: Ohio Bureau of Labor Market Information

Summary

More than 51,000 Ohioans work in the polymers and chemicals industry cluster. Ohio's central location, concentration of rail and major highways, and borders on major waterways make it well-suited for distributing raw materials and intermediate and final polymeric products to customers by truck, rail, water, pipeline, and rail-truck intermodal and air cargo. Over the next 10 years, employment in the cluster as a whole is expected to decline. Only one of the seven industries within the cluster – resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing – is projected to have an increase in employment.

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Bureau of Labor Market Information Business Principles for Workforce Development

- Partner with the workforce and economic development community.
- Develop and deploy new information solution tools and systems for the workforce and economic development community.
- Provide products and services that are customer- and demand-driven.
- Be known as an important and reliable source for information solutions that support workforce development goals and outcomes.

Acknowledgments: The Workforce Research Section produced this report under the direction of Bureau Chief Coretta Pettway. For further information, visit <http://OhioLMI.com> or call the Ohio Bureau of Labor Market Information at **1-888-296-7541** option 6, or **(614) 752-9494**.

John R. Kasich, Governor

State of Ohio
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Cynthia C. Dungey, Director

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