



**Department of  
Development**

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**The Ohio Polymers Industry:  
Rubber and Plastic Resins and Products, and Related Machinery**

**May 2010**



Department of  
Development

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Rubber and Plastic Resins and Products,  
and Related Machinery**

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## FOREIGN INVESTMENT IN OHIO

Foreign investment in Ohio is part of the globalization about which industry analysts write (e.g., O'Reilly, 2010). Forty-four foreign-based companies have subsidiaries in Ohio's polymers industry; five are on Fortune's Global-500 list. All of the companies are listed below, along with the countries where the home office is located, their Ohio subsidiaries, and the estimated number of employees here. Sometimes a parent company will have more than one subsidiary here, or have more than one establishment with the same name. In either instance, only the total employment by the parent is shown. Yamashita Rubber is the largest employer with over 1,000 employees. Altogether, the 44 companies employ more than 8,000 people in Ohio.

Ultimate Foreign Parent	Parent Country	Ohio Subsidiar(y/ies)	Industry Side	Total Jobs^
Amtcor Ltd.	Australia	Amtcor PET Packaging USA, Inc.	Plastics	33
Bayer AG*	Germany	Bayer Materialscience [sic] LLC	Plastics	150
Bridgestone Corp.*	Japan	Firestone Polymers LLC and Bridgestone APM Co.	Rubber	173
Compagnie de Saint-Gobain*	France	Saint-Gobain Abrasives and Saint-Gobain Performance	Both	499
De Ruijter International BV	Netherlands	De Ruijter International USA	Rubber	10
Deceuninck NV	Belgium	Deceuninck N.A. LLC	Plastics	325
Fletcher Building, Ltd.	New Zealand	Formica Corp.	Plastics	20
Freudenberg & Co. KG	Germany	Freudenberg-Nok General	Plastics	65
Fukuvi Chemical Industry Co.	Japan	Fukuvi USA, Inc.	Plastics	65
Gebruder Rochling KG	Germany	Rochling Glastic Composites	Plastics	200
Henkel AG & Co. KGaA	Germany	Henkel Corp.	Plastics	14
Huhtamaki Oyj	Finland	Huhtamaki Plastics, Inc.	Plastics	350
Knauf Gips KG	Germany	Ultimate Building Systems Ltd.	Plastics	20
Kumi Kasei Co., Ltd.	Japan	Kamco Industries, Inc.	Plastics	370
Lanxess AG	Germany	Lanxess Corp. and Rhein Chemie Corp.	Rubber	140
Meteor Gummiwerke KH Badje	Germany	Meteor Sealing Systems LLC	Rubber	155
Mitsui Chemicals, Inc.	Japan	Advanced Composites, Inc.	Plastics	220
Molten Corp.	Japan	Molten N. America Corp.	Rubber	410

Ultimate Foreign Parent	Parent Country	Ohio Subsidiar(y/ies)	Industry Side	Total Jobs^
Morbern, Inc.	Canada	Morbern USA	Plastics	12
Nifco, Inc.	Japan	Nifco America Corp.	Plastics	312
Nissei Plastic Industrial Co.	Japan	Nissei America, Inc.	Plastics	3
Nissen Chemitec Corp.	Japan	Nissen Chemitec America, Inc.	Plastics	250
Nova Chemicals, Inc.	Canada	Nova Chemicals, Inc.	Plastics	56
Rexam PLC	United Kingdom	Graham Packaging and Precise Technology, Inc.	Plastics	313
Ritrama SPA	Italy	Ritrama, Inc.	Plastics	67
Schutz-Werke GmbH & Co KG	Germany	Schutz Container Systems, Inc.	Plastics	50
Scott Bader Commonwealth Ltd.	United Kingdom	Scott Bader, Inc.	Plastics	8
Shin-Etsu Chemical Co. Ltd.	Japan	Shincor Silicones, Inc.	Rubber	59
SMS GmbH	Germany	Hycomp, Inc.	Plastics	70
Societe d'Investissement Familiale SA	France	Johnsonite, Inc.	Plastics	450
Solvay SA	Belgium	Solvay Advanced Polymers LLC	Plastics	180
Soprema Holding	France	Soprema USA, Inc.	Rubber	30
Steinhaus Gesellschaft MIT	Germany	Tema Isenmann, Inc.	Plastics	4
Storopack Hans Reichenecker GmbH	Germany	Storopack, Inc.	Plastics	50
Sumitomo Corp.*	Japan	Cantex, Inc.	Plastics	60
ThyssenKrupp AG*	Germany	Krupp Rubber Machinery	Rubber	2
Tigers Polymer Corp.	Japan	Tigerpoly Manufacturing, Inc.	Plastics	350
Tokai Rubber Industries Ltd.	Japan	DTR Industries, Inc.	Rubber	750
Trelleborg AB	Sweden	Sorbothane, Inc. Trelleborg Wheel Systems	Rubber	183
Windsor Mold, Inc.	Canada	Autoplas, Inc.	Plastics	50
Woodbridge Foam Corp.	Canada	Woodbridge Group	Rubber	150
Yamashita Rubber Co., Ltd.	Japan	YUSA Corp.	Rubber	1,046
Yokohama Rubber Co., Ltd.	Japan	SAS Rubber Co.	Rubber	135
Zhongding Group	China	Zhongding USA	Rubber	218

Notes: ^ - "Jobs" figures are thought to be the best available at the time of publication, but their accuracy cannot be guaranteed; \* - a Fortune Global 500 company. Sources: Fortune (2009), Harris (2009), Lexis-Nexis (2009).

The foreign parent companies are headquarters in 13 nations. Fourteen are Japanese, 12 are German, four each are Canadian or British, three are French, and two are Belgian. Australia, China, Finland, Italy, the Netherlands, New Zealand and Sweden each are home to one. The vast majority of the companies focus on the plastics side of the industry, but some with more than one establishment here may have operations on both the plastics and rubber sides. A few produce resins or synthetic rubber.

## THE ADVANTAGES OF LOCATING IN OHIO

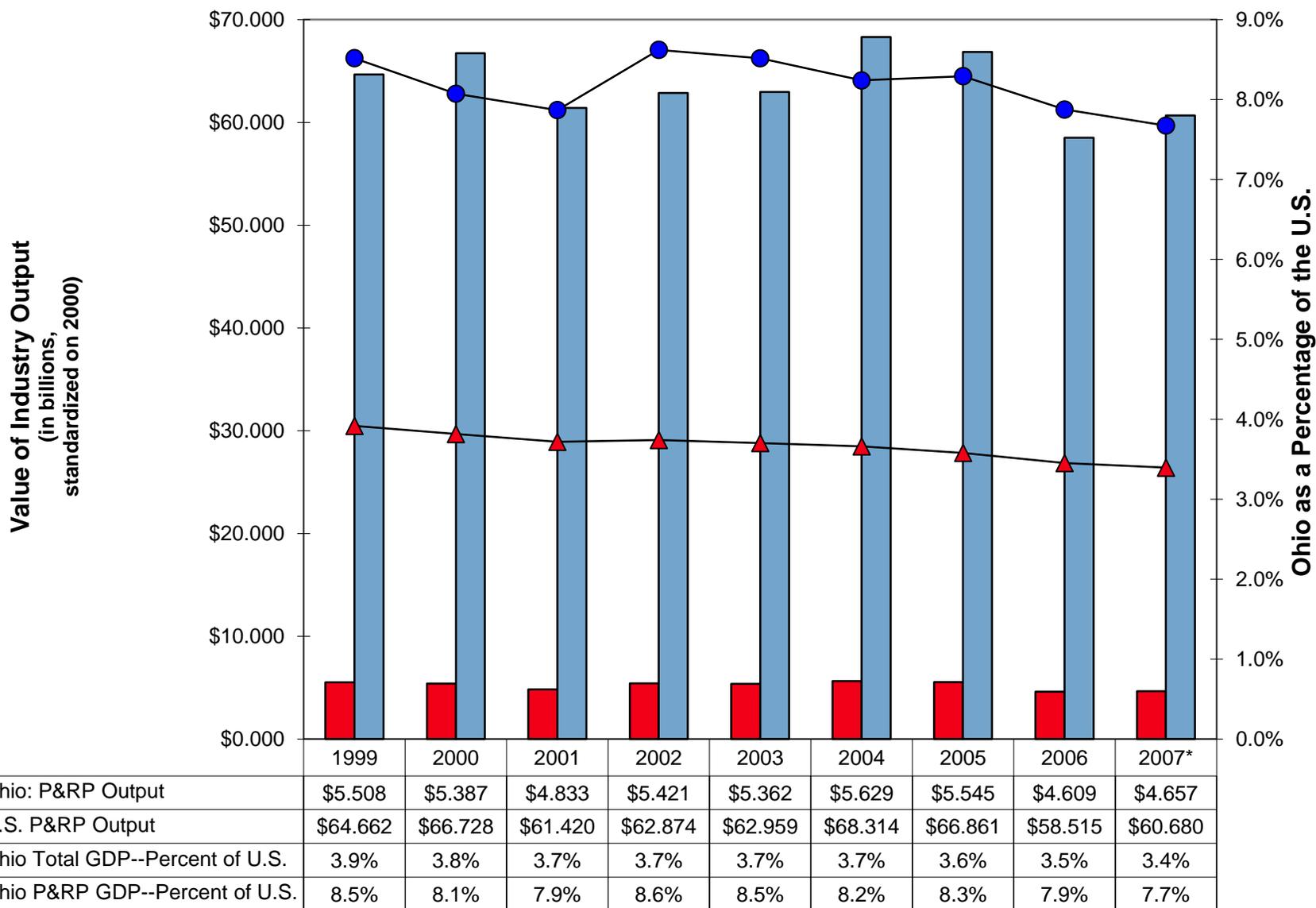
The polymers industry is concentrated in Ohio (Policy Research & Strategic Planning, 2009) for a number of reasons in addition to the origin of the modern rubber industry in Northeast Ohio (Prat, 1998).

- The suppliers are close. A significant portion of oil- and natural gas refinery output – the principal raw materials for resin and synthetic rubber production – occurs in the region from New Jersey through Illinois (O’Reilly, 2002); coal and coal-products, secondary sources for resin and synthetic rubber production, also are produced in the region stretching from Virginia and Pennsylvania through Illinois (U.S. Bureau of the Census, 2009b).
- The polymers industry in Ohio is also close to its major customers – often other manufacturers. Manufacturing is a relatively large part of Ohio’s economy, and industries that are larger consumers of rubber products – motor vehicles, food processing, printing, and industrial machinery (Prat, 1990) – are concentrated in Ohio (Policy Research & Strategic Planning, 2009).
- Ohio’s central location, concentration of rail and major highways, and borders on major waterways make it well suited for distributing polymer products to customers. Overall, probably one-half of rubber and plastic resins are shipped by truck, with most of the remainder divided between rail and water. Small portions are shipped by rail/truck intermodal, air cargo, and pipeline (O’Reilly, 2010: 25).
- Innovations from research and development (R & D) activities drive the expanding markets for rubber and plastic products. Regions in which industrial R & D activities are concentrated have a comparative advantage over other regions for future technological change, new products, and new industries (Malecki, 1981). Considerable R & D is done near corporate headquarters, in particular research that is basic and not related to product lines (Shanahan, et.al., 1985). As previously noted, Ohio is corporate headquarters for many companies in the polymers industry. Furthermore, the concentration of R & D activity in a small geographic area also provides an environment for entrepreneurial ventures. “Many of the small to medium-size polymer manufacturing firms in the [Akron] region were established by people previously employed in polymer-related... industries” (Shanahan, et.al., 1985: 168).

- R & D at universities may focus on industrial applications as well as basic research. This is evident from the many programs at over a dozen universities covering all aspects of polymer-related expertise from basic science through industrial applications and process engineering to technical training and quality control. Training in these fields extends from universities to community colleges, vocational centers, and even some secondary schools.
- The State of Ohio's Third Frontier program helps link the research capabilities and activities at universities with private sector entrepreneurs interested in commercial development of new materials and technologies. Support may take the form of grants, loans or tax incentives. The new companies may initially be located at a number of local centers.

# TRENDS

## Plastic & Rubber Products Industry (NAICS 326) Output and Its Concentration in Ohio, 1999-2007



Source: U.S. Bureau of Economic Analysis.

\* - Preliminary

## GROSS DOMESTIC PRODUCT

The gross domestic product is the net value of goods and services provided by people using capital in the United States, and the U.S. Bureau of Economic Analysis publishes estimates of each state's contribution to it by industry. In this regard, Ohio has ranked first in the nation in manufacturing plastic and rubber products (NAICS 326) during the latest nine years for which data are available (1999-2007, U.S. Bureau of Economic Analysis, 2009).

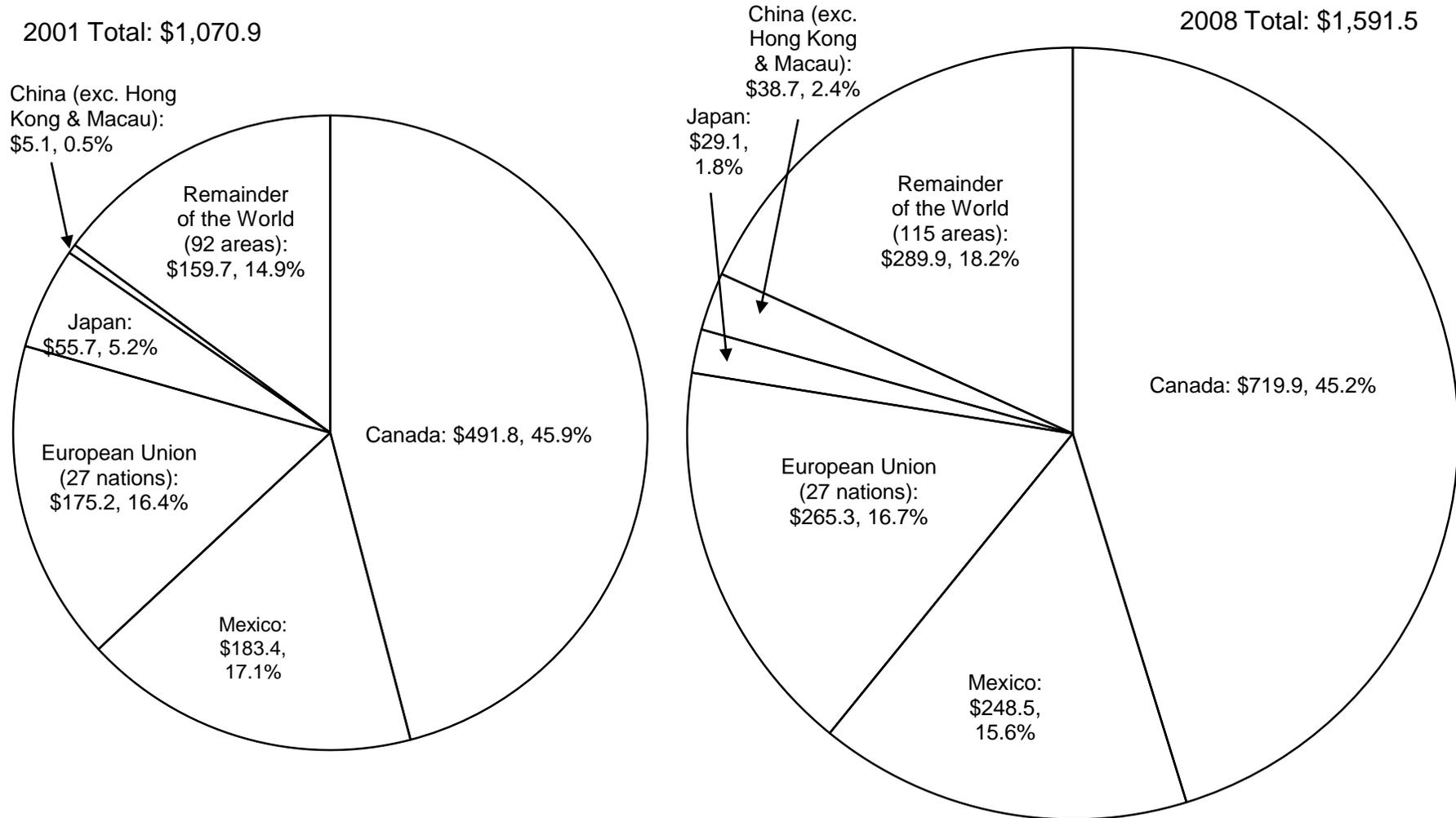
Real changes in economic output – i.e., the volume(s) of goods produced and services provided – can be discerned only after accounting for inflation. The chart above illustrates these changes in the volumes of plastic and rubber products: factory output in Ohio has fluctuated between \$4.6 and \$5.7 billion. Although there is no consistent trend, output in 2007 was 15.5 percent lower than in 1999. This pattern of growth and reduction over the years is consistent with a cyclicity seldom seen in the industry.<sup>4</sup>

What happened in Ohio is similar to what happened in the industry across the country in the cycles of expansion and contraction, but changes here were not in lock-step with the nation as a whole. The net change in U.S. industry output was a reduction in volume of 6.2 percent.

Data in the chart above also indicate the concentration of the industry in Ohio: between 7.7 and 8.6 percent of the plastic and rubber products made in America came from plants in Ohio, while the portion of total U.S. gross domestic product GDP originating here fell from 3.9 to 3.4 percent. The year-to-year ratio of these percentages showed a net increase from 1999 to 2007. This increase reflects the continuing relative importance of the industry in Ohio's economy despite its apparent net contraction. (Even though the industry in Ohio contracted relatively more than across the nation, the rest of the national economy grew faster than rest of Ohio's economy.)

See Table A8

## Exports of Plastic and Rubber Products (NAICS 326) from Ohio in millions of dollars



Sources: European Union, International Trade Administration

## EXPORTS

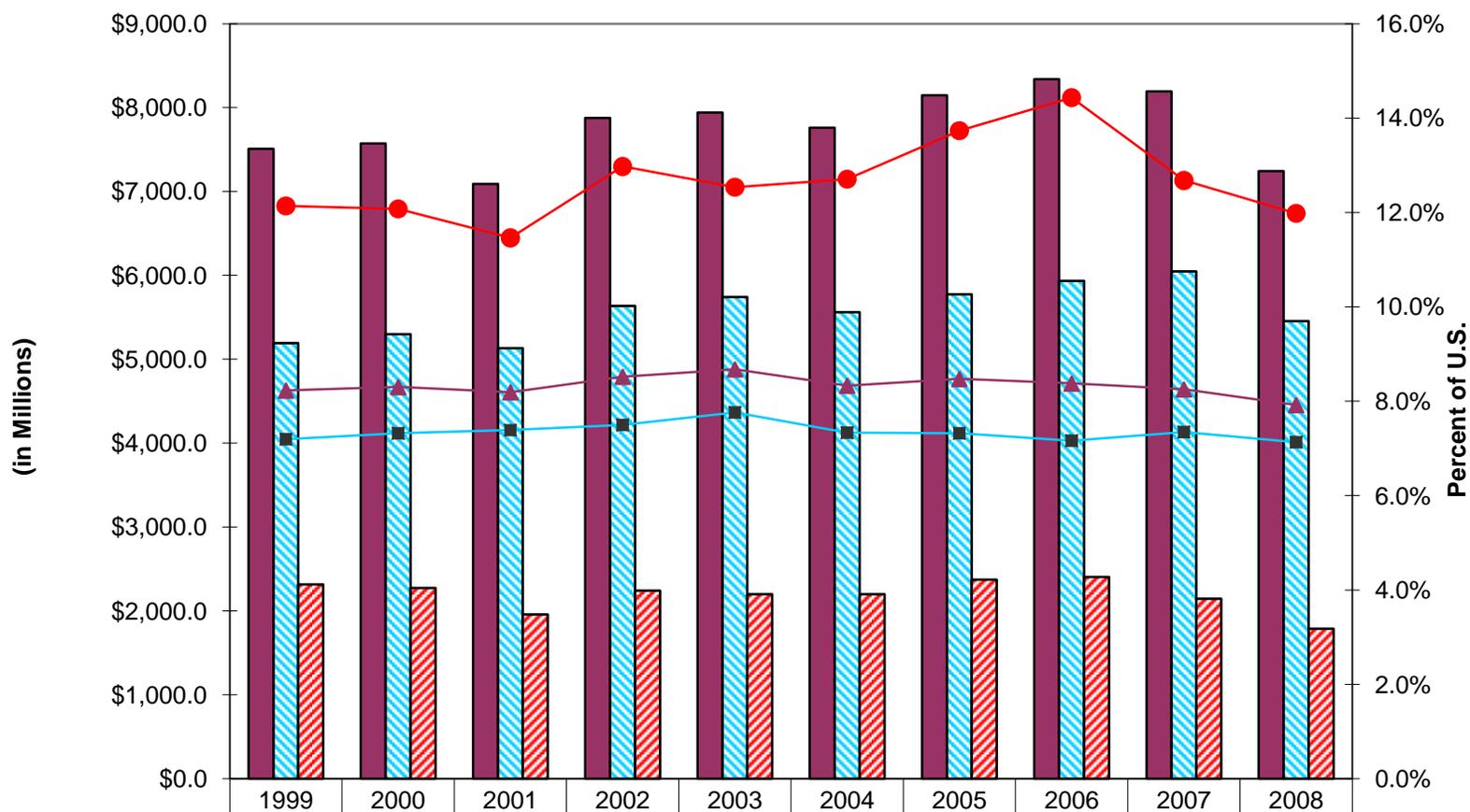
Exports of plastic and rubber products (NAICS 326) are an increasingly important part of production in Ohio. The chart above illustrates their growth from a total of \$1.07 billion in 2001 to \$1.59 billion in 2008. After adjusting for inflation, this is a real increase of 16 percent.<sup>5</sup> At least three-fifths of the exports have been – and still are – to NAFTA partners Canada and Mexico. The portion of exports to Canada showed little net change, but the portion of exports to Mexico fell slightly. At the same time, exports from Ohio to the European Union nations grew a little faster than exports to Mexico, making the European Union the second largest foreign market for manufacturers here.

The chart also shows the increasing importance of other markets. Perhaps most notably, exports to China (excluding Hong Kong and Macau) grew from \$5.1 billion in 2001 to \$38.7 billion in 2008 – an inflation-adjusted increase of 495.9 percent, and exports to the Remainder-of-the-World (except Japan) rose from \$159.7 to \$289.9 billion – a real increase of 41.7 percent. The two combined received 20.6 percent of exports from Ohio in 2008. This contrasts with the change in exports to Japan. Exports fell from \$55.7 to \$29.1 billion, a drop of 59.2 percent after adjusting for inflation. Japan was the destination of 1.8 percent of exports in 2008. This general shift in exports to developing nations – which might include some in the European Union – is consistent with the national trend noted by O’Reilly (2010: 10), who thinks it is due to the higher birth rates, industrialization, and/or improving living standards in such nations.<sup>6</sup>

Evidence of how things changed with the recession is seen in 2009 in Appendix Table A9. Total exports fell 13.6 percent from \$1.59 to \$1.37 billion. Furthermore, exports to all of the areas shown above fell without exception. The declines of exports to Canada and China – between eight and nine percent – were relatively less than to other markets. However, O’Reilly (2010: 6) thinks exports will improve in 2010.

See Table A9

## Value Added in Ohio's Plastic and Rubber Products Industry (NAICS 326): 1999-2008



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Total: Both</b>	\$7,509.5	\$7,573.1	\$7,090.4	\$7,878.2	\$7,942.5	\$7,759.7	\$8,146.9	\$8,338.2	\$8,191.4	\$7,243.2
<b>Total: Plastic Products</b>	\$5,194.2	\$5,300.4	\$5,132.7	\$5,637.0	\$5,743.2	\$5,562.2	\$5,773.2	\$5,935.0	\$6,045.6	\$5,454.7
<b>Total: Rubber Products</b>	\$2,315.4	\$2,272.6	\$1,957.7	\$2,241.1	\$2,199.3	\$2,197.5	\$2,373.7	\$2,403.3	\$2,145.8	\$1,788.5
<b>Percentage: Both</b>	8.2%	8.3%	8.2%	8.5%	8.7%	8.3%	8.5%	8.4%	8.3%	7.9%
<b>Percentage: Plastic Products</b>	7.2%	7.3%	7.4%	7.5%	7.8%	7.3%	7.3%	7.2%	7.3%	7.1%
<b>Percentage: Rubber Products</b>	12.1%	12.1%	11.5%	13.0%	12.5%	12.7%	13.7%	14.4%	12.7%	12.0%

Source: U.S. Census Bureau

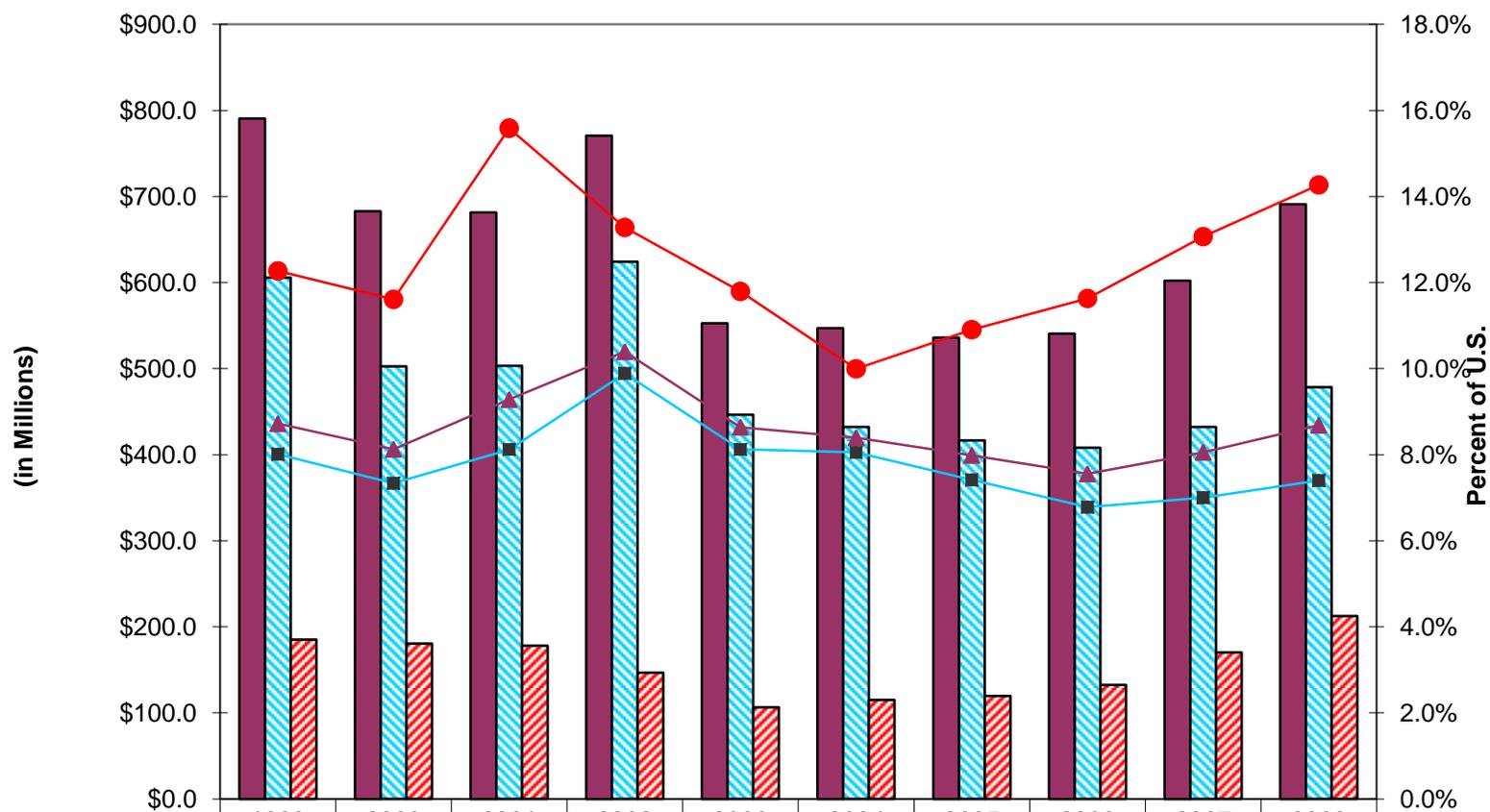
## VALUE-ADDED BY GROUP

Value-added data provide additional insight not available with gross domestic product data by focusing on the two groups within the major industry: plastic products (NAICS 3261) and rubber products (3262). The chart above shows that plastic products are the far-larger portion of industry output in Ohio, growing from \$5.1 billion in 2001 to \$6.0 billion in 2007 before dropping to \$5.5 billion in 2008. Value-added in rubber products rose from less than \$2.0 billion in 2001 to \$2.4 billion in 2006, and fell below \$1.8 billion in 2008. (These figures have not been adjusted for inflation.) On average, 71.8 percent of the industry output in Ohio has been plastic products, compared to 28.2 percent rubber products.

GDP data in the preceding section indicated the concentration of the industry in Ohio. The chart above shows that this concentration is greater in the rubber products group than the plastics products group. On average, 12.7 percent of the nation's value-added in the rubber products group originated in Ohio, while 7.3 percent of its value-added in plastic products came from the state. The percentages fluctuated during this time period, but there does not appear to be any trend away from production in Ohio of either plastic or rubber products. The declining percentage of rubber products coming from Ohio after 2006 may be consistent with reduced tire output due to the recession (Levy, 2009: 24), and the concentration of the motor vehicle in Ohio (Policy Research and Strategic Planning, 2009).

See Table A10

## Capital Expenditures in Ohio's Plastic and Rubber Products Industry: (NAICS 326) 1999-2008



	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Total: Both</b>	\$790.7	\$682.8	\$681.3	\$770.8	\$552.8	\$547.1	\$536.1	\$540.7	\$602.1	\$691.1
<b>Total: Plastic Products</b>	\$605.6	\$502.5	\$503.4	\$624.2	\$446.5	\$432.2	\$416.7	\$408.2	\$432.1	\$478.5
<b>Total: Rubber Products</b>	\$185.1	\$180.3	\$177.9	\$146.6	\$106.4	\$114.9	\$119.5	\$132.5	\$170.1	\$212.6
<b>Percentage: Total</b>	8.7%	8.1%	9.3%	10.4%	8.6%	8.4%	8.0%	7.6%	8.1%	8.7%
<b>Percentage: Plastic Products</b>	8.0%	7.3%	8.1%	9.9%	8.1%	8.1%	7.4%	6.8%	7.0%	7.4%
<b>Percentage: Rubber Products</b>	12.3%	11.6%	15.6%	13.3%	11.8%	10.0%	10.9%	11.6%	13.1%	14.3%

Source: U.S. Census Bureau

## CAPITAL EXPENDITURES BY GROUP

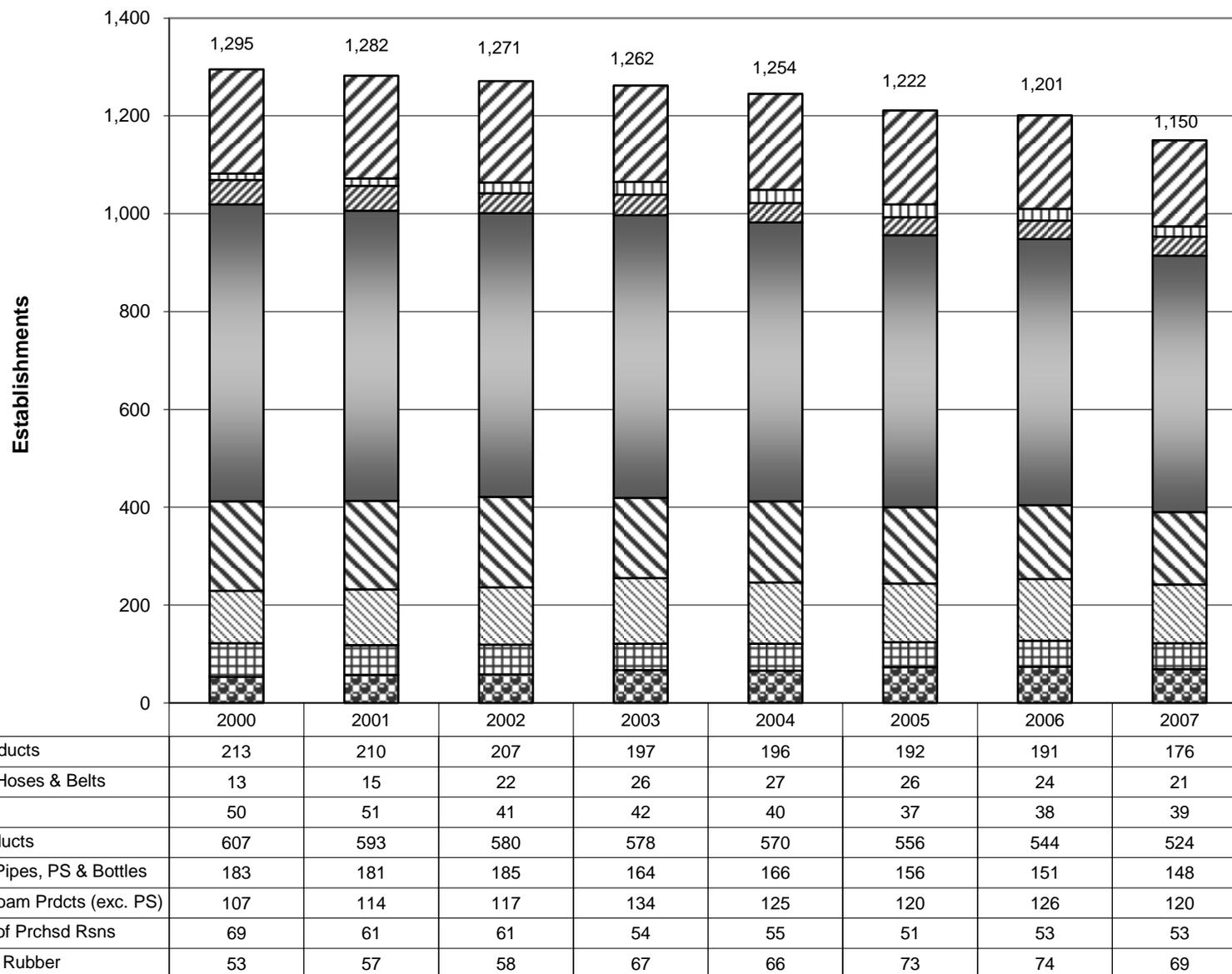
Capital expenditures are funds spent for buildings and equipment used in manufacturing. The chart above shows capital expenditures in Ohio for plastic and rubber products manufacturing (NAICS 326) fluctuating between \$790.7 and \$536.1 million. Except for a spike in 2002, expenditures declined from 1999 to 2005, after which they rose. On average, 75.8 percent of expenditures went for plastic products manufacturing (3261), and the year-to-year changes for plastic and rubber products (326) largely reflect that. However, expenditures for rubber products manufacturing have risen since 2003, and surpassed 1999's peak in 2008. (No adjustments have been made for inflation.)

The chart above also shows that capital expenditures in Ohio for plastic and rubber products manufacturing (326) ranged from 7.6 to 10.4 percent of national expenditures in any one year, and averaged 8.6 percent. Again, these figures represent the combined portions of capital expenditures in the plastic products group (3261), which averaged 7.8 percent of the nation, and the rubber products group (3262), which averaged 12.5 percent of the nation.

It is interesting to note that the proportions of capital expenditures in Ohio by companies during 1999-2008 nearly equal the proportions of value-added originating here. On average, 7.8 percent of national capital expenditures for plastic products manufacturing were made in Ohio, while 7.3 percent of value-added by the group came from Ohio. Similarly, 12.5 percent of capital expenditures for rubber products manufacturing were made here, and 12.7 percent of value-added came from the state. The near-equality of these ratios indicates industry companies' continued intentions to make plastic and rubber products in Ohio.<sup>6</sup>

See Tables A10 & A11

## Establishment Trends in Ohio's Polymers Industry: 2000-2007



Source: U.S. Census Bureau.

## ESTABLISHMENTS

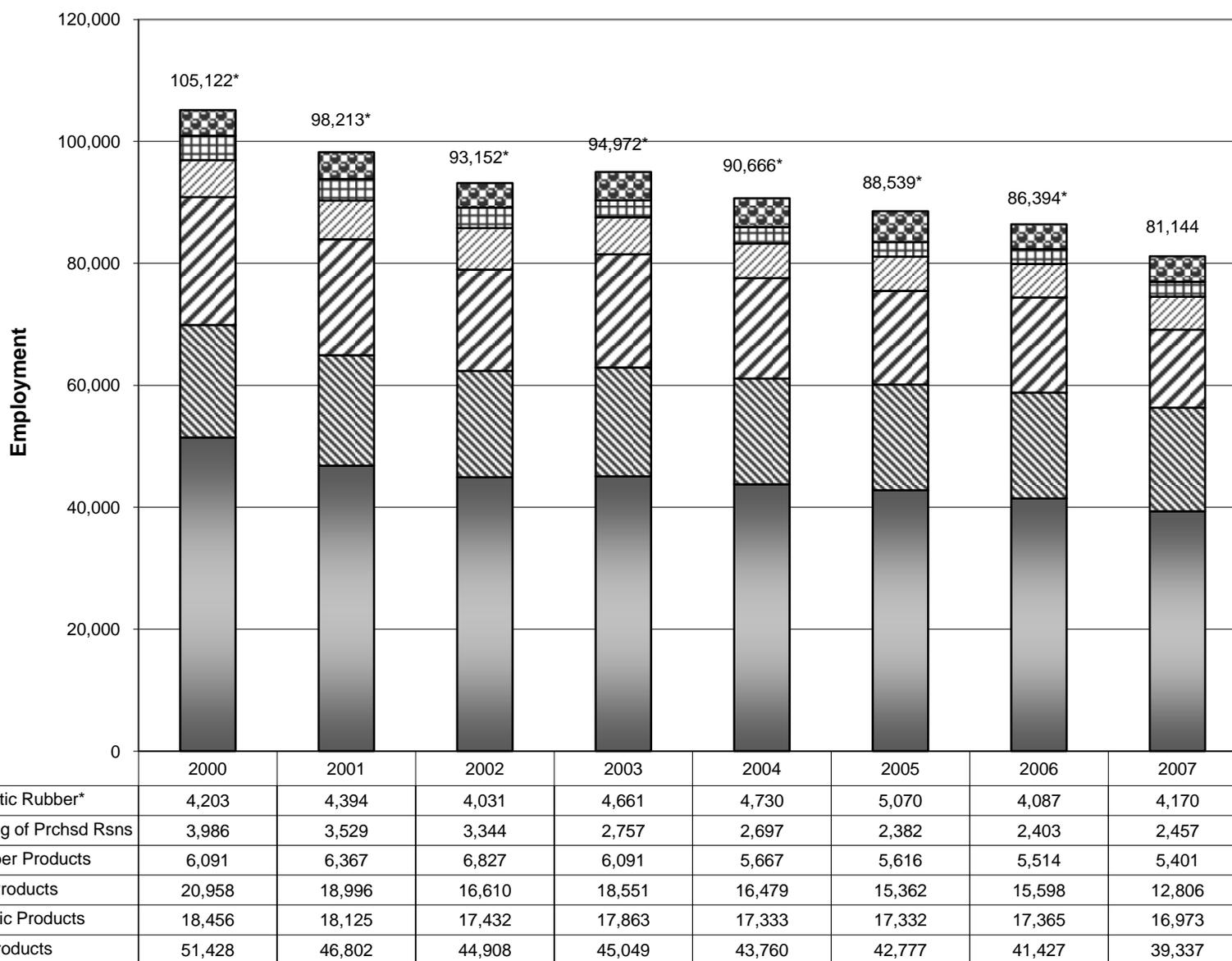
The chart above shows that the number of polymers industry establishments in Ohio declined more or less gradually from 1,295 in 2000 to 1,150 in 2007. This change masks a number of divergent trends in the various constituent industries. The number of plants in some industries was greater in 2007 than in 2000; these include plastic resin production (NAICS 325211), foam production other than PS (32615), and rubber and plastic hoses and belts (32622). However, the decreases in other industries – notably the custom compounding of purchased resins (325991), plastic laminates (32613), PS foam (32614), bottles (32616), other plastic products (32619), tires (32621) and other rubber products (32629) – more than offset the gains.

What was happening in Ohio was similar to what was happening across America. Resin producing plants (325211), foam production other than PS (32615), and rubber and plastic hose and belts (32622) increased. The number of tire-makers (32621) and other rubber products (32629), plastic laminates (32613), bottles (32616), PS foam (32614), other plastic products (32619) and custom compounding (325991) establishments all fell. Overall, the total number of polymers industry establishments in America declined at a rate essentially the same as that in Ohio. It's also worth noting that the numbers of industry establishments in Ohio and across the country have declined at faster rates than the overall rates for manufacturing establishments.

Trends in Ohio occasionally diverged from the rest of the country. Two examples include synthetic rubber production (325212) – four fewer plants in Ohio, but national number only fluctuated – and unsupported films-sheets-bags (32611) – little net change in Ohio, but fewer nationally. Appendix tables A12a and A12b show more details for specific industries.

See Tables A12a & A12b

## Employment Trends in Ohio's Polymers Industry: 2000-2007



Source: U.S. Census Bureau. Note: \* - Employment figure may incorporate an estimate.

## EMPLOYMENT

Employment in Ohio's polymers industry slide almost without interruption from 105,100 in 2000 to 81,100 in 2007. This is a loss of almost 24,000 jobs, or 23.8 percent. These summary figures largely reflect the experience of the two largest subgroups: other plastic products (NAICS 32619, down almost 12,100 jobs, or 23.5 percent), and other rubber products (32629, down more than 8,100 jobs, or 38.9 percent). Fifteen hundred jobs – 38.4 percent – were lost in the custom compounding purchased resins (325991), and more than 1,000 jobs – 51.7 percent – making laminated products (32613) disappeared.

The job trends were not uniformly bad, though. Employment in Ohio increased by at least 100 jobs in each of these industries: resin production (325211), unsupported plastic film and sheet (326112-3), plastic pipe and pipe fittings (326122), non-styrene foam products (32615), and resilient floor coverings (326192).

The big things that happened in Ohio were part of national trends: employment in other plastic and rubber products fell by 19.2 and 37.9 percent respectively. One-fifth of the jobs in the custom compounding of purchased resins were lost, and three-eighths of jobs making laminated products vanished. Overall, 18.4 percent of America's polymer industry jobs have been lost in seven years. Polymers industry job losses in Ohio and for the nation as a whole have been nearly proportional with the overall losses of manufacturing jobs, but on both counts, the job losses in Ohio have been proportionately greater (the low twenties vs. the high teens).

More current data show that job losses have continued with the recession that began in 2007. The number of jobs in Ohio in the plastics group was estimated at 47,000 in 2007, 44,500 in 2008, and 38,100 in 2009, while estimates for the rubber group were 17,400 in 2007, 16,300 in 2008, and 13,900 in 2009. No more detailed information is available (U.S. Bureau of Labor Statistics, 2010).<sup>8</sup>

See Tables A13a & A13b