

DATA BRIEF

S&E Manufacturing Jobs Down: Changes Vary Greatly by Industry and Occupation

by Richard E. Morrison

Employment of R&D scientists, engineers, and technicians exhibits greater volatility than employment of their non-R&D counterparts.

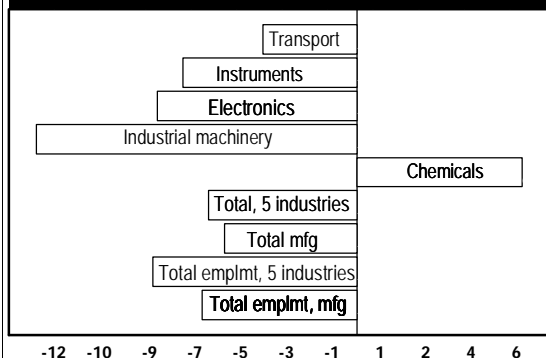
Although overall employment of scientists and engineers (S&Es) in manufacturing industries fell 2.4 percent from 1989 to 1992, employment changes varied significantly by industry and by occupational classification. While the chemicals and allied products industries managed to weather the stormy economic climate, other manufacturing industries were hit hard by the effects of defense-related downsizing and uncertain economic expectations.

Based on data from the Bureau of Labor Statistics Occupational Employment Statistics (OES) survey, four of the five industries that dominate the technical labor market of the manufacturing sector (see box, p. 2) experienced marked reductions in employment of scientists, engineers, and technicians (SETs) from 1989 to 1992. These reductions ranged from a 12.9-percent reduction in industrial machinery and equipment to a 3.8-percent falloff in transportation equipment. (See chart 1.)

Occupational Variation

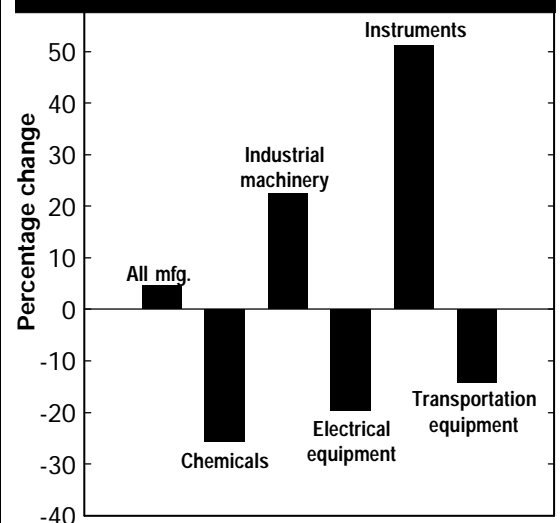
Overall changes in employment of SETs mask variations in employment effects on the occupational classifications "scientist," "engineer," and "technician" and between those SETs engaged in production and those engaged in research and development (R&D). Although total employment of SETs in chemicals and allied products rose 6.7 percent as noted above, employment of R&D SETs in chemicals and allied products actually declined—by 13.1 percent. Hardest hit were R&D engineers, who suffered a 25.7-percent drop in employment in chemicals and allied products industries from 1989 to 1992. Employment of R&D engineers similarly fell—by 19.6 percent in electronic and electrical equipment and by 14.2 percent in transportation equipment. Conversely, employment of R&D engineers increased 22.6 percent in industrial machinery and equipment and 51.2 percent in instruments and related products. (See chart 2.)

Chart 1. Scientists, engineers, and technicians (SETs) employed in manufacturing industries: percentage change 1989-92



Chemicals and allied products—buoyed by a whopping 34.4-percent increase in employment of SETs in pharmaceuticals—bucked the industry trend, increasing 6.7 percent.

Chart 2. Changing employment of R&D engineers, by industry group: 1989-92



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Employment of R&D technicians fell 18.9 percent in chemicals and allied products, but R&D scientists fared somewhat better—their employment dropped by only 4 percent. The data suggest that R&D employment in the chemicals and allied products industries may be highly leveraged to the business cycle, given that employment of SETs *not* engaged in R&D increased by 19.1 percent, 12.8 percent, and 10.3 percent respectively.

Growth Industries

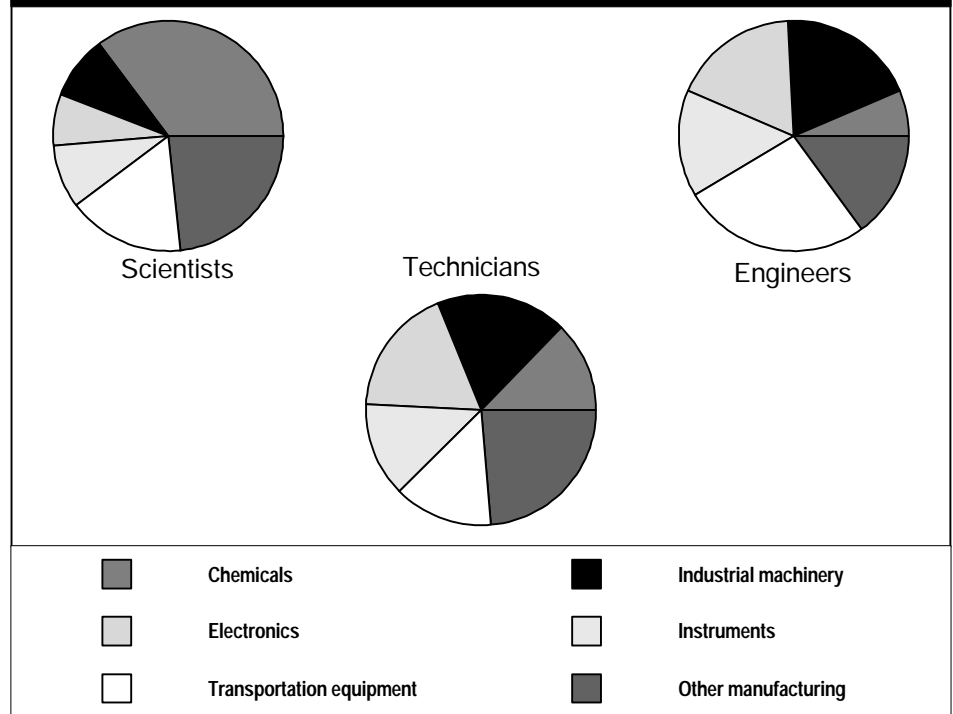
Certain manufacturing industries not only countered the generally downward trend in employment of SETs, but actually flourished. In addition to the increase in SET employment described above in chemicals and allied products, increases in SET employment in other manufacturing industries ranged from 1.2 percent in rubber and miscellaneous plastics products to 8.1 percent in petroleum and coal products. Offsetting these gains were sizable decreases in fabricated metal products (10.1 percent), textile mill products (6.7 percent), and food and kindred products (6.6 percent).

The data presented in this Data Brief are being released in advance of the comprehensive Detailed Statistical Tables report *Scientists, Engineers, and Technicians in Manufacturing Industries: 1992*.

Of the 20 major industry groups that the manufacturing sector comprises, the five dominant industries—industrial machinery and equipment, electronic and other electrical equipment, instruments and related products, transportation equipment, and chemicals and

allied products—accounted for the following in 1992: 81 percent of SETs; 86 percent of R&D SETs, 85 percent of engineers, 90 percent of engineers in manufacturing R&D, and 88 percent of scientists in manufacturing R&D. (See chart 3.)

Chart 3. Concentration of scientists, engineers, and technicians within five manufacturing industries



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