

What is the Chemical Industry?

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To have any successful dialogue or debate, it is necessary to define terms. According to the U.S. Bureau of Labor Statistics, chemical manufacturing is divided into seven segments:

1. **Basic chemicals segment** -- produces various petrochemicals, gases, dyes, and pigments. Petrochemicals contain carbon and hydrogen and are made primarily from petroleum and natural gas. The production of both organic and inorganic chemicals occurs in this segment. Organic chemicals are used to make a wide range of products, such as dyes, plastics, and pharmaceutical products; however, the majority of these chemicals are used in the production of other chemicals. Industrial inorganic chemicals usually are made from salts, metal compounds, other minerals, and the atmosphere. In addition to producing solid and liquid chemicals, firms involved in inorganic chemical manufacturing produce industrial gases such as oxygen, nitrogen, and helium. Many inorganic chemicals serve as processing ingredients in the manufacture of chemicals, but do not appear in the final products because they are used as catalysts—chemicals that speed up or otherwise aid a reaction. Product prices are generally less than fifty cents per pound for basic chemicals.
2. **Synthetic materials segment** -- produces a wide variety of finished products as well as raw materials, including common plastic materials such as polyethylene, polypropylene, polyvinyl chloride (PVC), and polystyrene.
3. **Agricultural chemicals segment** – produces fertilizers, herbicides, and pesticides.
4. **Paint, coating, and adhesive products segment** – produces paints, varnishes, putties, paint removers, sealers, adhesives, glues, and caulking.
5. **Cleaning preparations segment** – produces soaps, detergents, cleaning preparations, cosmetics and toiletries, including perfume, lotion, and toothpaste.
6. **Pharmaceutical and medicine manufacturing segment** – produces a variety of medicinal and other health-related products. Prices are typically over ten dollars per pound.
7. **Other chemical products segment** – includes explosives, printing ink, film, toners, and matches.

Chemicals generally are classified into two groups: **basic chemicals** and **specialty chemicals**. Basic chemical manufacturers produce large quantities of basic and relatively inexpensive compounds in large plants, often built specifically to make one chemical. Most basic chemicals are used to make more highly refined chemicals for the production of everyday consumer goods by other industries. Conversely, specialty chemical manufacturers produce smaller quantities of more expensive chemicals that are used less frequently. Specialty chemical manufacturers often supply larger chemical companies on a contract basis.

**Table 1. Distribution of wage and salary employment in chemical manufacturing, except pharmaceutical and medicine manufacturing, by detailed industry, 2008
(Employment in thousands)**

| Industry | Employment | Percent |
|---|------------|---------|
| Chemical manufacturing, except pharmaceutical and medicine manufacturing, total | 560.0 | 100.0 |
| Basic chemical manufacturing | 152.1 | 27.2 |
| Soap, cleaning compound, and toilet preparation manufacturing | 108.2 | 19.3 |
| Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing | 105.4 | 18.8 |
| Paint, coating, and adhesive manufacturing | 62.8 | 11.2 |
| Pesticide, fertilizer, and other agricultural chemical manufacturing | 36.1 | 6.4 |
| Other chemical product and preparation manufacturing | 95.4 | 17.0 |

SOURCE: BLS National Employment Matrix, 2008-18

Pharmaceutical and medicine manufacturing provided 289,800 wage and salary jobs in 2008.

Shipments (millions of dollars) in 2009 -- source: American Chemical Council

| | |
|--|------------|
| Total Chemistry | \$ 674,146 |
| Pharmaceuticals | \$ 190,583 |
| Chemicals, excluding Pharmaceuticals | \$ 483,563 |
| Agricultural Chemicals | \$ 32,519 |
| Basic Chemicals | \$ 256,174 |
| Specialties | \$ 114,914 |
| Consumer Products | \$ 79,956 |
| | |
| Total Basic Chemicals | \$ 256,174 |
| Inorganic Chemicals | \$ 38,811 |
| Bulk Petrochemicals & Intermediates | \$ 103,995 |
| Petrochemical Derivatives & Other Industrial Chemicals | \$ 113,368 |
| Plastic Resins | \$ 74,161 |
| Synthetic Rubber | \$ 6,711 |
| Synthetic Fibers | \$ 5,698 |
| Other Basic Chemicals | \$ 26,788 |
| Carbon Black | \$ 1,486 |
| Colorants | \$ 6,415 |
| Wood Chemicals | \$ 1,216 |
| Printing Ink | \$ 3,814 |
| Miscellaneous | \$ 13,857 |

Polymers and plastics, especially polyethylene, polypropylene, polyvinyl chloride, polyethylene terephthalate, polystyrene, and polycarbonate comprise about 80% of the chemical industry's output worldwide.

Chemical manufacturing is nearly a \$3 trillion global enterprise, and the EU and U.S. chemical companies are the world's largest producers. The US Chemical Industry has a balance of trade surplus in excess of \$15 billion in 2009. It contributes 21% in GDP to the US economy.