

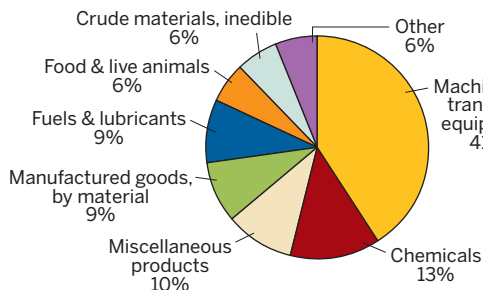
Percent share of 2012 U.S. chemical imports from Europe:

**50.4**

Percent share of 2012 U.S. chemical imports from China:

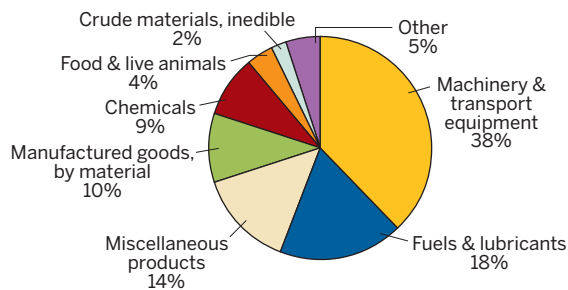
**7.3**

The chemical industry held the number two spot among U.S. exporting sectors and took fifth place among importing sectors



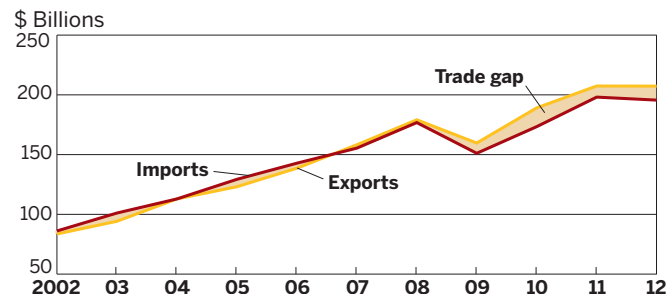
2012 exports = \$1.5 trillion

SOURCE: Department of Commerce



2012 imports = \$2.3 trillion

In 2012, the U.S. trade balance in chemicals expanded to \$11.7 billion from \$9.3 billion



SOURCE: Department of Commerce

Chemicals' percent share of total U.S. manufacturing exports in 2012:

**13.4**

U.S. trade balance in plastics:

**\$21.2** billion

U.S. trade balance in medicinals and pharmaceuticals:

**-\$23.5** billion

U.S. chemical industry's trade surplus with the rest of the world in 2012:

**\$11.7** billion

## NEW MARKETS DRIVE CHEMICAL COMMERCE

While overall **TRADE** in chemicals stabilized last year, exports to developing regions grew

**COMPARED WITH 2011**—a huge growth year for chemical trade—2012 brought only a modest overall gain in imports and exports around the globe. The exception was in emerging economies, particularly in the Middle East and Latin America, where chemical trade continued to rise smartly.

In the U.S., low-cost natural gas, used as both fuel and feedstock, kept the chemical industry competitive in the export market last year. The industry held its historical position as the second-largest exporter of goods, after the machinery sector, and chemical exports from the U.S.

stayed at a record level of \$207 billion.

Developing regions, specifically the Middle East, Latin America, and Africa, saw the biggest increase in chemical exports from the U.S. Together these regions made up more than one-third of U.S. exports last year. Europe is still the largest trading partner of the U.S. for both exports and imports; 50% of chemical imports into the U.S. come from Europe.

Overall, U.S. chemical imports shrank 1.3% in 2012, helping to boost the country's chemical trade balance to \$11.7 billion, the second-highest surplus of the past decade.

Imports of organic chemicals, inorganic chemicals, and fertilizers dropped the most.

In Europe, chemical exports expanded faster than imports in 2012, aided by a euro that was weakened by the European sovereign debt crisis. Exports to Saudi Arabia and Brazil grew briskly at 17.2% and 16.5%, respectively.

Canada saw foreign demand for its fertilizers and other agricultural chemicals rise by 6.3%; imports rose even faster at 12.4%. In contrast, exports of basic chemicals, which had been on the rise for the previous two years, reversed course and shrank by 12.5%. Canada's overall trade deficit in chemicals increased to \$14.8 billion.

Chemical trade in Asian countries shrank a bit in 2012, with some notable exceptions. Exports of inorganic chemicals from China jumped 19.2%. Interestingly, exports of pharmaceuticals from China grew by 8.7%, while imports jumped by a whopping 25.9%. In Japan, however, foreign trade in chemicals mostly decreased, except for medical material imports, which increased by 15.4%.

## U.S. CHEMICAL TRADE, BY REGION

Latin America approached Europe as the leading export location

| \$ MILLIONS   | 2009             |                  | 2010             |                  | 2011             |                  | 2012             |                  | CHANGE, 2011-12 |              |
|---------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|--------------|
|               | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS         | IMPORTS      |
| Canada        | \$24,438         | \$20,448         | \$28,526         | \$24,314         | \$32,196         | \$28,125         | \$32,258         | \$26,910         | 0.2%            | -4.3%        |
| Europe        | 55,049           | 85,822           | 59,310           | 93,939           | 59,641           | 103,097          | 58,995           | 98,509           | -1.1            | -4.5         |
| Japan         | 8,943            | 7,809            | 11,766           | 9,140            | 12,415           | 9,146            | 12,868           | 9,204            | 3.6             | 0.6          |
| China-Vietnam | 10,437           | 8,593            | 13,052           | 10,788           | 14,792           | 14,001           | 13,724           | 14,275           | -7.2            | 2.0          |
| Rest of Asia  | 19,006           | 13,382           | 25,212           | 15,076           | 28,083           | 18,968           | 26,383           | 20,805           | -6.1            | 9.7          |
| Middle East   | 3,151            | 5,408            | 3,943            | 7,799            | 4,151            | 9,070            | 4,634            | 9,055            | 11.6            | -0.2         |
| Latin America | 33,208           | 7,912            | 41,238           | 10,218           | 49,511           | 13,199           | 51,756           | 14,479           | 4.5             | 9.7          |
| Australia     | 3,050            | 892              | 3,291            | 999              | 3,363            | 1,074            | 3,409            | 969              | 1.4             | -9.8         |
| Africa        | 1,618            | 630              | 1,785            | 952              | 2,125            | 1,188            | 2,281            | 1,098            | 7.3             | -7.6         |
| Other         | 779              | 177              | 966              | 225              | 1,163            | 261              | 1,039            | 312              | -10.7           | 19.5         |
| <b>TOTAL</b>  | <b>\$159,678</b> | <b>\$151,073</b> | <b>\$189,089</b> | <b>\$173,449</b> | <b>\$207,442</b> | <b>\$198,129</b> | <b>\$207,347</b> | <b>\$195,616</b> | <b>0.0%</b>     | <b>-1.3%</b> |

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

## U.S. CHEMICAL TRADE, BY PRODUCT

Imports and exports changed little in 2012 from the previous year

| \$ MILLIONS                          | 2009             |                  | 2010             |                  | 2011             |                  | 2012             |                  | CHANGE, 2011-12 |              |
|--------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------|--------------|
|                                      | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS         | IMPORTS      |
| Organic chemicals                    | \$28,152         | \$42,145         | \$38,806         | \$45,825         | \$45,478         | \$54,265         | \$44,371         | \$52,314         | -2.4%           | -3.6%        |
| Plastics in primary form             | 24,998           | 8,172            | 32,128           | 10,938           | 35,324           | 12,863           | 34,487           | 13,283           | -2.4            | 3.3          |
| Medicinals & pharmaceuticals         | 44,244           | 59,910           | 44,607           | 65,270           | 43,154           | 69,561           | 44,794           | 68,265           | 3.8             | -1.9         |
| Inorganic chemicals                  | 10,531           | 10,793           | 12,133           | 13,830           | 14,436           | 17,013           | 12,892           | 15,499           | -10.7           | -8.9         |
| Plastics in nonprimary form          | 8,849            | 5,519            | 10,822           | 6,886            | 11,868           | 7,885            | 12,087           | 8,437            | 1.8             | 7.0          |
| Perfume, toilet & cleaning materials | 11,680           | 8,404            | 13,173           | 9,565            | 13,988           | 10,613           | 15,022           | 11,348           | 7.4             | 6.9          |
| Dyeing, tanning & coloring materials | 5,700            | 2,423            | 7,578            | 3,104            | 8,787            | 3,459            | 8,155            | 3,760            | -7.2            | 8.7          |
| Fertilizers                          | 4,109            | 4,146            | 4,574            | 6,652            | 6,199            | 9,160            | 5,342            | 8,758            | -13.8           | -4.4         |
| Other                                | 21,416           | 9,561            | 25,268           | 11,377           | 28,207           | 13,309           | 30,197           | 13,952           | 7.1             | 4.8          |
| <b>TOTAL</b>                         | <b>\$159,678</b> | <b>\$151,073</b> | <b>\$189,089</b> | <b>\$173,449</b> | <b>\$207,442</b> | <b>\$198,129</b> | <b>\$207,347</b> | <b>\$195,616</b> | <b>0.0%</b>     | <b>-1.3%</b> |

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

## U.S. CHEMICAL TRADE BALANCE, BY PRODUCT

Trade surplus grew in 2012, led by plastics and coloring materials

| \$ MILLIONS                          | 2002            | 2010            | 2011           | 2012            |
|--------------------------------------|-----------------|-----------------|----------------|-----------------|
| Organic chemicals                    | -\$13,373       | -\$7,019        | -\$8,787       | -\$7,943        |
| Plastics in primary form             | 7,471           | 21,190          | 22,460         | 21,204          |
| Medicinals & pharmaceuticals         | -8,570          | -20,663         | -26,407        | -23,471         |
| Inorganic chemicals                  | -406            | -1,697          | -2,577         | -2,607          |
| Plastics in nonprimary form          | 1,656           | 3,936           | 3,983          | 3,650           |
| Perfume, toilet & cleaning materials | 1,940           | 3,608           | 3,375          | 3,674           |
| Dyeing, tanning & coloring materials | 1,619           | 4,474           | 5,328          | 4,395           |
| Fertilizers                          | 643             | -2,078          | -2,961         | -3,416          |
| Other                                | 6,556           | 13,891          | 14,898         | 16,245          |
| <b>TOTAL</b>                         | <b>-\$2,464</b> | <b>\$15,640</b> | <b>\$9,313</b> | <b>\$11,731</b> |

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

## CANADA CHEMICAL TRADE BALANCE, BY PRODUCT

Trade deficit rose across the entire chemical sector in 2012

| \$ MILLIONS  | 2002             | 2010             | 2011             | 2012             |
|--|------------------|------------------|------------------|------------------|
| Basic chemicals  | -\$1,187         | \$378            | \$1,789          | \$327            |
| Resins, synthetic rubber & fibers                      | -418             | -568             | -315             | -642             |
| Pesticides, fertilizers & other agricultural chemicals | -252             | -380             | -390             | -563             |
| Pharmaceuticals & medicine                             | -5,522           | -7,177           | -7,681           | -7,956           |
| Other chemical products                                | -5,345           | -5,309           | -5,553           | -5,928           |
| <b>TOTAL</b>   | <b>-\$12,723</b> | <b>-\$13,056</b> | <b>-\$12,150</b> | <b>-\$14,762</b> |

NOTE: Monetary statistics for all years were converted at the 2012 average exchange rate of \$1.00 U.S. = \$0.9995 Canadian. Totals may not sum because of rounding. SOURCES: Industry Canada, Statistics Canada

## EUROPE CHEMICAL TRADE, BY COUNTRY

Chemical exports jumped in 2012 as the euro weakened

| \$ MILLIONS  | 2009    |         | 2010    |         | 2011    |         | 2012     |         | CHANGE, 2011-12 |         |
|--------------|---------|---------|---------|---------|---------|---------|----------|---------|-----------------|---------|
|              | EXPORTS | IMPORTS | EXPORTS | IMPORTS | EXPORTS | IMPORTS | EXPORTS  | IMPORTS | EXPORTS         | IMPORTS |
| Brazil       | \$6,528 | \$2,393 | \$8,831 | \$2,732 | \$9,721 | \$3,334 | \$11,327 | \$3,279 | 16.5%           | -1.7%   |
| Canada       | 6,275   | 2,729   | 6,878   | 2,772   | 6,599   | 3,203   | 7,318    | 3,501   | 10.9            | 9.3     |
| China        | 12,984  | 10,208  | 16,018  | 14,142  | 19,037  | 16,738  | 21,655   | 16,630  | 13.8            | -0.6    |
| India        | 3,845   | 3,850   | 4,970   | 5,181   | 5,460   | 6,631   | 5,727    | 6,766   | 4.9             | 2.0     |
| Japan        | 12,203  | 7,166   | 15,183  | 8,354   | 16,838  | 8,825   | 18,646   | 8,353   | 10.7            | -5.3    |
| Russia       | 14,583  | 4,273   | 19,969  | 6,049   | 22,927  | 7,350   | 25,001   | 8,055   | 9.0             | 9.6     |
| Saudi Arabia | 3,837   | 2,068   | 4,758   | 3,687   | 5,361   | 4,422   | 6,283    | 4,656   | 17.2            | 5.3     |
| South Korea  | 4,786   | 1,899   | 6,131   | 2,356   | 6,875   | 2,874   | 7,433    | 3,222   | 8.1             | 12.1    |
| U.S.         | 68,739  | 43,136  | 77,589  | 49,997  | 79,787  | 52,102  | 85,325   | 56,171  | 6.9             | 7.8     |

**NOTE:** Data represent a total for 27 countries in the European Union. All figures were converted at the 2012 average exchange rate of \$1.00 U.S. = 0.7777 euros.

**SOURCE:** European Union

## EAST ASIA CHEMICAL TRADE, BY PRODUCT

Japanese and Chinese imports of medical products rose

| \$ MILLIONS                   | 2009            |                 | 2010            |                 | 2011             |                  | 2012             |                  | CHANGE, 2011-12 |              |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|-----------------|--------------|
|                               | EXPORTS         | IMPORTS         | EXPORTS         | IMPORTS         | EXPORTS          | IMPORTS          | EXPORTS          | IMPORTS          | EXPORTS         | IMPORTS      |
| <b>CHINA</b>                  |                 |                 |                 |                 |                  |                  |                  |                  |                 |              |
| Inorganic chemicals           | \$7,817         | \$6,218         | \$11,765        | \$9,956         | \$17,301         | \$10,943         | \$13,981         | \$9,773          | 19.2%           | -10.7%       |
| Organic chemicals             | 24,198          | 36,174          | 31,459          | 48,232          | 39,295           | 63,171           | 40,411           | 60,812           | 2.8             | -3.7         |
| Pharmaceutical products       | 3,450           | 6,020           | 4,485           | 7,236           | 5,421            | 10,347           | 5,890            | 13,032           | 8.7             | 25.9         |
| Fertilizers                   | 2,584           | 1,993           | 5,431           | 2,572           | 7,924            | 3,450            | 7,242            | 4,024            | -8.6            | 16.6         |
| Dyes & pigments               | 3,068           | 3,592           | 4,310           | 4,426           | 5,504            | 4,539            | 5,470            | 4,161            | -0.6            | -8.3         |
| Other <sup>a</sup>            | 12,909          | 15,424          | 17,540          | 20,730          | 21,652           | 25,553           | 21,508           | 26,246           | -0.7            | 2.7          |
| <b>TOTAL</b>                  | <b>\$54,026</b> | <b>\$69,421</b> | <b>\$74,990</b> | <b>\$93,152</b> | <b>\$97,097</b>  | <b>\$118,003</b> | <b>\$94,502</b>  | <b>\$118,048</b> | <b>-2.7%</b>    | <b>0.0%</b>  |
| <b>JAPAN</b>                  |                 |                 |                 |                 |                  |                  |                  |                  |                 |              |
| Organic chemicals             | \$18,866        | \$14,078        | \$22,072        | \$16,216        | \$24,569         | \$19,167         | \$23,393         | \$18,325         | -4.8%           | -4.4%        |
| Inorganic chemicals           | 3,510           | 5,521           | 4,484           | 7,922           | 4,941            | 11,384           | 4,416            | 7,765            | -10.6           | -31.8        |
| Synthetic resins              | 21,702          | 9,788           | 29,237          | 12,675          | 30,295           | 15,289           | 28,512           | 15,704           | -5.9            | 2.7          |
| Materials for medical use     | 3,436           | 13,068          | 3,603           | 16,207          | 3,794            | 19,967           | 3,392            | 23,035           | -10.6           | 15.4         |
| Photographic materials        | 3,890           | 370             | 4,681           | 392             | 4,951            | 393              | 4,786            | 382              | -3.3            | -2.8         |
| Fertilizers                   | 99              | 862             | 146             | 850             | 205              | 1,056            | 198              | 1,081            | -3.4            | 2.4          |
| Dyes & pigments               | 3,655           | 1,134           | 4,808           | 1,536           | 5,240            | 1,787            | 5,069            | 1,629            | -3.3            | -8.8         |
| Rubber                        | 9,686           | 3,463           | 12,830          | 5,399           | 14,946           | 7,570            | 14,871           | 6,390            | -0.5            | -15.6        |
| Other                         | 12,401          | 8,760           | 17,074          | 10,665          | 18,575           | 13,026           | 17,285           | 12,240           | -6.9            | -6.0         |
| <b>TOTAL</b>                  | <b>\$77,245</b> | <b>\$57,044</b> | <b>\$98,935</b> | <b>\$71,862</b> | <b>\$107,516</b> | <b>\$89,639</b>  | <b>\$101,922</b> | <b>\$86,551</b>  | <b>-5.2%</b>    | <b>-3.4%</b> |
| <b>SOUTH KOREA</b>            |                 |                 |                 |                 |                  |                  |                  |                  |                 |              |
| Chemicals & chemical products | \$37,415        | \$31,505        | \$48,951        | \$41,148        | \$60,709         | \$48,251         | \$61,304         | \$47,354         | 1.0%            | -1.9%        |
| Petrochemicals <sup>b</sup>   | 27,466          | 9,535           | 35,715          | 13,301          | 45,587           | 16,503           | 45,882           | 15,954           | 0.6             | -3.3         |

**a** Calculated by C&EN. **b** Defined as synthetic resins, synthetic fiber raw materials, and synthetic rubber. **SOURCES:** General Administration of Customs of the People's Republic of China; Japan Chemical Exporters & Importers Association; Korea National Statistical Office, Republic of Korea; Korea Petrochemical Industry Association

## CANADA CHEMICAL TRADE, BY PRODUCT

Canadian imports rose in 2012 as exports fell

| \$ MILLIONS  | 2009            |                 | 2010            |                 | 2011            |                 | 2012            |                 | CHANGE, 2011-12 |             |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------|
|  | EXPORTS         | IMPORTS         | EXPORTS         | IMPORTS         | EXPORTS         | IMPORTS         | EXPORTS         | IMPORTS         | EXPORTS         | IMPORTS     |
| Basic chemicals  | \$8,033         | \$8,386         | \$9,711         | \$9,333         | \$11,677        | \$9,887         | \$10,217        | \$9,889         | -12.5%          | 0.0%        |
| Resins, synthetic rubber & fibers                      | 5,189           | 5,465           | 6,000           | 6,568           | 6,951           | 7,267           | 6,772           | 7,415           | -2.6            | 2.0         |
| Pesticides, fertilizers & other agricultural chemicals | 1,646           | 2,053           | 1,595           | 1,975           | 2,016           | 2,406           | 2,142           | 2,705           | 6.3             | 12.4        |
| Pharmaceuticals & medicine                             | 7,573           | 14,546          | 6,161           | 13,338          | 5,898           | 13,579          | 5,552           | 13,507          | -5.9            | -0.5        |
| Other chemical products                                | 4,049           | 9,482           | 4,317           | 9,626           | 4,723           | 10,276          | 4,950           | 10,878          | 4.8             | 5.9         |
| <b>TOTAL</b>   | <b>\$26,489</b> | <b>\$39,932</b> | <b>\$27,784</b> | <b>\$40,839</b> | <b>\$31,266</b> | <b>\$43,415</b> | <b>\$29,634</b> | <b>\$44,394</b> | <b>-5.2%</b>    | <b>2.3%</b> |
| <b>TOTAL WITH U.S.</b>                                 | <b>\$20,032</b> | <b>\$23,066</b> | <b>\$21,009</b> | <b>\$24,332</b> | <b>\$24,032</b> | <b>\$26,622</b> | <b>\$22,581</b> | <b>\$27,162</b> | <b>-6.0%</b>    | <b>2.0%</b> |
| <b>U.S. SHARE</b>                                      | <b>75.6%</b>    | <b>57.8%</b>    | <b>75.6%</b>    | <b>59.6%</b>    | <b>76.9%</b>    | <b>61.3%</b>    | <b>76.2%</b>    | <b>61.2%</b>    |                 |             |

**NOTE:** Monetary statistics for all years were converted at the 2012 average exchange rate of \$1.00 U.S. = \$0.9995 Canadian. Totals may not sum because of rounding.

**SOURCES:** Industry Canada, Statistics Canada