

The Chemistry Enterprise in 2015: Do We Have a Future, or What?

or, Preparing chemists and chemical engineers for a globally oriented workforce

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During his tenure as ACS President, Bill Carroll pioneered an effort to predict the status of the chemical enterprise in 2015. A number of leaders in industry, academia, and government were asked to predict the future. The report is posted at www.chemistry.org/chemistryenterprise2015.html.

All the leaders interviewed agreed on one thing: The period 2005 to 2015 will be a time of great change.

From Commodity to Specialty

Many things that were once specialties have become commodities. This means that the product has lost its perceived differentiation, some perceived brand value and pricing power. One good example is aspirin. Acetylsalicylic acid was originally produced and sold by Bayer under the brand name "Aspirin." It was a specialty pain/fever reducer exclusive to Bayer. However, it has since become so common that even the name "aspirin" is no longer a trademark. Aspirin has become a commodity.

There is also commodity and specialty information. Phone numbers are an example of commodity information; phone numbers are the same, no matter which phone book they come from. However, there is different perceived value in use for one stockbroker versus another or one cancer doctor versus another. This is specialty, differentiated information.

Commodities

- high volume, fungible, low cost raw material, transportation sensitive
- not brandable, interchangeable

Specialties

- technical value, higher cost
- labor, overhead-sensitive
- differentiation, specific, brandable

Industry of the Future

When established businesses build a new research and development (R&D) center, they will locate it in a developing country generally if they are working with a known technology. The lower cost and large employee pool make developing countries very attractive. However, if the business is developing a new technology, it generally feels safer in the more stable environment of a developed country.

Moreover, in recent years, smaller companies have been hiring more U.S. chemistry graduates than large companies, and small companies tend to be focused on new technologies.

In other words, the U.S.-based businesses of the future will be centered on new technologies, requiring specialty knowledge. This conclusion was confirmed by the

National Academies' report, "Rising Above the Gathering Storm." According to the report, the U.S. now competes globally in costs and quality, is no longer the low-cost producer, and therefore is unlikely to lead the global market in commodities.

The Logical Conclusion

Regardless of the market, quality personnel matter; a truly cost-savvy business will not hire sub-standard employees. Moreover, innovation—bringing a good idea out of the research laboratory and turning it into products and profit—will be the economic driver of the future.

For technicians, this means that discipline depth and collaboration are the keys to a strong career. While they need sufficient knowledge to take on new responsibilities quickly, they cannot allow themselves to become commodities. Technicians must manage their careers as other professionals do—by keeping their skills current with marketplace needs, recognizing and exploiting opportunities as they arise, and differentiating their talents in the marketplace.