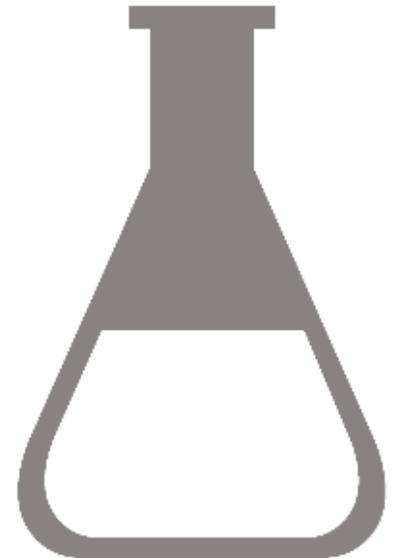


The most In-Demand jobs in the Chemical Sector

Report 2014



Elaborated by:

Deloitte.

Co-Financed by:



**Generalitat
de Catalunya**



Unió Europea
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de Desenvolupament
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"Una manera de fer Europa"

1. Introduction to the Sector

Chemistry can be considered both a science but also an industrial field. As a science, it aims to study substance's attributes and transformations while as an industrial field, it tries to take advantage of the exploitation of natural resources and to develop new substances and products. However, both perspective share a common goal: the continuous improvement of people's quality of life, ensuring the satisfaction of their needs.

Activities frequently included in the chemical industry can be classified in three groups:

- **Basic chemistry:** includes activities aimed at manufacturing basic chemical products (nitrogenous compounds, fertilizers, plastics, synthetic rubber in primary forms, colorants and pigments, etc.).
- **Chemistry of the human, animal and vegetable health:** includes activities focused on the protection of humans, animals or plants. The products that it manufactures include pesticides, insecticides, etc.), primary pharmaceutical materials and specialist pharmaceutical and animal-health products.
- **Chemistry for industry or consumer goods:** includes activities aimed at manufacturing of a wide range of products for both industry and end-consumer goods (paints, dyes for printing, varnishes and lacquers, oils and greases for industrial use, adhesives and gelatin, detergents, etc.)

It should be also taken into account that the influence of chemistry goes beyond their own industry, as it includes any industrial and technological field that uses products and substances. Frequently, the chemical industry is at the beginning of the productive chain of other industries such as automotive or clothing.

2. Current Environment

Global trends: Nowadays, the European Union leads the production of chemical products, being Germany the main manufacturer, followed by France, Italy, the United Kingdom and Spain. According to the last available data, an accumulated growth of 5% for the 2014 and a yearly increase of 4,5% in the industry production until the 2030. However, the future of this sector in Europe is uncertain, as the profit margins of the chemical companies have decreased due to the rise of the cost of raw materials and the increase of potential competitors.

Spain: Traditionally, chemical industry has been seen as an strategic field of activity for the Spanish economy, due to its relative weight inside the Spanish industrial sector but also because of its innovative and exporting nature. Although the industry has suffered the effects of the economical downturn, during the past years, a significant number of multinational companies, specially from Germany and the United States, have started their operation in the country. In the case of production, there are differences depending on the activity. Production has risen in paints and dyes and in the case of agrochemical products but, in the case artificial fibers, manufacturing has decreased. Nevertheless, exports have balanced out this reduction, giving a boost to the production of basic chemistry, detergents, cosmetics, and specially, paints, dyes and agrochemical substances.

Employment mostly takes place in the private sector, concentrated specially in Catalonia, the Valencian Community, the Community of Madrid, the Basque Country and Andalusia.

Catalonia: Although the economical downturn has meant a significant decline of domestic demand, exports of chemical products are still increasing, as it also happened during the 2013. However, the Catalan companies are facing the same challenges than the rest of the industry, this is a important fact in the amount of competitors while a decrease in the operational margins. Regarding the employment, the chemical industry has a relevant presence in Catalonia, which concentrates almost the 50% of all the Spanish chemical industry because of the chemical area in Tarragona.

Chemical Industry indicators	Contribution to Spanish industrial Gross Domestic Product ⁽¹⁾	Employed population in Spain ⁽²⁾	Number of companies in Spain ⁽³⁾
	11% (2013)	156.600 (des. 2013)	3.100 (2013)

(1) Federación Empresarial de la Industria Química Española (FEIQUE)

(2) Federación Empresarial de la Industria Química Española (FEIQUE)

(3) Federación Empresarial de la Industria Química Española (FEIQUE)

3. Key Sectorial Trends

Sectorial Trends

	<p>Innovation and Continuous improvement of products and processes</p>	<p>The decrease of operational margins and a more intense competition characterize the environment of the chemical industry. In front of this situation, the continuous development of new products or the improvement of the current products and processes becomes a necessity. This trend is also related with the compliance of new health and environment regulations and quality standards. Moreover, it also tends to increase profits, by reducing costs and improving energetic efficiency. Regarding the processes, continuous improvement is focused in achieving more automation and digitalization, in order to increase the capacity of factories, reduce water consumption and promote the use of biotechnology and nanotechnology on the productive processes. In regard to the products, companies try to increase their competitiveness, by improving their products quality while observing environmental regulations.</p>
	<p>Sustainability</p>	<p>Current societies demand a more responsible behavior to the chemical industry, in the social and environmental fields. This request has meant more rigorous regulation aimed at ensuring the production of the environment by means of a better use of raw materials, waste reduction, new productive processes with minor level of risk and less greenhouse gas emissions. In this aspect, activities addressed to promote a less polluting production such as the white biotechnology (manufacturing of chemical products without using polluting materials) or the green chemical (new products and processes aimed at reduce waste production, or at least, their degree of toxicity) have become increasingly important.</p>
	<p>Competitiveness</p>	<p>Increases on the price of raw materials together with a more demanding industry regulation in the European countries have caused that, in globalized environment, the local chemical industry faces the competition of other countries with less requirements regarding safety and environmental protection. In this context, business reorganization has become a reality through the use of various strategies such as concentration (mergers, agreements, etc.), specialization, service and processes outsourcing and improvement of the customer service. However, these efforts might not be enough without a reduction on the cost of energy, the improvement of current infrastructures and less bureaucracy.</p>
	<p>Internationalization</p>	<p>Given the fall in the domestic demand, chemical companies are orientating their activities to foreign markets, as evidenced by the progressive increase of their exports. The Spanish and Catalan chemical industry have the capabilities and the qualified resources to respond to the increasing demand from the emerging countries. However, innovation is necessary, keeping or increasing current R+D investment level, in order to develop competitive and distinguishing products.</p>

4. Employment in the Chemical Sector

Although the economical downturn has caused a decrease in the employment at the chemical industry, the increasing ecological awareness has meant a major requirement of professionals with knowledge and skills related to environmental management. Moreover, it has also been observed that chemical companies are looking to hire employees with marketing and sales knowledge, in order to improve their market position.

Analysis of employment in the Chemical Sector	Current situation	Forecast growth
		

 Recovery / Growth;  Maintenance;  Decrease

4.1. The most required highly-qualified jobs

Job Position	Description	Requirements valued (Education, experience and skills)	Additional considerations
1 Environmental and chemical safety specialist	Environmental and chemical safety specialists are responsible for planning and coordinating the occupational risk prevention and environmental areas, identifying and applying specific regulations, improving the working procedures, keeping track of actions and initiatives implemented in the production process, waste management and monitoring the environmental management system.	<ul style="list-style-type: none"> Education: It is advisable to have an engineering degree or an environmental sciences degree. A professional training course in environmental chemistry may also be suitable. Additionally, it should be complemented with training in environmental regulation, environmental management systems or occupational risk prevention. 	<ul style="list-style-type: none"> In order to execute the most qualified tasks, it is frequently required a master degree, or even a doctorate. The candidate should have sectorial knowledge but also about business. Moreover, professionals with statistics and database knowledge are becoming increasingly required.
2 Operations manager in the chemical industry	Operations managers are responsible for overseeing and coordinating the different departments involved in a company's production processes, from production to maintenance, storage and logistics.	<ul style="list-style-type: none"> Education: It is advisable to have an engineering degree complemented with a post-graduate degree in operations. Experience: It is required to have previous experience in a position of responsibility in production environments or at chemical plants, in continuous process industries or at a logistics firm. 	<ul style="list-style-type: none"> In order to execute the most qualified tasks, it is frequently required a master degree, or even a doctorate. The candidate should have sectorial knowledge but also about business. Moreover, professionals with statistics and database knowledge are becoming increasingly required.

	Job Position	Description	Requirements valued (Education, experience and skills)	Additional considerations
3	Pharmaceutical marketing specialist	This professional's mission is to manage the life cycle of one or more products, from the definition stage and launch to when it is taken off the shelves, with the fundamental aim of maximizing profits through sales.	<ul style="list-style-type: none"> • Education: It is advisable to have a business related degree or a health science degree complemented with post-graduate studies in marketing. • Experience: It is required to have previous experience, with professionals normally starting out as assistants or product managers within the marketing department. 	<ul style="list-style-type: none"> • It is necessary to have an advanced level of English, both written and spoken, with additional language skills in German or French also considered an advantage.
4	Product specialist	The product specialist plays a key role as the technical link between the R&D and production departments of the company and the sales staff, distributors and end-customers. This professional tends to report to the sales department when carrying out his/her occupation and provides advice, training and technical support to the sales network and customers on product uses and applications, contributing to the development of new solutions and technical adjustments, new products launches and demonstrations, drawing up technical support materials and guaranteeing the post-sale service for a particular company product range.	<ul style="list-style-type: none"> • Education: It is advisable to have knowledge of marketing plans, including market research, marketing mix design, promotions and advertising. • Experience: It is required to have previous experience as a technical application service, in R&D or selling chemical products for industrial use. 	<ul style="list-style-type: none"> • It is advisable to be interested in news and advancements of the industry. • Candidates should have the following skills: Flexibility and change management.

4.2. The most required less-qualified jobs

	Job Position	Description	Requirements valued (Education, experience and skills)	Additional considerations
1	Chemical sales technician	The chemical sales technician forms part of the sales team or department of a chemical company sales. S/he has a strategic role, given that s/he represents the company before its customers, within their own market.	<ul style="list-style-type: none"> • Education: Technical training is practically essential, professionals in this field must have higher or intermediate qualifications related to experimental science or engineering. Vocational training leads to the professional qualification of Technical Salesperson. • Experience: it is recommended to have a minimum of one to two years experience in the industrial product sector or industrial goods marketing (preferably chemicals), 	<ul style="list-style-type: none"> • Chemical companies usually offer training courses to their employees. • It is advisable to have both technical but also managerial skills and competences. • Candidates should have: Orientation towards achievement, Planning and organization, Customer orientation and Communication
2	Quality Control Technician	The role of the quality control technician has emerged as a progression of the figure of the laboratory analyst, and forms part of production support teams or companies' quality departments. Their responsibilities include taking statistic samples of raw materials and intermediate and finished products, carrying out routine and non-routine tests using set methods, calibrating and performing maintenance on equipment, managing the documentation related to trials and samples, ensuring compliance with specifications, reviewing possible deviations, and drawing up technical documentation.	<ul style="list-style-type: none"> • Education: it is advisable to have a professional training program related to chemistry. • Education: it is important to have knowledge of the application of the ISO 9000:2000 standard and its methodology and also of laboratory practices (GLP) and manufacturing practices (GMP). • Experience: professionals may require previous experience at a company within the chemical sector or the manufacturing industry, whether in production or quality control. 	<ul style="list-style-type: none"> • Candidates should have: Orientation towards achievement, Planning and organization, Customer orientation and Communication

5. Conclusions and Future prospects

Potential and opportunities



- The chemical industry has an extended relationship with other industries, like the textile or the automotive, often constituting the first step of the value chain and creating new opportunities.
- Biotechnology, material technology or processing engineering mean opportunities for the Spanish chemical industry positioning and competitive about the other states. It will stimulate the development of work places and high qualified jobs.
- The increasing demand in certain Asian countries can suppose a potential market for the Catalan and Spanish chemical industry products by the fact of provide differential and high quality products. The internationalization will keep on being relevant providing the industry.

Respect for the environment and impact on professionals



- The increasing consciousness about the necessity of respecting the environment has a direct impact in the chemical industry because it means more social and ecological responsibility. In this sense, public authorities have established new regulations that could mean more costs and difficulties for the industry. Furthermore, they suppose at the same time an opportunity to transform the way of work creating new techniques and methodologies to reduce the volume of residues, minimize the risks in specific process, or using more efficiently the raw materials.
- The search for a harmony between the activities of the chemical industry and the environment is boosting the development of new fields of work such as white biotechnology and sustainable chemistry. In addition, the importance of having environmental experts and chemical safety and risk prevention is increasing in the whole industry, which must be sure to ensure suitability of regulations and promote the adoption of sustainable practices with a lower risk.

Alerts



- It is necessary to increase the coordination in national and European R&D, as well as to promote greater conversion of these commercial products, while maintaining the balance between short-term research, which is determined by the market, and the long-term technological progress.
- The present context is characterized by high competition among countries and chemical industries which are not always under the same conditions. In this regard, excessive bureaucracy and complex regulation as well as inadequate infrastructure development, can decrease competitiveness in the local industry.

Strengths



- Spain has consolidated a producer model, being the fifth most important producer in Europe. This infrastructure often corresponds to chemical estates, which brings together the various facilities, taking advantage of possible synergies and economies of scale.
- The professionals in this sector have high levels of qualification, especially those who carry out their work in R&D departments, and many of them have a PhD. However, we must emphasize the importance of continuing education in order to respond to demands for greater innovation and technical expertise required by the industry.

The market of the chemical industry is under strong pressures, being necessary to develop products and processes of higher value and quality, and environmentally friendly in order to provide a more competitive sector.

Sources: : Recently published data. Idescat; Federación Empresarial de la Industria Química Española (FEIQUE); Instituto Nacional de Estadística (INE); Generalitat de Catalunya; Ministeri d' Indústria, Energia i Turisme. Press: El Nacional, 5 Días, La Vanguardia, Expansión.

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6. Sectorial complementary Webography

- ✓ FEIQUE – Federación Empresarial de la Industria Química Española
<http://www.feique.org/>
- ✓ Foro de Química y Sociedad
<http://www.quimicaysociedad.org/>
- ✓ Industria Química
<http://www.industriaquimica.es/noticias>
- ✓ Asociación Española del Comercio Químico
<http://www.aecq.es/>
- ✓ The European Chemical Industry Council
<http://www.cefic.org/>

Barcelona Treball (The job seeking website of Barcelona)

Do you want more information of the main occupations of the Industry? You can know in detail the tasks required for each professional, the training needed to work, the key competencies and associated jobs posted on the major job seeking websites.

www.bcn.cat/treball > [Economic Industries](#)
> [Job profiles search engine](#)

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