

Career Profile: Industrial Chemist

An industrial chemist applies chemical science to industrial processes and may work in the area of development and production. Industrial chemists are experts in the properties and chemical structure of materials such as oil, metal and plastics, drugs, fertilizers and food. They contribute to creating new chemicals, develop and control production processing methods and also ensure that the quality of products is maintained. New chemicals with the desired properties are produced through experiment and then further developed on a larger scale and also at a reasonable cost. The industrial chemist can also become involved in the management of plant operations.

The chemical industry can be divided into two categories:

- *Heavy chemical industry* which is focused on large scale conversion of raw materials such as air, water, oil, coal into simple substances, eg. ammonia, sulphuric acid, ethene, and polythene
- *Light chemical industry* which converts the products of heavy industry into a variety of substances such as pharmaceuticals, adhesives and detergents.

As an industrial chemist, you could get involved in research and development work in a laboratory, or you could focus more on the production side, making sure that production processes run efficiently. Typical tasks you could be expected to perform include:

- conducting experiments to identify chemical composition and studying chemical changes which occur in natural substances and processed materials
- developing and testing theories, techniques and processes
- developing practical applications of experiments and research findings, for example, combining new compounds for industrial and medical use
- testing products and materials and drawing up specifications and standards that comply with government health laws and quality standards
- developing experimental procedures and special equipment for the analysis of chemical processes
- developing, managing and monitoring chemical processes for the manufacture of products and materials
- monitoring the environment to check the safety, function and quality of products
- managing chemical technicians.

Industrial chemists usually work in close cooperation with chemical engineers and, depending on the focus of the work, may also consult other scientists in relevant disciplines such as metallurgy, geology, biochemistry or food technology.

Education Requirements

National Senior Certificate (NSC)

For a career in industrial chemistry students are advised to select English, Mathematics, and Physical Science and to add to this a selection from the designated subjects. These are subjects that are particularly suitable for tertiary study.

Bachelor Degree

The **Bachelor of Science in Chemistry – (3 years)** programme focuses on developing knowledge and skills for entry into careers in the field of chemistry.

Offered at:

- [North-West University](#)¹ (Faculty of Natural Sciences - Potchefstroom Campus)
- [University of South Africa](#)² (Department of Chemistry)
- [University of Johannesburg](#)³ (Faculty of Science)
- [University of Limpopo](#)⁴ (School of Physical and Mineral Science)
- [University of Pretoria](#)⁵ (Faculty of Natural and Agricultural Sciences)
- [University of Venda](#)⁶ (School of Mathematics and Natural Sciences)
- [University of the Witwatersrand](#)⁷ (School of Chemistry)

Admission requirements

As admission requirements vary from one institution to another, find out what the specific requirements are by checking on the website and contacting the university if you have any queries.

Possible Employers

- Atomic Energy Commission (AEC)
- [AECI](#)⁸
- [Council for Scientific and Industrial Research](#)⁹ (CSIR)
- [Department of Agriculture](#)¹⁰
- Educational institutions
- Eskom
- Food processing companies – SASOL, AECI

¹ http://www.puk.ac.za/fakulteite/natuur/spcs/index_e.html

² <http://www.unisa.ac.za/Default.asp?Cmd=ViewContent&ContentID=220>

³ <http://www.uj.ac.za/science/Home/tabid/728/Default.aspx>

⁴ http://www.ul.ac.za/index.php?Entity=School%20Main%20Menu&school_id=9

⁵ <http://web.up.ac.za/default.asp?ipkCategoryID=1233&sub=1&parentid=48&subid=1232&ipklookid=11>

⁶ http://www.univen.ac.za/math_natural_sciences/chemistry.html

⁷ <http://web.wits.ac.za/Academic/Science/Chemistry/Home.htm>

⁸ <http://www.aeci.co.za/>

⁹ <http://www.csir.co.za/>

¹⁰ <http://www.daff.gov.za/>

- General industry, e.g., mining, transport, cement, paper, iron and steel
- Government departments
- Industries dealing with pharmaceuticals, agricultural products, foods, biotechnology products, paints, plastics and polymers, cleaning agents, cosmetics, and textiles
- Industry service organisations – Sugar industry
- Large oil companies
- [Council for Mineral Technology](#)¹¹ (MINTEK)
- [SASOL](#)¹²
- Sentrachem
- [South African Bureau of Standards](#)¹³ (SABS)
- Research – [Agriculture Research Council](#)¹⁴ (ARC)

The [South African Chemical Institute](#)¹⁵ is the official professional institute for chemistry in South Africa. To register as a member, you need to have completed four years of study in any branch of chemistry with a degree, diploma or certificate and engaged in full-time chemical work or further study in chemistry for a further three years.

Find out more

Find out more about chemical engineering, bursaries and jobs:

- [South African Chemical Institute](#)¹⁶ has an extremely useful brochure on various careers in chemistry on its website.
- [GoStudy](#)¹⁷ gives very useful information on chemistry as a career with specific information on industrial chemistry.
- The Australian website [MyFuture](#)¹⁸ also provides useful information on a career in industrial chemistry.
- [DPA](#)¹⁹ is an engineering consultancy that, among others things, employs industrial chemists and technicians.
- [University of KwaZulu-Natal](#)²⁰, Pietermaritzburg School of Chemistry website covers industrial, analytical and environmental chemistry.

¹¹ <http://www.mintek.co.za/>

¹² <http://www.sasol.com/>

¹³ <https://www.sabs.co.za/>

¹⁴ <http://www.arc.agric.za/>

¹⁵ <http://www.saci.co.za/>

¹⁶ <http://www.saci.co.za/>

¹⁷ <http://www.gostudy.mobi/Careers/View.aspx?oid=89>

¹⁸ <http://www.myfuture.edu.au/services/default.asp?FunctionID=5050&ASCO=211111B>

¹⁹ <http://www.dpaconsult.co.za/services/steel-corrosion-assessment/>

²⁰ <http://chemweb.unp.ac.za/chemistry/Programs/CTEC-3rd%20Yr-2007.pdf>

Are you suited to this career?

This quick quiz can help you to identify whether you are suited for this occupation.

QUIZ	YES	NO
Are you interested in finding out about how things work?		
Do you enjoy Mathematics and Science?		
Do you pay attention to detail?		
Are you interested in solving problems?		
Do you enjoy working with the latest technology and machinery?		
Are detail and accuracy in your work important to you?		
Are you creative and do you persevere when faced with a problem?		
Can you communicate well in speech and writing?		
Do you work well with other people and communicate clearly with them?		
Do you have good eyesight and eye-hand coordination?		

If you have mainly yes answers it may be an indication that this is an occupation to consider.