CZECH Chemical and Pharmaceutical Industry

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CZECH CHEMICAL AND PHARMACEUTICAL INDUSTRY

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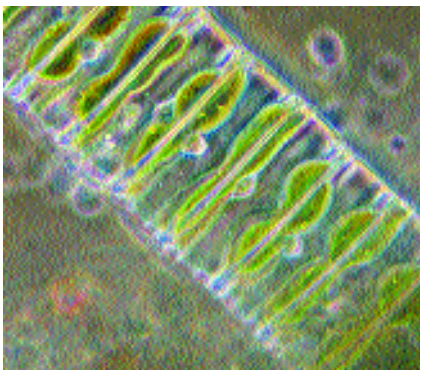

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Dear Readers,

Life without the chemical and pharmaceutical industry can hardly be imagined. Dramatic progress in the chemical industry is improving the living standard, and discoveries in pharmacy are prolonging human life. The chemical and pharmaceutical industry has a long tradition in the Czech Republic. Universities of high quality are educating proficient chemists and pharmacists, and foreign companies are opening new plants and laboratories in this country.

The Czech Zentiva company ranks among the most important producers of medicines in Central Europe, and the Unipetrol group is an important player on the local petrochemical market. Technology incubators are being established in the Czech Republic. You will have an opportunity to become acquainted in detail with one of them, and with the above mentioned companies in this issue.

Last but not least, mention is deserved by the long series of achievements which include the invention of the contact lens. An interview will introduce a successful Czech chemist, Miroslav Bleha, the winner of an important scientific award for the development of a new membrane technology.

This issue gives the reader an overall view of the chemical and pharmaceutical industry and indicates its possible development in the future.

Ondřej Štrba

Czech Chemical Industry Now and its Future Prospects

Erik Geuss, Jiří Chroustovský, Eva Veselá, Ministry of Industry and Trade, e-mail: geuss@mpo.cz, chroustovsky@mpo.cz, veselae@mpo.cz

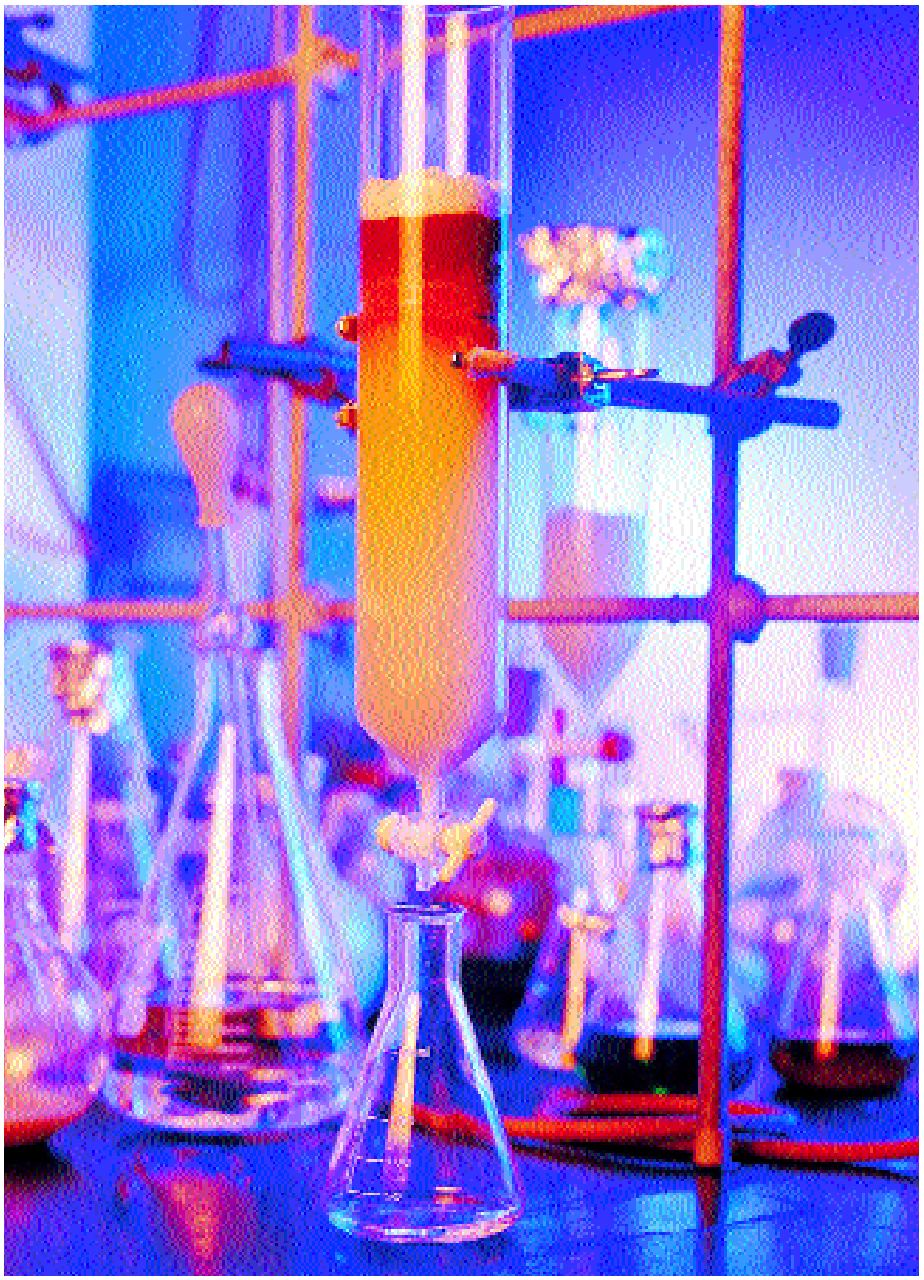
The chemical industry, including the pharmaceutical branch, ranks among the main manufacturing sectors, as its semi-finished and final products serve everywhere. In 2007, its organisations with 20 and more employees accounted for 5% of the revenues of the Czech manufacturing industry, 5.5% of the book value added, and 3.4% of the number of employees. The share in GDP is estimated at 2 to 2.1%, which is approximately at the level of the EU-27.

The sector includes seven product branches and their share in the 2007 revenues (in constant prices, in per cent) is shown in the graph on p.5.

The graph clearly shows that basic chemicals (NACE 24.1) have the largest share in the product structure of the sector – more than three fifths, pharmaceuticals (NACE 24.4) account for 18%, and detergents and cosmetics for 10.3%. On the contrary, a low share is shown in other chemical products (NACE 24.6), which include special chemicals and agrochemicals (NACE 24.2, industrial fertilisers are included in NACE 24.1) and man-made fibres (NACE 24.7). The structure In the EU-27 is different. In 2006, basic chemicals (NACE 24.1) accounted only for 43%, and the manufacture of pharmaceuticals, which has the highest share in value added in relation to revenues, accounted for 28%.

Economic Results in 2007

The 2007 results (revenues rose by 6.2%) were better than the 2006 results (revenues rose by 3.8%). The situation was particularly favourable in the first half of the year, whereas the results in the second half were strongly influenced by the long outage in UNIPETROL RPA, s.r.o. This worsened several industrial indicators in this petrochemical holding, which had a decisive share in the revenues of the sector. The results of other large companies ended in black numbers, which applied especially to SPOLCHEMIE, a.s., in which the new manufacture of synthetic resins was in full swing. The book value added in the monitored period was lower than the increase in revenues (3.8%) and the number of employees increased only slightly – approximately by 1.3%. At the end of 2007, a total of 221 enterprises with 20 and more employees were operating in the NACE 24 sector, and the large enterprises with 250 and more employees accounted for more than 75% of the sector revenues. The largest company of the sector is UNIPETROL, a.s. In terms of revenues, it ranked among the first five of the TOP 100 enterprises in 2007. The main economic indicators of the chemical industry sector from 2005 to 2007 are shown in the table on p. 6.



The chemical industry has a long tradition in the Czech Republic

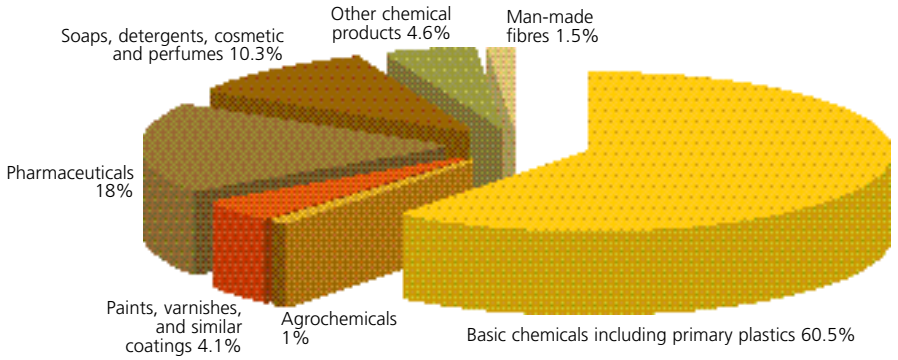
Foreign Trade

Foreign trade (according to the CPA – Classification of Products by Activity) has been significantly influencing the economic results of this sector in the last years, and reflecting its competitiveness in the global economy. The exports of the sector were worth EUR 4.6 billion in 2007 (10.2% more than in 2006), and imports amounted to EUR 8.5 billion (increase of 15.6%), so that the deficit rose to EUR 3.9 billion and was EUR 723 million higher than in 2006. The foreign trade turnover exceeded EUR 13.1 billion, which was a year-on-year rise of 13.5%. Germany remained the major trade partner (imports to CR EUR 2.3 billion, exports from CR almost EUR 1 billion), followed by the neighbouring countries – Slovakia (imports EUR 403 million, exports EUR 627 million) and Poland (imports EUR 411 million, exports EUR 522 million). The largest trade partner of the Czech Republic is the EU-27, which accounted for more than 79% of Czech imports and almost 81% exports of chemical products in 2007. In contrast to the EU-27 (surplus of more than EUR 40 billion in 2006), the Czech Republic has a large deficit in foreign trade, but taken by NACE classification, i.e. only imports for the chemical industry, the CR would have a surplus in this sector.

Investment in the Sector

Tangible investment into the Czech chemical industry, including the pharmaceutical branch, has been ranging around an annual average of EUR 325–350 million in the last years, but exceeded EUR 400 million in 2007. The largest investment into the development of chemical production has been made by the petrochemical holding UNIPETROL, a.s. and SPOLCHEMIE, a.s., both based in the Ústí Region. In the framework of its planned outage, UNIPETROL, a.s. increased bulk manufacture of some plastics in 2007, and in 2008 is to add to its product portfolio dicyclopentadien and the non-hydrogen fraction of aromatic hydrocarbons, both on the basis of its own technologies, which were developed in co-operation with the Institute of Chemical Technology, Prague, and the Inorganic Chemistry Research Institute in Ústí nad Labem, and to expand benzene production. In

Division of the sector and share of branches in revenues



Source: Ministry of Industry and Trade of the Czech Republic

Photo: Photocombo

the last years, SPOLCHEMIE, a.s. built plants to manufacture epoxy and alkyd resins (Epispol I and Epispol 2) and thus captured third place among European epoxy resin producers. The company has expanded its manufacture of synthetic sapphires, is considering the construction of epichlorhydrin plants in Malaysia and the USA, and is purchasing technology for the construction of a membrane electrolysis unit to produce hydroxides and chlorine. The major investors include LINDE GAS, a.s., the largest Czech manufacturer of technical gases, now building the first hydrogen station, DEZA, a.s. (intensification of anthraquinone and esters production), Rigips. s.r.o.(factory to make foam polystyrene EPS), and BorsodChem-MCHZ, s.r.o. (expansion of aniline manufacture).

Investment into the pharmaceutical industry in the Czech Republic has been high in the last years and went mainly to the manufacture of generics. Detailed information is in a separate article on this branch.

The list of projects is long, and yet experts believe that investment into the Czech chemical industry is insufficient. Dominant in their structure are bulk products with a lower value added rather than products of qualified chemistry and special products with a higher value added. This worsens the balance-sheet of the chemical industry, as special products which are not available from domestic production must be imported.

Development in the Sector in 2008

Preliminary results of the sector in the first half of 2008 (in constant prices) show slight growth against the same period of 2007 (6%), but chemical companies are experiencing a very difficult period. They had to come to grips with record growth in petroleum prices combined with the record rate at which CZK strengthened. The revenues of enterprises were rising, but the year-on-year net profit declined. This applied especially to the UNIPETROL, a.s., holding, which had to spend much higher amounts on hedging against changes in petroleum prices. The foreign trade development of the sector more or less copied the 2007 trend. In the first half of the year, exports increased almost by 20%, to EUR 2 816 million, and imports by 17.4%, to EUR 4 900 million. The deficit was by EUR 258 million higher than in the same period of 2007.

Main economic indicators in 2005-2007

	2005	2006	2007 [1]	2007/2006 index
Revenues from the sale of products in EUR million, c.p[2]	4 583	4 758	5 056	106.2
Book value added in EUR million, c.p.[2]	1 247	1 305	1 356	101.3
Number of employees	37 591	36 929	37 415	101.3
Exports in EUR million, cr.p.[3]	3 648	4 188	4 616	110.2
Imports in EUR million, cr.p.[3]	6 354	7 393	8 544	115.6

1) preliminary data
2) c.p. - constant prices
3) cr.p. - current prices; according to the Classification of Products by Activity (CPA)
Note: revenues – organisations with 20 and more employees
Value added – organisations with 100 and more employees
Source: Czech Statistical Office, Ministry of Industry and Trade own calculations

Position of the Sector in EU-27

The Czech chemical industry ranks among the less important ones in the EU-27 and, according to CEFIC data, its share ranged around 1% of EU revenues in 2006. This share is expected to be below this value in 2007, since the European Union was enlarged with Romania and Bulgaria. The Czech Republic's book added value per employee is below the average in the EU and its most developed countries – this indicator has been ranging around EUR 30 000, while it was three-fold on average in the EU-25 in the last years. The main reason is the different product structure: bulk products are dominant in the Czech Republic, whereas the developed countries of the EU and the world are transferring their manufacture abroad, especially to Asia, and domestic producers concentrate on competitive chemical specialties with higher value added, based on knowledge economy.

On the contrary, the accession of the Czech Republic to the EU in 2004 gave

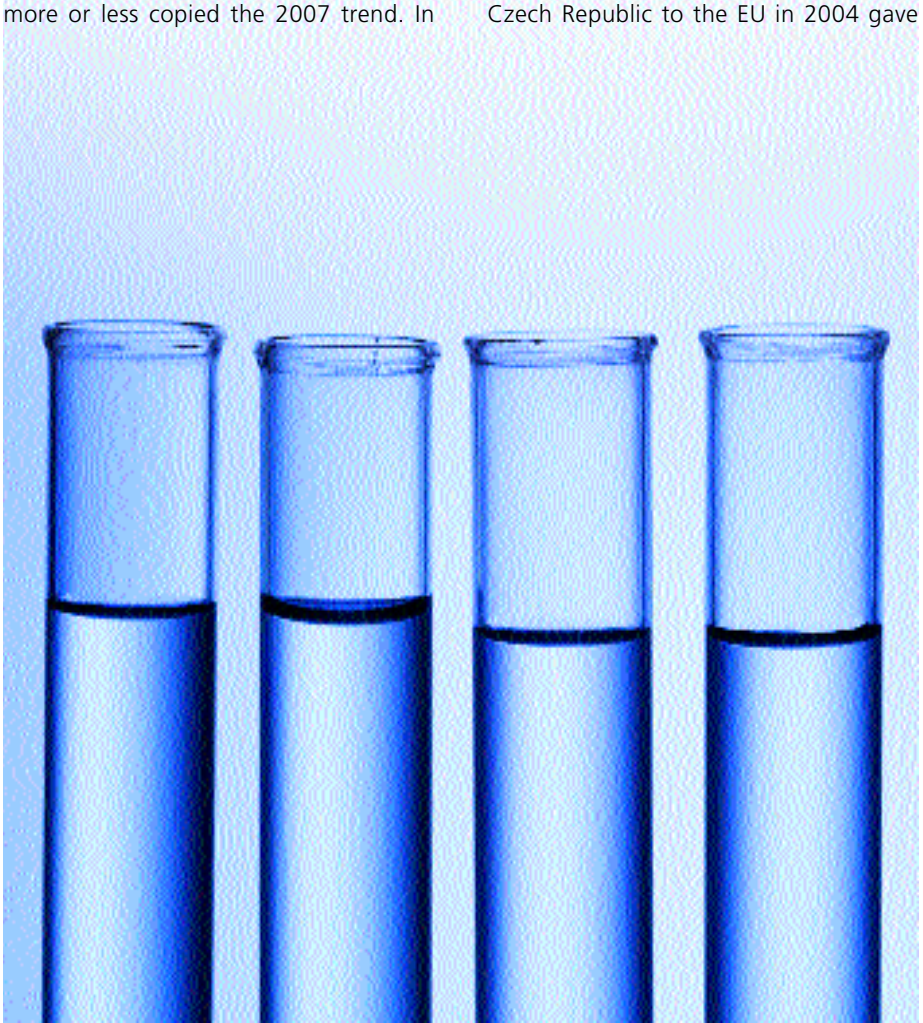


Photo: Photocombo

a boost to trade with this grouping. This is documented by the preliminary result in 2007, when the EU-27 accounted for 80.5% of the Czech export of chemicals and 78.9% of the Czech import of chemicals. The main trade partners of the Czech Republic are its neighbouring countries, and this is a logistic advantage. Germany had the largest share in NACE 24 foreign trade in 2007 (almost 25%), followed by Slovakia (7.8%) and Poland (7.1%). In 2007, the Czech Republic had a deficit of EUR 1.3 billion in trade with Germany, but a surplus of EUR 223 million in trade with Slovakia and EUR 112 million in trade with Poland. The Czech Republic has a permanently high deficit in trade with other West European countries. In 2007, for example, EUR 483 million with France, EUR 439 million with the Netherlands, and EUR 292 million with Belgium.

Prospects for the Near Future

The prospects of the Czech chemical industry for the near future must be seen in a broad context in expectation of a lower rate of growth in the global, European, and Czech economy. The economic growth of the sector is in the hands of foreign trade which, however, must come to grips with the strong CZK, as well as lower rate of growth in the Euro area and particularly in Germany, which is the largest trade partner of the Czech Republic. In June 2008, for example, Czech enterprises exported their products at prices 8.1% lower than a year ago, while the year-on-year import prices declined by 5.7%, and, moreover, this was influenced by the big growth in petroleum prices. Domestic firms cannot rely too much on domestic consumption, as the economy leaders are sectors with strong pro-export orientation (and foreign demand is on the decline), and the flow of foreign investment slowed down in 2008. Positive is the expected decline in petroleum prices and weakening of CZK, but on the contrary, the next months could bring a lower rate of growth in the export of chemicals to the largest partners, Germany, Slovakia, and Poland in view of a probably lower economic growth. These facts indicate that the year-on-year increase in Czech chemical industry revenues in constant prices will be approximately 3–5% in 2008, and investment will be slower compared with 2007.

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Pharmaceutical Industry in the Czech Republic

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The pharmaceutical industry is a high-tech sector. Its products are manufactured by chemical or biotechnological processes and serve both human and veterinary medicine. The high value added to pharmaceuticals rests on technologies, which result from complicated research and highly qualified labour. The products are divided into two groups – branded (protected by patent) and generic (copies of originals with expired protection). New drugs result from many years of research, verification and approval, and yet revenues fully cover the costs of research and development only in three out of ten new products, according to the European Federation of Pharmaceutical Industries and Associations (EFPIA).

The pharmaceutical industry has two branches – the manufacture of basic pharmaceutical products (NACE 24.41) and the manufacture of pharmaceutical preparations (NACE 24.42) including homeopathics, vaccines, antiserums, and dental fillings. NACE 24.42 has a much higher share in revenues (approx 90% in the EU, approx 70% in the Czech Republic).

Main economic indicators in 2005-2007

	2005	2006	2007 [1]	2007/2006 index
Revenues from the sale of own products in EUR million, c.p.[2]	836	900	909	101.0
Book value added in EUR million, c.p.[2]	288	345	350	101.5
Number of employees	9 288	9 576	9 673	101.0
Exports in EUR million, cr.p.[3]	558	702	812	115.7
Imports in EUR million, cr.p.[3]	1 674	1 791	2 217	123.8

[1] preliminary data
[2] c.p. - constant prices
[3] cr.p. - current prices; according to the Classification of Products by Activity (CPA)
Note: revenues – organisations with 20 and more employees
Value added – organisations with 100 and more employees
Source: Czech Statistical Office, Ministry of Industry and Trade own calculations

Results in 2007

In 2007, 44 organisations with 20 and more employees operated in the Czech pharmaceutical industry and their revenues totalled EUR 909 million (1% more than in 2006). The branch accounted for 18% of NACE 24 revenues, and almost 26% of book added value, and had the same share in the number of employees. In the manufacturing industry, the

pharmaceutical share was almost 0.9% in revenues, approx 1.5% in value added, and 0.9% in the number of employees. The basic industrial indicators of the branch from 2005 to 2007, including trade exchange, are shown in the following table

Most of the main manufacturers and distributors of drugs are in foreign hands at present. Sanofi-Aventis and two Dutch companies have the highest shares in Zentiva, a.s., the largest pharmaceutical company; IVAX Pharmaceuticals, s.r.o. in Opava is owned by the Israeli TEVA Group; PLIVA -Lachema a.s. has been newly owned by the US Barr Pharmaceuticals since 2006; the majority owner of LONZA BIOTEC s.r.o. is the Swiss Lonza group, and Medicamenta, a.s. is owned by the Indian company Glenmark Pharmaceuticals. In 2008, foreign firms took control of another two Czech pharmaceutical companies – Tamda, a.s. in Olomouc was purchased by the Belgian Arseus, and Interpharma, a.s.in Prague was acquired by the Japanese pharmaceutical giant Otsuka. With the exception of WALMARK, a.s. in Třinec (a leading European manufacturer of nutrition supplements and drugs, which has a number of branches abroad), this has left in Czech hands mainly small companies, such as Herbacos-Bofarma, s.r.o., Ardeapharma, a.s., which makes infusion solutions, Bioveta, a.s., a producer of generics, and the biotechnological company I.Q.A., which recently signed a lucrative licence agreement with a prominent US pharmaceutical company. Most of these are companies with an annual turnover of several dozen million EUR, and since consolidation continues on the Central European market, other acquisitions can be expected also in the future.

Foreign Trade

The pharmaceutical industry ranks among branches with the highest deficit in foreign trade. In 2007, its exports were worth EUR 812 million (almost 16% more than in 2006), and imports amounted to EUR 2 217 million (increase of 23.8%) and the deficit exceeded EUR 1.4 billion, which was EUR 416 million more than in 2006. The Czech Republic manufactures a limited range of drugs, and due to a permanently large demand their import has been increasing at a higher rate than their export.

Investment in the Branch

Since health care is a priority in the Czech Republic, the pharmaceutical industry is permanently attracting investors, as proved by several recent examples. In 2007, LONZA BIOTEC, s.r.o. completed an investment of some EUR 40 million (pharmaceutical enzymes) and PLIVA-Lachema, a.s. expanded its production with a new cytostatic injections line at the cost of approximately EUR 20 million. Zentiva, a.s., and WALMARK, a.s. are investing large amounts into development, and IVAX Pharmaceuticals, s.r.o. is beginning to build a new plant at the cost of some

Photo: Photocombo

The pharmaceutical industry has the highest value added per employee

EUR 40 million to make tablets and hard gelatine capsules. The Masaryk Memorial Cancer Institute in Brno commenced the manufacture of radiation drugs in May 2008.

Position of the Branch in EU-27

The pharmaceutical industry belongs to the main sectors in the European Union and, according to data of the European Chemistry Council (CEFIC), accounted for 28% of the revenues of the EU chemical industry in 2006, while this share was 18% in the Czech Republic. Of all sectors and branches in the Union, the pharmaceutical industry shows the highest value added per employee, followed by the chemical industry as a whole and then at a distance by the manufacture of office machines and computers, basic metal production, and the automotive industry. According to data of "Panorama of European Business, Edition 2007", this indicator has exceeded the value of EUR 100 000 per employee, as compared with EUR 36 000 in the Czech Republic in 2007.The main reason for this striking difference is the dominant position of generics in the portfolios of pharmaceutical firms in the Czech Republic.

Development in 2008 and Prospects for the Near Future

The results of the Czech pharmaceutical industry were not encouraging in the first half of 2008, revenues in constant prices declined by 5.7% in the year-on-year comparison (mainly due to lower domestic revenues of Zentiva, a.s.). This was caused mainly by the mandatory fees for visits to physicians and medical prescriptions, which were introduced as of the beginning of 2008 and reduced the demand for drugs. Companies are countering this by increased support to their marks. Nevertheless, the prospects of the branch can be seen optimistically and the situation should improve in the second half of 2008. Due to good results in Central and East Europe, exports were increasing more rapidly (by 63.8% to EUR 462 million) than imports (by 22.2% to EUR 1.3 billion), but in view of the lower starting amount of exports the year-on-year rise in the deficit was EUR 46 million to EUR 839 million. Revenues in this branch are expected to increase, since several large investment projects are being built or launched. Demand for drugs is influenced by the cyclic fluctuation in the developed economies only partially, but the ageing of the population and prolongation of human life must be taken into consideration, as they increase drug consumption in this age group. And so it can be expected that the interest of investors in the pharmaceutical industry will last and its consolidation will continue.

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Photo: Photocombo

Chemical and Pharmaceutical Industry, Traditional Sector with Bright Prospects

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The pharmaceutical and chemical industries rank among the most rapidly developing branches of the economy. The Czech Republic has a long tradition in the manufacture of drugs and chemicals, and Czech scientists have been at the birth of many significant discoveries which influence everyday life. CzechInvest, the Investment and Business Development Agency, supports these branches.

Pharmaceutical Industry

Several large companies which have a big share in the total Czech manufacture of pharmaceutical preparations are operating in the Czech Republic at this time. These companies include PLIVA-Lachema, Zentiva, and IVAX Pharmaceuticals, which are producing mainly generics – drugs which are produced without patent protection after its expiration. The patent protection of drugs from which generics are derived range between 15 and 20 years, depending on the laws of the country in which they are produced. Patents have been introduced due to the huge funding and the long time required for drug development. Their holders are very few pharmaceutical companies such as Novartis or Roche. None of the large producers of original drugs is based in the Czech Republic as yet, but many formulas for excellent medicaments originated in this country – including Viread, the most effective preparation for AIDS treatment at present, from Antonín Holý's laboratory. In the manufacture of generics, however, we are a giant on the European market mainly due to Zentiva of Prague, which is expanding through acquisitions to southern Europe and Turkey. One of the largest pharmaceutical companies of the world, the Israeli TEVA, purchased a generics manufacture plant in Opava in 2006, and is planning to invest EUR dozens of millions into its enlargement. Generic drug manufacture in the Czech Republic can be expected to be increased in the future. On the basis of a European Union Directive, the member countries are beginning to give increased support to research, and development. In 2005, the Czech Government Council for Science and Technology approved a rule which ranks biotechnology and pharmacy among priority branches of basic research, and thus increased their funding. CzechInvest is participating in the division of these resources by distributing money from structural funds. These incentives can be used, for example, for the establishment of a centre in support of development or a new production line. Very important to research and development in the Czech Republic is Lonza, the only large pharmaceutical company in this country to have its own research and development department. This company has been making repeated use of the above mentioned means of support.

The Czech Republic is a country very attractive to investors

Foreign companies regard the Czech Republic as an important gateway to East Europe, and so very many packaging and manufacturing lines are in this country.

Chemical Industry

The chemical industry in the Czech Republic is supported from the structural funds of the European Union and investment incentives. Following privatisation in the 1990s, the chemical industry has been more or less consolidated and saturated. Consequently, the chance of foreign companies to become involved in the industry is narrowed to the possibility of acquisition of Czech companies. The chief players on the market include the Unipetrol group, owned by the Polish PKN Orlen, Synthos, and Spolchemie.

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Photo: Photocombo

New Chemical Legislation – Implementation of REACH Regulation and Preparation of GHS Regulation

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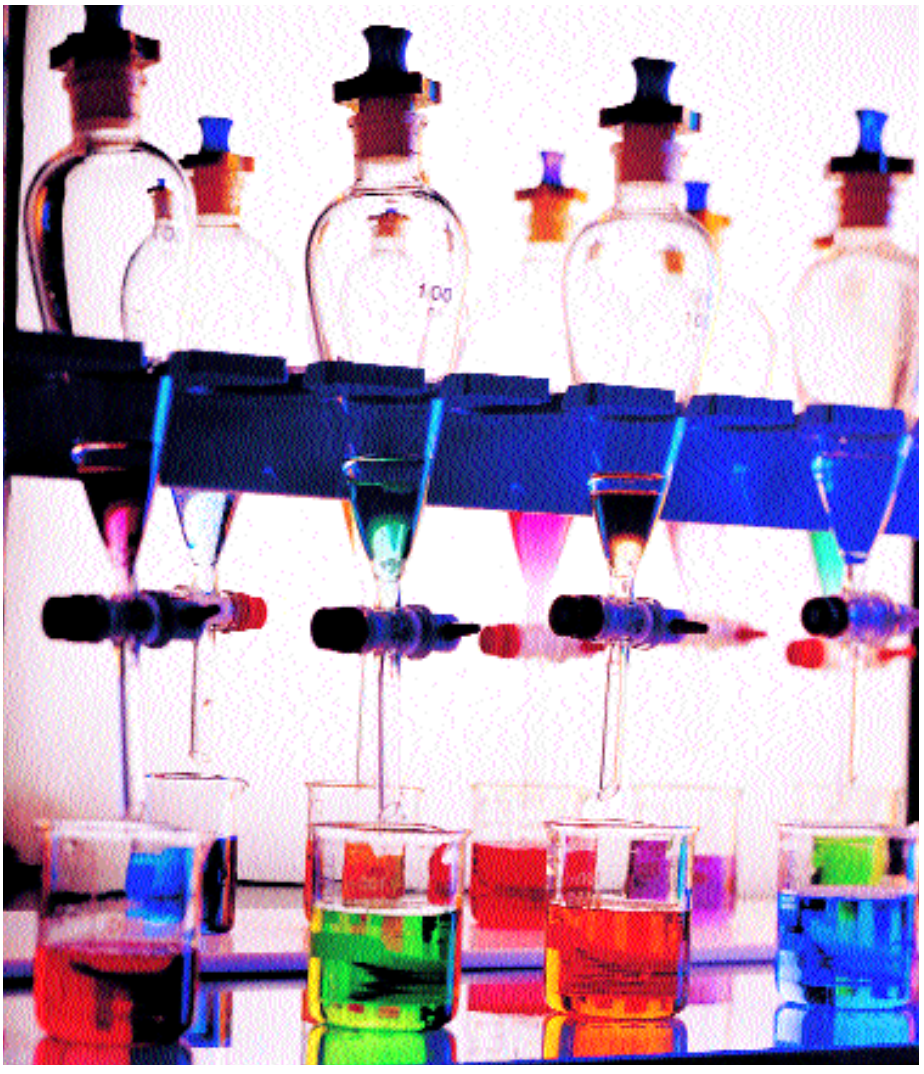
The new European chemical legislation is based on two regulations of the European Parliament and Council – REACH and GHS. The publication of Regulation 1907/2006 concerning REACH, Registration, Evaluation, Authorisation and Restriction of Chemical substances in the European Union countries, is followed by preparations of the GHS Regulation on the classification, packaging, and labelling of chemical substances and mixtures.



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Implementation of REACH Regulation

The REACH Regulation, in effect as of 1 June 2008, requires all manufacturers and importers of chemical substances as such, chemical substances contained in preparations/mixtures, and chemical substances contained in articles (the substance is released from the articles and the release of the substance from the articles presents a risk to human health or the environment) to register them with the European Chemicals Agency in Helsinki.

The European Regulation can be used as a legal provision directly. The competence of the state administration of the Czech Republic and sanctions for failure to fulfil the provisions of the Regulation are stipulated in legislation of the Czech Republic. In the case of the REACH Regulation, the Ministry of the Environment, the competent body, put forward a bill amending Act No. 356/2003 Coll., on chemical substances and chemical preparations, and on amendments to several laws as amended later. The Act was passed at the turn of October and November 2008.

The Association of Chemical Industry of the Czech Republic (SCHP ČR) has estimated that domestic enterprises will have to spend a total of EUR 400 million on the fulfilment of the REACH Regulation; has run courses on REACH for more than 1 200 employees of Czech companies within the Adaptability and Competitiveness of the Chemical Industry project, which is supported by the Ministry of Labour and Social Affairs of the Czech Republic and the European Social Fund; has established the ReachSpektrum limited liability company, which provides schooling on the REACH Regulation, and professional consultation services for Association of Chemical Industry, including services as a sole agent of producers from third countries.

Preparation of GHS Regulation

The publication of the GHS Regulation is expected at the turn of 2008/2009. In order to minimise the costs of the

application of the new system, the fulfilment of the duties stipulated in the GHS Regulation will come gradually. The transition period, in which new legislation relating to chemical substances and chemical preparations/mixtures will be phased in and the present legislation phased out concurrently, begins on 1 October 2010 and ends in 2015 (for substances) and in 2017 (for preparations/mixtures).

The costs of the introduction of the new system will have to be monitored consistently for GHS advantages to come soon. The quantification of costs connected with the reclassification of chemical substances, preparations for new labelling of chemical substances and preparations, drafting of new safety lists, notification/reporting of substances as such and substances contained in preparations to the European Chemicals Agency, and the use of alternative names of chemicals to harmonise classification, is to be included in a study which has been ordered by the Ministry of Industry and Trade from the ReachSpektrum company. This analysis of the GHS Regulation impacts is oriented towards the manufacturers of hazardous chemical substances and preparations/mixtures in the Czech Republic (specifically chemical substances placed on the EU market before 1 December 2012 or preparations before 1 June 2015).

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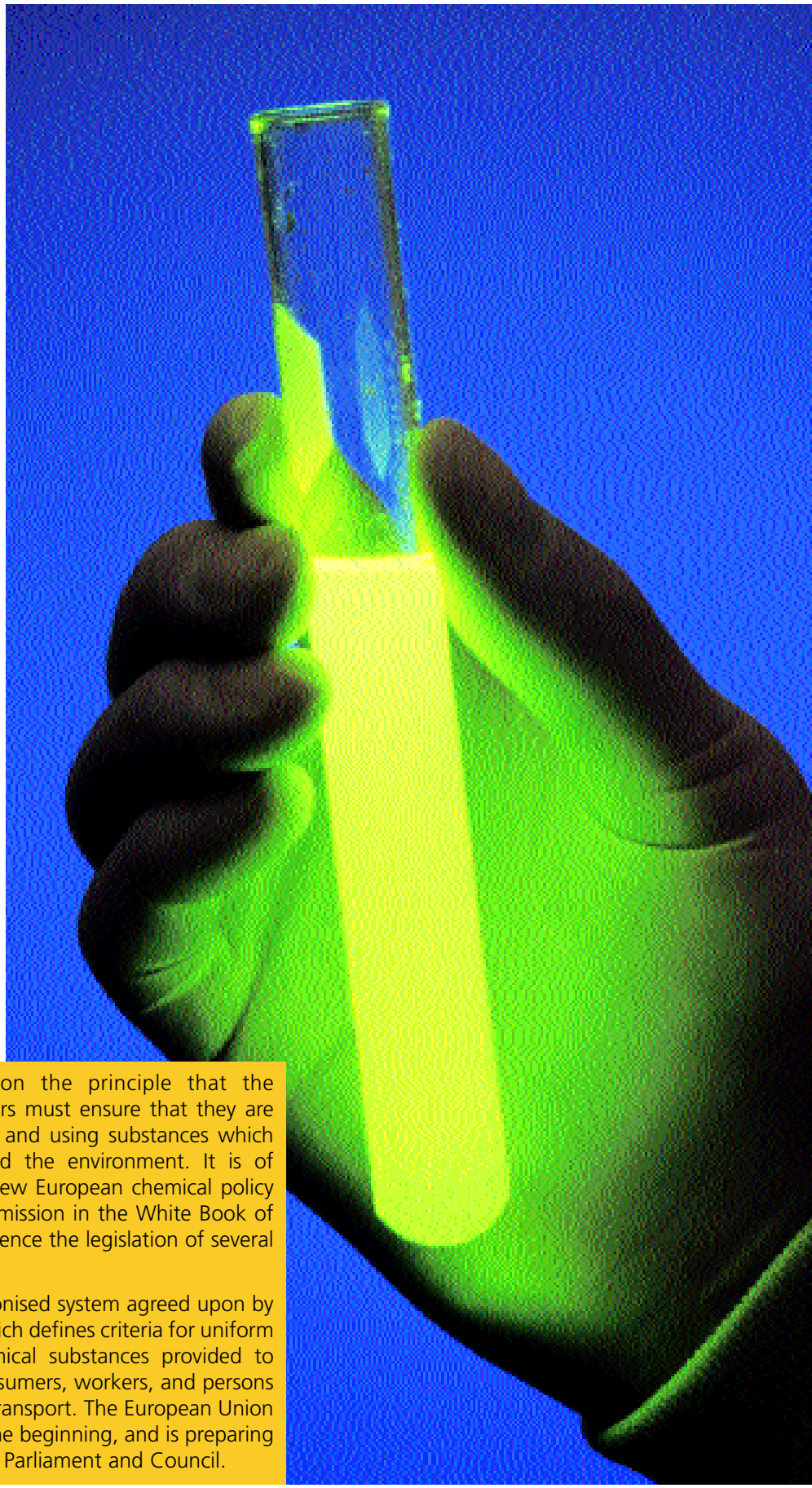

Photo: Photocombo

REACH – the regulation is based on the principle that the manufacturers, importers, and final users must ensure that they are manufacturing, placing on the market, and using substances which are not harmful to human health and the environment. It is of European origin (the principles of the new European chemical policy were formulated by the European Commission in the White Book of February 2001) and is beginning to influence the legislation of several extra-European countries.

GHS – the regulation is a globally harmonised system agreed upon by the UN Economic and Social Council, which defines criteria for uniform safety information on hazardous chemical substances provided to different targeted groups, including consumers, workers, and persons operating in emergency situations and transport. The European Union has been involved in this process since the beginning, and is preparing the relevant Regulation of the European Parliament and Council.

Institute of Chemical Technology, Prague Educates Top-ranking Experts

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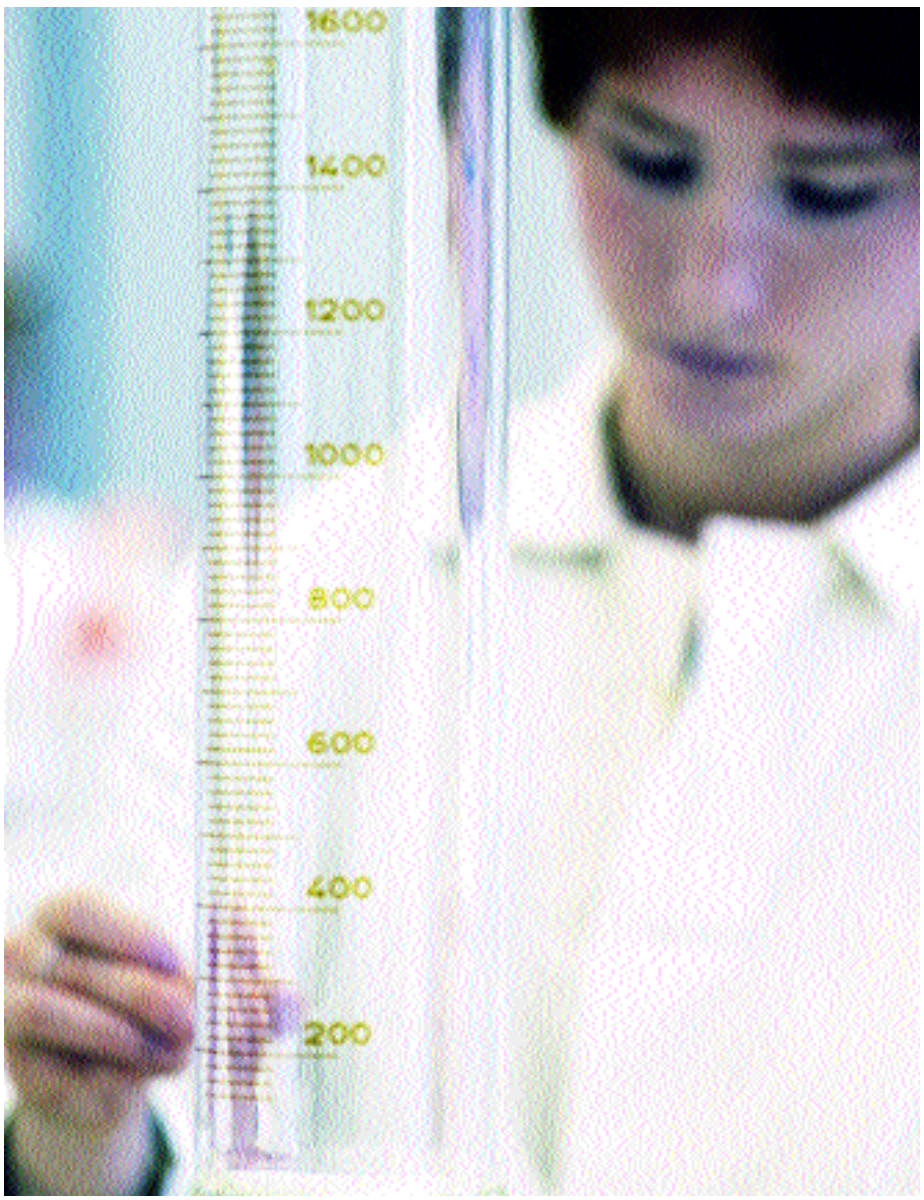
The Institute of Chemical Technology, Prague (ICT Prague) is the biggest educational institution of its kind in Central Europe. It is building on the 200-year tradition in the teaching of chemical technology in Bohemia. Its tradition and large professional potential predetermine its education of highly regarded experts. Many famous names are connected with the Institute of Chemical Technology, Prague, such as Nobel Prize winner for chemistry, Vlado Prelog, inventor of soft contact lenses, Otto Wichterle, Emil Votoček and a number of others who had significant influence on the standard of the chemical industry as well as our everyday life.



ICT Prague is the largest institution of its kind in Central Europe

ICT Prague has four faculties:

Faculty of Chemical Technology is focused on the requirements of the chemical industry to optimise and develop new technological procedures. The scientific research of the faculty is closely linked with its teaching, and can be divided into two areas: the chemistry and technology of materials with a view to the complicated relationship between the composition, preparation, and properties of new materials, and improvement of the utility properties of traditional metallic and non-metallic inorganic materials and polymers.

Faculty of Environmental Technology proceeds from the traditional orientation towards the technology of fuels and water, and in accordance with the latest trends puts great emphasis on environmentally friendly technologies. The Faculty has ideal conditions for its focus on environmental protection, which are given by the professional capacity and background for the development of modern technologies for air and water protection, chemical and energy fuel processing, development of alternative fuels, and the liquidation of industrial and municipal waste.

Faculty of Food and Biochemical Technology is concerned with all areas of food-related chemistry, technology and biotechnology, with emphasis on improvement of the quality of food, optimum nutrition of the population, application of progressive processes to achieve higher upgrading of raw materials, and biochemical, microbiological, and molecular-genetic studies as the theoretical basis for modern biotechnology. Excellent professional background, modern equipment, and technological units rank the Faculty among centres of food and biological sciences of international significance. The Faculty has laboratories for food analysis, food microbiology and

Photo: ICT Prague archives

detection of genetically modified food. They are connected to the network of EU laboratories.

Faculty of Chemical Engineering involves in its research and development the complete range of chemical and processing engineering, from engineering experiment to computer-assisted modelling, analysis, measuring and management, including the methods and means of chemical and physically-chemical analysis of the properties and behaviour of bioengineering and chemical-engineering systems. The Faculty provides a combination of natural scientific and technical education, which meets the requirements of the modern education of engineers. Universality is the characteristic feature of all study branches at the Faculty. The graduates are successful in managerial and technical posts, and are well equipped for operations in applied research, development, designing, consulting, and trade.

The Institute of Chemical Technology, Prague is strictly focused on modern trends in the education of chemical engineers. Some of the study branches are not offered by any other university in the Czech Republic. Individual approach to students is characteristic of ICT Prague. From the first year, students can join in research projects and participate in basic and applied research and possibly in development for the industry.

In 2006, ICT Prague became the ninth European university entitled to add to its Bachelor Diplomas the Chemistry EuroBachelor label. The holders of this label, which proves study results of European quality, can be admitted for master studies at any university thus accredited.

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MEGA a.s. – Leader in Electro-membrane Processes

Luboš Novák, MEGA a.s., e-mail: lnovak@mega.cz, www.mega.cz

A Czech private company, one of the world leaders in electro-membrane processes, is based in North Bohemia, in the industrial zone of Stráž pod Ralskem, a town with four thousand inhabitants. In November 2007, Luboš Novák, MEGA a.s. Chairman of the Board and General Manager, was awarded the Invention Prize in the Česká Hlava (Czech Brains) project. He shared the prize for the development of ion exchange membranes and the use of membrane processes in ecologic and production applications with his colleague of many years, Miroslav Bleha of the Institute of Macromolecular Chemistry of the Academy of Sciences of the Czech Republic. MEGA products and technologies are defeating their rivals, multinational giants such as the "water" division of General Electric.

Main Emphasis is Laid on Innovation

The company was established in the 1970s. Since the 1990s, MEGA a.s. has been a supplier of technological complexes and complete services in environmental protection with focus on the technology of water treatment in the Czech Republic and abroad. Besides its dominant position on the domestic market, the company is building its reputation abroad. The company gradually became a clear-cut, innovative company which offers top-quality technologies in the application of membrane processes, especially in water treatment and the pharmaceutical and food industries. Its production background, research and development, and the quality of services rank MEGA among world leaders in these fields.

The company has realised that water will be the most strategic and valued commodity with the best prospects in the near future. Competition on the market connected with water supply and treatment is very strong, and prices are dictated by General Electric, Siemens, Veolia, RWE and other concerns.

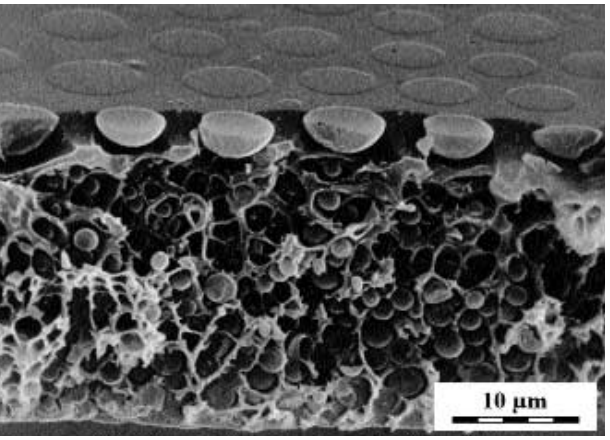
Product Diversification Yields Success

The emphasis that MEGA a.s. puts on its own research is unusual in this country. Without it, any enterprise would be incapable of innovation and thus doom itself to extinction. The company reinvests its entire profit. Proof of this is the new modern complex in Stráž pod Ralskem, and planned capital construction.

The company realised years ago that it is better to stand on two (or maybe three) legs, and so in addition to water treatment, it ventured into another human need and found applications for its technologies in the food industry. It is supplying technologies to breweries and to dairies for the processing of whey; previously whey was regarded as waste but then it began to be utilised due to technologies supplied by MEGA a.s.. The third sector in which the company operates is surface treatment. Since the mid-1990s, The company has been the sole agent of PPG, the US paint manufacturer, for the Czech and Slovak Republics. The link with MEGA's main activity is apparent: almost all automobile plants worldwide use technologies with membranes for body painting manufactura in Stráž pod Ralskem.

Thanks to its orientation, MEGA a.s. is not dependent on domestic procurement, although this was most profitable in the 1990s at the time of the "boom" of environmental burden liquidation. The time has come to export. Through to its subsidiary, MEGA Profiline, the company is doing well on the very promising market of Russia. The company's 2007 turnover of EUR 16 million could be higher by 6 million this year, and its target is to get close to EUR 40 million in three years. This result has been achieved with only 150 dedicated employees.

That MEGA a.s. is known in the world is proved by the interest of potential investors and a number of rivals who have offered strategic partnerships. However, the owner of the company believes that its potential can increase the productivity of labour, effectiveness and turnover for at least the next two years. ■



Membrane under microscope

Filter based on the unique membrane technology

Photo: MEGA archives

WALMARK is Planning Expansion to West European Markets

Kateřina Ondřejková, WALMARK a.s., e-mail: katerina.ondrejkova@walmark.cz, www.walmark.cz

For several years, the pharmaceutical company WALMARK has been an important participant on the market of nutrition supplements in the Czech Republic and other countries. Due to massive investment into technologies, control systems, and knowledge of its employees, it has one of the most modern pharmaceutical plants in this country, which operates in accordance with the Good Manufacturing Practices (GMP) standards, and holds a licence for the manufacture and distribution of drugs. Besides nutrition supplements, which account for the major part of its turnover, the company has been producing medical preparations since the autumn of 2004.

WALMARK – Leader on the Central European Market

In 2007, WALMARK reached its strategic goal set in 2001 and, according to data of renowned agencies IMS Health and Cegedim, became the Central and East European leader in food supplements. After 16 years in the business it expanded successfully in such a difficult branch as pharmaceutical production even in the present globalised world. It continues to be a Czech company now owned by 8 shareholders, domestic natural persons. The company stocks are not on the public market.

In the past five years, WALMARK increased its pharmaceutical production more than 2.5-fold, established six new foreign branches (Hungary, Lithuania, the Ukraine, Bulgaria, Latvia, and France), and raised the number of its export destinations to more than two dozen countries including those in West Europe and the Middle East. Consolidated results in the last business year showed the share of foreign revenues in the total revenues of the WALMARK group at almost

Manipulation with material at the weighing place

Photo: Boris Renner

70%, and the company expects continued growth. This testifies to WALMARK's position of an international player who generates most of its revenues abroad. WALMARK has been opening one foreign branch a year on average in the recent years, and wants to maintain this tempo.

First Branch in West Europe

The expansion of WALMARK's foreign trade is indicated by the opening of its first branch in West Europe in February 2008. The new branch, based in Paris, followed up the successful operations of the export department which had been selling WALMARK products on the French market for three years. Success on foreign markets requires careful consideration of their specific features, and choice of the best marketing strategy and most suitable products.

WALMARK is also doing very well in Estonia, Kazakhstan, Azerbaijan, and Serbia. But it also pays great attention to markets of the countries of the former Yugoslavia (Slovenia, Croatia, Bosnia and Herzegovina), Cyprus, Macedonia, and the Persian Gulf countries.

WALMARK Is Developing New Products with Good Prospects

The WALMARK portfolio includes 200 products, but every country has its favourites. The most popular products include Arhtrostop Plus, GinkoPrim, Marťánci, Prostenal, Vápník-Hořčík-Zinek and Urinal.

Tablet coating machine

Photo: Boris Renner

This year, WALMARK acquired Aminostar, the leading Czech manufacturer of nutrition supplements for sportsmen, and will expand its operations to a segment of the market. Sport nutrition offers many synergies in the range of supplements and medicaments in terms of development, manufacture, sale, and marketing. It is a segment with very good prospects on the domestic and foreign markets. WALMARK will introduce Aminostar on foreign markets through the network of its branches and operations of its export department.

■

Allergens for Laboratories Manufactured in the Czech Republic

Petr Kohout, Centre of Biological Technologies, e-mail: kohout@greentech.cz, www.greentech.cz/cbt

BONAPOL, a.s. is an important manufacturer of natural allergens, especially pollens, which are designed for laboratories and pharmaceutical production. Pollen, which is an allergen source most difficult to renew, serves as raw material for the manufacture of diagnosing and immunotherapeutic drugs. BONAPOL has introduced the ISO 9001:2000 quality management system, and thus meets the strict criteria for the observance of manufacturing procedures, preservation of allergen profiles and the resulting purity of pollens, which can exceed 99.5% according to the client's requirements.

Way of Pollen Collection Depends on Plants

BONAPOL specialises in pollens of wild Central-European plants, mainly woody species. Pollens of some herbs and grasses are collected from specially grown monocultures. These cultures of European and non-original species allow constant expansion of the range of products as well as capacity, and minimise production risks.

Specific Pollen Species Require Specific Production Procedures

In view of the morphological and biochemical diversity of pollens and contaminating particles, different pollen species require specific manufacturing procedures. For this reason, research and development, conducted concurrently with production, is crucial to company activity. Their results are applied both in the phase of collections and processing. These procedures and special equipment for pollen cleaning are protected intellectual property.

The annual pollen production ranges around hundreds of kilograms. At present, the entire production is exported.

■

PLIVA-Lachema, Leading Czech Manufacturer of Generic Drugs

Jana Šilarová, PLIVA-Lachema a.s., e-mail: jsilarova@lachema.cz, www.lachema.cz

PLIVA-Lachema became a part of the New Jersey-based US Barr Pharmaceuticals, Inc. in 2006. It offers its clients the advantages of the fourth largest multinational generic company worldwide and ranks among the most important pharmaceutical producers and drug suppliers of the world. PLIVA-Lachema is based in Brno, but due to its product portfolio and the US parent company it provides cancer treatment to patients all over the world.

Phase of the manufacture of a pharmaceutical preparation

Unique Position in Oncologic Preparations Production

In the Barr group, PLIVA-Lachema is justifiably regarded as a centre of excellence of the development and manufacture of oncologic preparations (for the treatment of tumour diseases). Its long experience in such complicated technologies as cytostatics, highly qualified experts, and manufacturing equipment of world standard rank the company among the best worldwide. The most difficult production technology in the company and the world is the manufacture of cytostatic sterile forms. They are made on a single production line at present. Its capacity is insufficient and so the construction of a second line commenced last year.

In order to maintain the quality of the manufactured products, the continuity of PLIVA-Lachema production, and especially its own production of sterile injections, the company is preparing active pharmaceutical ingrediences (API). Tablets of highly effective substances are made on one production line in the tablet pavilion, which ranks among the top Czech facilities due to the use of pressure suits to protect workers.

Company Supports Research and Development

The combination of the professional knowledge and experience of the company's researchers with those of the Barr group gave rise to a very strong team capable of keeping pace with pharmaceutical development in the world. PLIVA-Lachema gives increased support to projects involving anti-tumour drugs. Almost all activities are heading towards the development of generic curative preparations which are placed on the market after the patent protection expires.

High Degree of Control Guarantees System Effectiveness

Since PLIVA-Lachema supports the joint objective of the public health care and private sectors – to provide patients and physicians with drugs of high quality – the quality system matches the specific environment of the manufacture of cytostatic drugs and those with highly effective substances. The effectiveness of the system is consistently controlled by regular inspections by the State Institute for Drug Control and foreign authorities (such as the US Food and Drug Administration), and customer audits.

PLIVA-Lachema Feels Social Responsibility

The quality of human life is closely connected with the quality of the environment, and so PLIVA-Lachema is doing more than just fulfilling the legal duties concerning the protection of the health its staff and the environment, it is joining voluntarily activities aimed at permanent improvement in this respect. It is accredited with certificates for EMS (environmental protection) and SMS (health protection and safety at work), which confirm that the company is aware of responsibility for the environment.

■

Photo: PLIVA-Lachema archives

Milestone in the Manufacture of Polyolefins in UNIPETROL RPA, s.r.o.

UNIPETROL RPA, s.r.o., e-mail: info@unipetrol.cz, www.unipetrol.cz

UNIPETROL RPA, s.r.o. produced its four millionth tonne of polyethylene in 2008. The production of high-density polyethylene (HDPE) manufactured under the commercial name of Liten was launched in July 1976 with a capacity of 80 000 tons in four reactors and six granulators. In 1999, the increasing demand dictated the decision to build a new unit with a capacity of 200 000 tonnes. The unit went into operation in July 2002. The new HDPE manufacture is highly flexible – its range is 40 types of the Liten polyethylene.

Polyethylene products are widespread. The material is used for the manufacture of injected, blown, extruded and pressed products.

Manufacturing complex

Polyethylene Is Everywhere

Polyethylene is the raw material for a variety of household utensils. Shops use polyethylene crates for bakery products, fruit, vegetables, and beverages. Food is wrapped in polyethylene sachets, bags, and sacks. Large amounts of polyethylene are used for the making of blown cans and barrels for the transport and storage of chemicals including hazardous ones. The LITEN polyethylene pipes are used for water mains. A large amount of polyethylene serves in the building industry in the form of extruded boards and profiles. The manufacture of injected cartouches for bonds and glues is on the rise.

Polypropylene manufacture is to arrive at a similar milestone within three years. In 2008, it should turn out the 3.5 millionth tonne since production commenced in 1976. The original technology with an annual capacity of 120 000 tonnes could not meet demand and, as in the case of polyethylene, the construction of a new unit was decided in 1999. It went into operation in November 2002. The new technology is flexible and allows the manufacture of more than 30 types.

Polypropylene from Unipetrol in the Automobile Industry

Polypropylene products are widespread in everyday life. Their broad range includes injected household utensils, bowls and cups, injected or moulded pots and jars for cream, yoghurt, and cheese, blown containers for household detergents, and household appliances components. Many loose products and crops are packed in bags and sacks made of polypropylene (PP) fabric. PP fibres are used to make geotextiles for the building industry and ship ropes. PP pipes serve for hot and cold water distribution and floor heating.

In the last few years, PP consumption has been soaring in the automobile industry. Many components are made of polypropylene and compounds in which PP is modified by various fillers to improve its utility properties. Typical products include bumpers and mirror casings.

UNIPETROL RPA in numbers

A share of plastics sales in total revenues of UNIPETROL RPA is approx. 22% (13% PE and 9% PP). From other products of UNIPETROL RPA, cca. 23% represents the sale of monomers and agrochemicals (BU II) and 55% represents the sale of refinery products, namely fuels (BU I).

From total plastics sales company sells 44% on domestic market (28% PE and 66% PP), approx. 56% is being exported.

The most important foreign territories are generally EU countries (totally 93% of plastics production, including sales in the Czech Republic, is being sold to the EU).

■

Unipetrol is a group of companies operating in the petrochemical industry in the Czech Republic. In 2005, it became a part of the PKN Orlen Group, the largest petrochemical company in Central Europe. Unipetrol is focused on petroleum processing, fuel distribution, and petrochemical production. The Unipetrol Group ranks among the leaders of this sector in the Czech Republic and Central Europe. Unipetrol has some 4 000 employees and its revenues ranks, it among the most important companies in the Czech Republic.

UNIPETROL RPA – the company is an umbrella for the manufacture and wholesale operations of Unipetrol in refineries, petrochemistry, and agrochemistry. It originated on 1 August 2007 by the merger of Chemopetrol, Unipetrol Rafinérie, and UNIPETROL RPA.

Photo: Unipetrol archives

Zentiva – Five Years of Successful Development

Věra Kudynová, Zentiva, a.s., e-mail: vera.kudynova@zentiva.cz, www.zentiva.cz

Zentiva is an international pharmaceutical company which specialises in the development, manufacture, and sale of modern branded generics. It holds leading market positions in the Czech Republic, Turkey, Romania, and Slovakia. In recent years, Zentiva has extended its operations to Poland, Russia, the Ukraine, Hungary, Bulgaria, and the Baltic countries and as a result it is now one of the largest pharmaceutical companies in Central and East Europe. In 2007 the Company had sales of EUR 600 million.

The Company supplies approximately 850 pharmaceutical products to countries that have a total combined population of over 400 million people. The capacity of Zentiva's four manufacturing plants in the Czech Republic, Slovakia, Turkey, and Romania is 850 million packs per annum making it one of the biggest producers of pharmaceutical products in Europe.

Successful Expansion to Foreign Markets

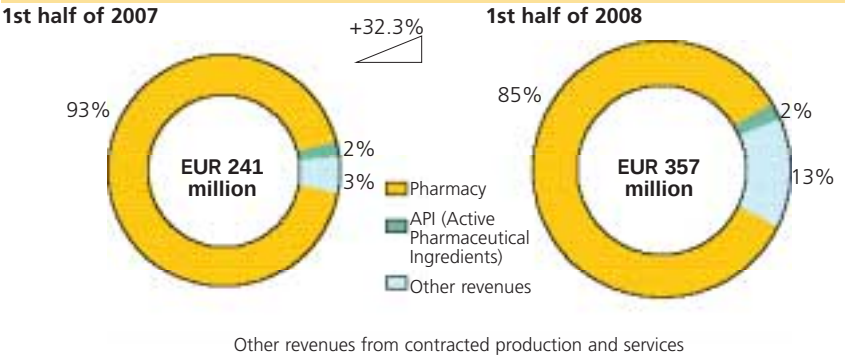
Zentiva has achieved a number of important achievements while building its business in the last few years. In 2004, the Company issued new shares as part of a successful IPO on the Prague and London stock exchanges – Zentiva was the first company in the history of the Czech Republic, and amongst companies in the new countries entering the European Union, to acquire funds to strengthen its balance sheet for future corporate development in this way.

A key element of Zentiva's profitable growth strategy has been to make acquisitions to supplement organic expansion. In the last five years the Company has made strategic acquisitions, which helped its expansion to important markets in the region. In 2003, Léčiva merged with Slovakofarma, the Slovak leader, which was included into the Zentiva group in the same year. In 2005, Zentiva affiliated to its group the Romanian pharmaceutical company Sicomed, and in 2007 by purchase of a 75% stake the Turkish company Eczaçibasi Generic Pharmaceuticals. This latter acquisition was the largest in Zentiva's history.

Focus on Primary Care

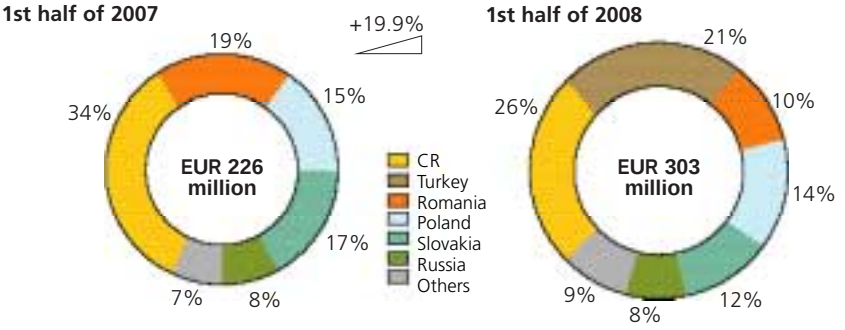
Zentiva's success has not just relied on acquisitions. The reason, and maybe the main reason for Zentiva's growth in recent years has been its focus on the primary care segment of the pharmaceutical market. General practitioners, who are the providers of primary care and are the first point of contact for patients with the medical system, now use modern pharmaceutical products to treat many disorders previously treated by specialists. Zentiva's products include prescription drugs as well as consumer healthcare medicines that are designed for the treatment of cardiovascular diseases, inflammations, pain, infections, disorders of the central nervous system and the digestive system, and urological diseases. Zentiva's focus on primary care is based on a key element of the Company's corporate culture which seeks to improve the quality of life in the countries in which Zentiva operates and it is not just driven by commercial reasons. A further factor which has been crucial to the Company's recent success is the quality of its products, which meet all strict requirements of European laws covering the production of pharmaceutical products.

Revenues according product groups



Other revenues from contracted production and services

Revenues from curative preparations according to countries



Note: Net revenue
Source: Zentiva

Our Corporate Responsibility

Zentiva is an important player, and in a number of cases a market leader in many of the countries of Central and East Europe. This success naturally brings with it responsibility for the society and cultures in which Zentiva operates. As a result, the Company supports science and its researchers co-operate with the academic community as well as providing backing to culture and sports. For example, Zentiva is a partner of the Czech and Slovak Olympic teams. ■

Czech Membranes Are Conquering the World

Miroslav Bleha, Institute of Macromolecular Chemistry of the Czech Republic, v. v. i., e-mail: bleha@imc.cas.cz, www.imc.cas.cz

Miroslav Bleha, a promising Czech chemist, won a Česká hlava (Czech Brains) 2007 award for the technology of the manufacture of ionic membranes and the use of membrane processes in ecologic and manufacturing applications, which he has been developing in the Institute for many years. He shared the award with Mr Luboš Novák, Managing Director of MEGA, a.s., which applies membranes in practice and proves their quality by winning foreign tenders.

Miroslav Bleha (left) and Luboš Novák (right)

Could you describe the development of your unique technology? What was the objective of the research? Has it been achieved to its full extent?

The research was conducted in response to the requirements of the then Czechoslovak uranium industry, specifically the treatment of waste water from chemical mining. Basically, it involved the desalination of large amounts of waste water which had high contents of sodium sulphate, a very important chemical substance. But acquiring it from waste water by evaporation was very uneconomic. The development commenced before the fall of Communism, and the embargo on Western technologies induced our team to find a totally new technology of membrane manufacture. We achieved the objective to develop a membrane which could be used in practice and compete with foreign membranes.

Where is your technology used at this time? Does it serve in equipment based on ionic membranes of your provenance?

MEGA, a.s. has been doing well on foreign markets. Industrial waste water treatment equipment is now serving at many places in this country and abroad. Our membrane technology also won a tender for water desalination in Spain against the renowned General Electrics of the USA. The technology is applied in the Canary Islands for the purification of waste water for irrigation. Besides these applications, the pharmaceutical company LONZA uses ionic membranes in combination with electrical dialysis. Last but not least, mention is deserved by the food industry, which uses our membranes for the demineralisation of whey.

How are you co-operating with foreign countries?

Co-operation within the European Union and with Russia is well established. Initially, however, the project was restricted to the Czech Republic as we regarded it as our know-how and protected it thoroughly. We co-operated for a long time with the British National Power company in the use of membranes in electricity storage. A success is the pilot power plant in western England, which is using them for the conservation of electricity, its transformation into chemical energy and back for use when needed. We have also co-operated with the Japanese Tokuyama Company.

■

Česká hlava – The (Czech Brains) project in support of the scientific and technical intelligentsia was opened in March 2002. It is a system of activities designed to popularise science and increase the social prestige of domestic scientists as the main contributors to the economic prosperity of the country. The annual highlight of the project is the award of the Česká hlava national prizes to the best innovators in science and technology. The immodest objective is to raise social awareness to the level of a kind of national Nobel Prize. **Source: www.ceskahlava.cz**

Photo: Miroslav Bleha's archives

Centre of Biological Technologies – Czech Technology Incubator

Petr Kohout, Centre of Biological Technologies, e-mail: kohout@greentech.cz, www.greentech.cz/cbt

The Centre of Biological Technologies in Nové Hrady, South Bohemia, is comprised of a technology incubator, scientific technology park, and a technology transfer centre. These are the basis of very close co-operation of the incubating firms and a representative of the Centre in the solution of incubation projects. The chief objective of the technology incubator is the creation of the best conditions for successful launch of innovative and development projects. Besides advantageous rental agreements during the project incubation period, the offer includes a broad range of ancillary services to enhance the chance of the innovative project to reach the stage of successful commercialisation.

Three Basic Parts of the Park

The technology incubator has a biotechnology hall and laboratories which serve co-operation with the Academic and University Centre in the development of innovative projects.

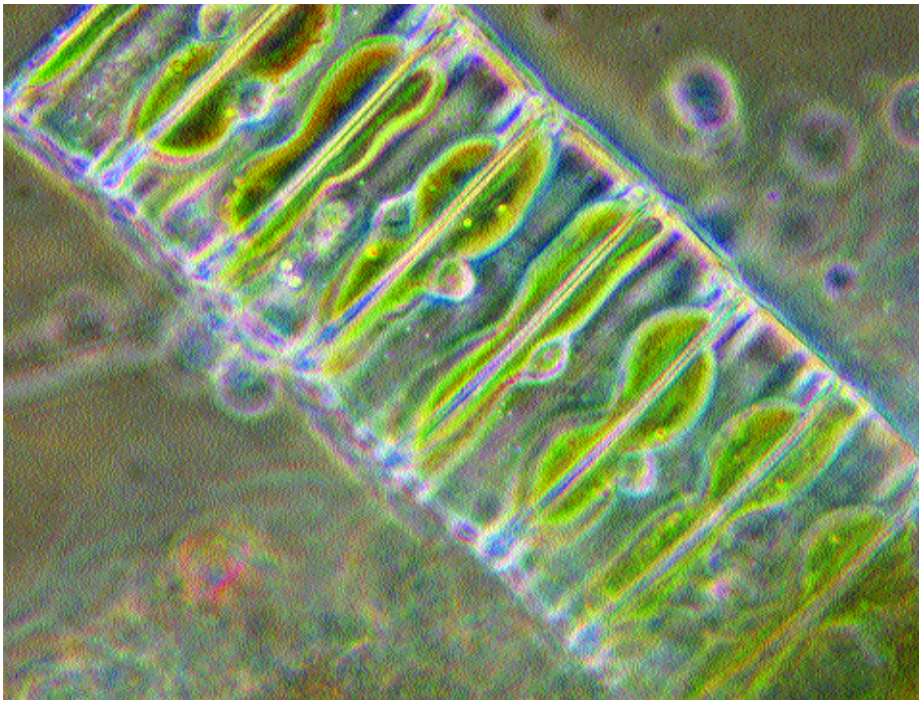
The scientific technology park is a base for companies which develop high technologies, and a place for the grouping of innovative business activities connected with workers of the research and academic area who ensure the development of firms and the basic functions of the park together with its representatives.

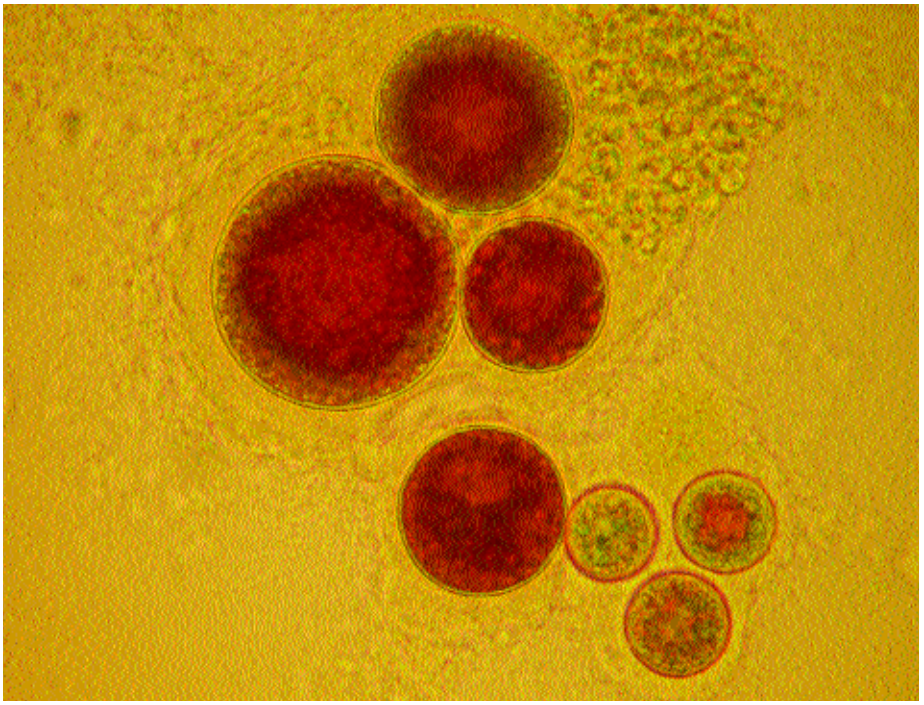
The technology transfer centre searches the academic area for results suitable for application in practice, and helps in their commercialisation. The technology transfer services of the centre are used by the incubating firms, research organisations, and institutions which co-operate in association with the Centre of Biological Technologies.

These three units are essential for correct function of the technology incubator, and their interconnection creates a very good environment for start up firms.

Technology Is Exchanged in Both Directions

The Nové Hrady centre is focused on the





Microorganisms photographed during research at the Centre of Biological Technologies

Photo: Centre of Biological Technologies archives

transfer of technologies and their application in practice in firms which operate biotechnology, biochemistry, and molecular biology. The Academic and University Centre transfers technologies to and from the Czech Republic. The incubator office provides consultations on intellectual property protection and in this co-operates with patent office professionals.

Successful companies are connected or co-operating with the technology incubator in Nové Hrady. To give a better idea, we introduce some of them.

Building of the technology incubator

B.P. Medical

This company conducts scientific research and development and manufactures preparations containing biologically active substances. Its turnover of approximately EUR 100 000 ranks it among small and medium-sized enterprises.

The company's research is concentrated on the use of autotrophic microorganisms, and the application of animal cell and tissue cultures, which are used for primary testing of the biocompatibility of materials primarily designed for medical purposes, especially dental implants, and most recently the testing of findings in nanomedicine.

The company produces a number of preparations from various kinds of algae of its own cultivation. The cultivation conditions and the specific features and contents of biologically active substances are equally important. The algae and blue-green algae are produced in the company's own cultivation systems in controlled conditions which it developed. The products thus manufactured are nutrition supplements, cosmetic preparations (ointments, creams, bath salts), animal feed supplements (carotenoid mixtures), and fish feed supplements, including aquarium fish feeds.

A big advantage of the company is its own collection of applied autotrophic organisms which it regularly controls, maintains, and enriches from natural resources. The second big advantage is co-operation with the Czech scientific-technical base, and the third one is its know-how including protected intellectual property.

HIC & services s.r.o.

The company commenced the development of crystallising methods for very pure silicon four years ago. The development was conducted in academic institutions in Armenia, of which the owner, Armen Jegijan, is a native. It became evident that the method of manufacturing single crystals of sapphire for highly efficient lasers can also be used for the manufacture of single-crystal silicon, of much cheaper materials than needed when the ordinary methods are used. This research is being transferred to the Czech Republic with significant support of the Centre of Biological Technologies. A factory which will use the technology is being built in the České Velenice – Gmünd Industrial Park. Thanks to this co-operation, the Institute of Physical Biology found lecturers of branches such as firm-phase thermodynamics and inorganic crystallography.

Triana Sci&Tech s.r.l.

The products of this Hi-Tech Spanish company are used by academic and industrial research facilities of the world, and serve experiments in orbital stations. Its founder, Professor Garcia Reina, has been a visiting professor of the University of South Bohemia since 2003, but his co-operation with the Centre of Biological Technologies dates from 2001. The protein crystallography laboratory, headed by Ms Ivana Kuta Smatanová, developed some of the technologies manufactured by Triana Sci&Tech, and tested several others. Proteins which originated from this development fly to outer space. Co-operation with Triana Sci&Tech has won the Centre of Biological Technologies reference at the National Institute of Health USA. ■

Supportive Services Offer of the Centre of Biological Technologies

- Consultation and assistance in working out the programme of an innovative or development project
- Consultation and assistance in looking for the funding of an innovative or development project
- Support in project control
- Education focused on development and innovation business
- Intellectual property protection - consulting and co-financing
- Verification and demonstration of the project in real conditions

Professional Consultations Provided at the Centre of Biological Technologies

- Technical consultations based on the knowledge of the staff and collaborators of the scientific technology park
- Technical assistance and testing at the Centre of Biological Technologies, which participates in the operation of unique apparatus
- Legal consultations (studies, manuals, mediation of partnership)
- Marketing and education
- Arrangement of co-operation exchanges, workshops, and conferences

Poll of Successful Companies Operating in the Chemical and Pharmaceutical Industry Sector

Lovochemie, a.s.

Terezínská 57, 410 17 Lovosice, phone: +420 416 561 111, fax: + 420 416 533 098, e-mail: info@lovochemie.cz, www.lovochemie.cz

Turnover: EUR 133 million
Number of employees: 626
Contact person: Ms Irena Vodičková
e-mail: irena.vodickova@lovochemie.cz
Exports: Approximately 50%, mainly to West Europe, Latin America

Lovochemie, a.s., is the largest manufacturer of industrial fertilisers in the Czech Republic and its production programme has greatly contributed to the development of Czech agriculture. Lovochemie is a member of the Agrofert group. At present, its chief operations are the manufacture and sale of nitric and combined fertilisers in both solid and liquid form. Products in greatest demand include different types of saltpetre, ammonium sulphate, and special fertilisers. In organic chemistry, the company presents itself with the product LOVOSA (carboxymethyl cellulose), which is used in the food, textile, and other industries.

How does your company co-operate with foreign countries?

The company sells its products on the domestic and foreign markets. Approximately one-half of its output is exported mainly to the West European countries, Germany in particular. A special range of products goes to more distant destinations such as Latin America, where products of the calcium nitrate type are sought.

How does your company invest into its development? What do you expect of this investment?

The largest recent investment – into the manufacture of nitric acid, the so-called KD6, was completed in 2003, but Lovochemie continues investing into projects focussed on the modernisation of production all of which have an ecologic character – the costs of environmental protection, and health safety and protection amounted to EUR 6 million in 2007 alone. The major projects included the overhaul of electrical separators, repairs of cyclone separators and sedimentation tanks of the waste-water treatment plant, and the reconstruction of the limestone crushing and grinding plants to reduce their dustiness, noisiness, and energy consumption.

Fertiliser pellets

Photo: Lovochemie archives

The company is now increasing its research. The development of new products ranks among Lovochemie priorities.

Reference must be made of an organic fuel manufacturing plant with an annual capacity of 400 000 tonnes of rape, which is under construction in the Lovochemie complex for PREOL, a company of the Agrofert Group, and is due to be completed in the spring of 2009. This investment, too, is designed to reduce the impact of human activity on the environment.

IVAX Pharmaceuticals s.r.o.

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Number of employees: 834
Contact person: Karin Martínková
e-mail: karin.martinkova@ivax-cz.com
Export: more than 80% - including to Russia, Germany, Slovakia, the United Kingdom, the USA, Poland, the Ukraine, Mexico, the Netherlands, Japan, Switzerland, and Saudi Arabia

IVAX Pharmaceuticals s.r.o., based in Opava-Komárov, member of the TEVA Group, is a major manufacturer of pharmaceutical products. Its history opened in 1883. Its broad range of products includes generic curative preparations – mainly antiasthmatics, cyclostatics, immunosuppressives, hypolipidemics, and antihypertensives – in the form of tablets, capsules, and liquids (sterile and non-sterile), and over-the-

counter (OTC) drugs, active pharmaceutical ingredients (API), and plant extracts.

The products meet quality standards and are exported to many countries of the world, including the USA and West Europe. The company became a part of the TEVA multinational group in 2006.

Your company joined the TEVA multinational group two years ago. What does this mean to you?

TEVA ranks among the twenty largest pharmaceutical firms of the world and is its largest manufacturer of generic preparations. It sells its products through carefully selected and efficient subsidiaries in 115 countries. In Israel, North America, Europe, and Latin America it owns 43 plants manufacturing pharmaceutical preparations and 14 more plants producing active pharmaceutical ingredients (API). TEVA also owns 34 research and development centres round the globe (8 of these for API research and development). Last year, ten of the pharmaceutical plants were earmarked for strategic development to carry out TEVA'S ambitious plans. IVAX Pharmaceuticals is proud to belong to this group.

Can you specify what you mean by strategic development?

In keeping with a decision made in the late 2007, the Opava manufacturing plant will be expanded with a new unit to turn out 4 billion tablets and hard gelatine capsules every year. The construction, which will cost an estimated EUR 40 million, commenced early in August. The unit will be built in two stages, the first one is due to be completed at the end of 2009 and go into operation in the first half of 2010. The second stage is planned for 2011. The production capacity of our company will thus be doubled and IVAX Pharmaceuticals will be one of the largest pharmaceutical producers in Europe.

Photo: IVAX archives

Factory of the IVAX company

CHEMOTEX Děčín a.s.

Tovární 63, 407 11 Děčín 32 - Boletice nad Labem, phone: +420 412 709 216, fax: +420 412 709 232,
e-mail: chemotex@chemotex.cz, www.chemotex.cz

Number of employees: 65
Contact person: Mr Tomáš Urbánek
e-mail: tomasurbanek@chemotex.cz
Export: Germany, France, Austria, Poland, Hungary, Slovakia, Russia, the Ukraine, Kazakhstan

CHEMOTEX Děčín a. s. manufactures chemical auxiliary industrial products. At present, its main products are tenzids and detergents, and chemicals for the engineering, construction, textile, and paper industries. Its offer includes more than 200 types of products.

How do you co-operate with foreign countries?

Our company has a long tradition in co-operation with countries of the former Soviet Union, on which several present deals and negotiations are based.

Which of your products is most popular abroad?

Most popular are specialties on which CHEMOTEX has been focused in the recent period. These include especially sulphocarbolic acid – a specialty manufactured in many qualities. Also worth mentioning is ALTHOSAN MB – a corrosion inhibitor used in the petroleum industry, which is popular, due to the manner of use, particularly on the eastern markets.

Photo: Photocombo

Exhibitions and Fairs in the Chemical and Pharmaceutical Industry Sector in the Czech Republic

PRAGOMEDICA
31st international medical fair
21-24 April 2009, Praha-Holešovice Exhibition Grounds
INCHEBA PRAHA spol. s r.o., e-mail: pragomedica@incheba.cz,
www.incheba.cz/pragomedica

PERMEA 2009
Membrane science and technology conference of Visegrad countries
7-11 June 2009, Pyramida Hotel, Praha 6–Břevnov
e-mail: sympo@imc.cas.cz,
www.imc.cas.cz/sympo/permea09

16th EUROPEAN SYMPOSIUM ON ORGANIC CHEMISTRY
Scientific symposium
12-17 July 2009, Municipal House, Praha
e-mail: info@esoc2009.com, www.esoc2009.com

Medical Fair Brno
International fair of medical equipment, rehabilitation, and health
20-23 October 2009, Exhibition Center Brno
Veletrhy Brno, a.s., e-mail: medicalfair@bvv.cz,
www.bvv.cz/medicalfair

Important Contacts

Ministries		
Ministry of Health of the Czech Republic*	www.mzcr.cz	tis@mzcr.cz
Ministry of Industry and Trade of the Czech Republic	www.mpo.cz	mpo@mpo.cz
Ministry of the Environment of the Czech Republic	www.env.cz	info@env.cz
Associations and Societies		
Association of Chemical Industry of the Czech Republic	www.schp.cz	vladimir.janecek@schp.cz
Czech Chemical Society	www.csch.cz	csch@csch.cz
Czech Society of Chemical Engineering	www.cschi.cz	cschi@csvts.cz
Czech Association of Pharmaceutical Companies	www.aff.cz	caff@aff.cz
Czech Pharmaceutical Society	www.cfs-cls.cz	jahodar@faf.cuni.cz
Institutions		
State Veterinary Administration of the Czech Republic	www.svscr.cz	e.podatelna@svscr.cz
State Institute for Drug Control	www.sukl.cz	sukl@sukl.cz
National Institute for Nuclear, Chemical, and Biological Protection	www.sujchbo.cz	sujchbo@sujchbo.cz
Universities		
Institute of Chemical Technology Prague	www.vscht.cz	eva.markova@vscht.cz
University of Veterinary and Pharmaceutical Sciences Brno	www.vfu.cz	fvl@vfu.cz
Charles University Prague		
Faculty of Pharmacy Hradec Králové	www.faf.cuni.cz	lic@faf.cuni.cz
Institutes		
Polymer Institute Brno, spol. s r. o.	www.polymer.cz	pib@polymer.cz
Research Institute of Organic Syntheses	www.vuos.cz	vuosas@vuos.cz
Research Centre for Environmental Chemistry and Ecotoxicology (RECETOX)	www.recetox.muni.cz	holoubek@recetox.muni.cz
CEPHA s.r.o. - Centre for Pharmacology and Analysis	www.cepha.cz	bazant@cepha.cz
BIOPHARM, Research Institute of Biopharmacy and Veterinary Drugs	www.bri.cz	biopharm@bri.cz
Institute of Chemical Process Fundamentals	www.icpf.cas.cz	icecas@icpf.cas.cz
Institute of Analytical Chemistry	www.iach.cz/uiach	uach@iach.cz
J. Heyrovský Institute of Physical Chemistry	www.jh-inst.cas.cz	director@jh-inst.cas.cz
Institute of Inorganic Chemistry	www.iic.cas.cz	sekretar@iic.cas.cz
Institute of Organic Chemistry and Biochemistry	www.uochb.cas.cz	uochb@uochb.cas.cz
Institute of Macromolecular Chemistry	www.imc.cas.cz	office@imc.cas.cz
Institute of Experimental Medicine	www.iem.cas.cz/	krizova@biomed.cas.cz

** Websites only in Czech*