

Working for chemical and pharmaceutical businesses

## Skills

### Skills and education

The chemical industry is the UK's largest manufacturing sector exporter. To operate safely and compete globally we need to employ a wide range of skilled people from chemical engineers to technicians and maintenance staff. In fact, there is not an unskilled job in the chemical industry. Even in times of an economic downturn, supply of skills is a problem that is hampering the competitiveness of the industry and the UK's reputation for science.

A science literate population is also vital to the future of the UK for social and environmental reasons. With an ever-increasing reliance on technology and the moral issues that accompany science as it pushes boundaries, people can make the most of opportunities if they have the confidence to engage with science.

### Background

A survey of chemical businesses in the UK found:

- 90% of companies reported some degree of difficulty in recruiting science graduates with 45% describing it as very difficult
- only 5% of companies stated that graduates are very well equipped to perform at the required level
- 60% of companies are recruiting graduates from overseas, mostly Europe but also India and China.
- nearly 40% of these companies think the skills and knowledge of overseas graduates are stronger than those educated in the UK.
- companies reported problems finding graduate recruits with skills in problem solving (42%), report writing (36%), analysis (36%) and research (29%)
- nearly half of all available training budgets are needed to close essential skill shortfalls (46.09%)

- 69% of companies feel that they are training their staff in skills that should have been learned in the education system at school, college or university.

### Skills

Cogent (the Sector Skills Council for the chemical industry) has also carried out research.

The chemical and pharmaceutical industries in the UK have significant skills gaps at Level 2 (5 GCSEs, e.g. Process Operators) and Level 3 (2 A-levels e.g. Process Technician). For the chemical industry there is also a gap at Level 4 (graduate). Cogent research shows that in chemicals the gap is 14% and pharmaceuticals 21% at Levels 2 and 3.

Employers have real and pressing skills shortages in:

- innovation and business improvement techniques
- change and project management
- health and safety
- management and leadership.

With an ageing workforce, demand for new recruits during the next ten years will be high, and employers will need to look beyond the traditional pool of candidates to find the talented people they need.

The supply of new people and the ability to quickly and easily up skill the existing workforce is a major challenge for chemical businesses in the UK. Employers need satisfying that these challenges can be overcome quickly. If we do not do so, then investment decisions will be at risk.

In response to this, Cogent research has resulted in an action plan. Five key 'Big Ticket' programmes for the sector have been identified – apprenticeships, career pathways, competence assurance, industry passports and upskilling programme.

The National Skills Academy for the Process Industries (NSAPI) will design and

deliver training for the sector. The Academy is employer led and will work in partnership with government and top training providers. Please click here for their latest newsletter.

Alongside and linked to Cogent and NSAPI there are other initiatives. The Centre for the assessment of Technical Competence – Humber (CATCH) was created to satisfy the practical requirements of training and assessment for local companies on Humberside. CATCH is a training provider that delivers 'highly competent workers with a good work ethic'. There are truly authentic environments that add to the training experience. One of the biggest challenges in chemical businesses today is re-establishing our competence to manage process safety. We are examining a number of ways of doing this. One such example is the work we are doing with CIA Associate Member company, Haden Freeman to develop a management qualification in Process Safety Management. Unlike some safety training, this qualification will look at the broad range of practical competencies and experience needed to manage hazardous installations. This vocational qualification – set to be launched in late 2008 – will be modular based and will include hazard identification, asset integrity management, management of change and people performance.

The CIA – along with Chemicals Northwest, Humber Chemical Focus Institute of Biology, Yorkshire Chemical Focus and Yorkshire Forward – is a proud supporter of the Royal Society of Chemistry's Essential Skills Management Scheme. The eleven courses (plus the online assessments forming the initial basis of this scheme) offer an accessible, flexible suite of personal development training courses required by industry.

The courses are designed for new



recruits in the chemical, pharmaceutical and related industries; spin-out, start-up and small company employees, who have limited access to this type of training; postdoctoral academic researchers wanting to move into industry; more experienced people wishing to reinvigorate their Continuing Professional Development programmes. The courses can also be company based.

Across the industry we are witnessing a dramatic increase in apprenticeship recruitment. And there is now a growing trend for the growing formalisation of company qualifications.

## Education

In education, our main work is through the Chemical Industry Education Centre (CIEC) at the University of York. CIEC was established in 1988 to develop and deliver science (especially chemistry) teaching materials into schools across the UK in support of the Curriculum. The most successful project is the Children Challenging Industry (CCI). This project helps teach science to 8-11 year old pupils and allows them and their teachers to visit chemical plants and set their teaching in context. Evidence shows that at Key Stage 2, performance in science tests has improved after involvement with CCI.

The CIA has been active in supporting the 21st Century Science for GCSE. While the course is designed for all students/ children (as part of the compulsory science teaching) it allows more able students to study separate sciences at GCSE. We have also supported government plans to:

- Step up recruitment, retraining and retention of physics, chemistry and

mathematics specialist teachers, so that by 2014 there will be 25% of science teachers with a physics specialism; 31% chemistry (currently 25%); and 95% mathematics.

- Increase the number of young people taking A-levels in physics, chemistry and mathematics so that by 2014 entries to physics are 35,000 (currently 24,000), chemistry are 37,000 (currently 33,000) and mathematics 56,000 (currently 46,000).
- Increase the numbers of pupils achieving at least level six in science at the end of Key Stage 3, and A\*-B and A\*-C in two science GCSEs. Later this year government expects that all pupils who achieve at least level six at Key Stage 3 will be able to study three separate science GCSEs.

In addition, we want to see effective implementation of science and chemistry qualifications at diploma level.

One of the greatest contributors to the understanding of chemistry and the chemicals industry is the Catalyst Science Discovery Centre in Runcorn. Catalyst is the only science centre (and museum) solely devoted to chemistry and how the products of chemistry are used in everyday life – from medicines to meccano. Its key aim is to inform people of all ages about chemistry industry and its role in our lives, past present and future.

Alongside CIA's support and encouragement for the many successful industry-wide initiatives, there are many other fantastic initiatives undertaken by chemical businesses locally in the education and skills arenas.

## Priority areas

We want government to undertake an action programme comprising:

- A review of the schools curriculum to include increased provision of science, technology, engineering and mathematics (STEM) related subjects, to ensure we have the teachers and curricula to provide people with the right skills at all levels.
  - The provision of a wide range of post-school education provision, varied STEM related graduate courses that continually increase skills and deal with new emerging technologies. This may mean more flexible short-term courses.
  - The development of quality careers information in conjunction with the industry promoting the benefits of STEM skills.
  - Government to work with industry to ensure the many excellent science education projects such as the Catalyst Science Discovery Centre and the Chemical Industry Education Centre have secure futures.
  - A complete overhaul and simplification of government funded training activity with a stronger distinction between sector based initiatives and general quality of life/economy wide training.
  - Provide positive incentives to both employers and workers for career transition same line training and support.
  - Imaginative use of public funding to help employees with on-going training during the recession especially in relation to short time working and lay-offs.
- A determined concentration on fewer initiatives.