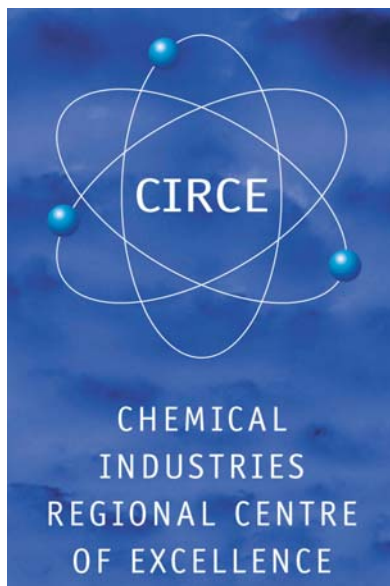


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**SKILLS BROKER  
(CHEMICALS & BIOSCIENCE CLUSTER)**



**RESEARCH REPORT**

**SKILLS NEEDS OF THE CHEMICAL & BIOSCIENCE  
CLUSTERS IN WEST YORKSHIRE**

**NOVEMBER 2004**

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## EXECUTIVE SUMMARY

The two sectors under consideration in this report, chemicals and bioscience, have marked differences but their skills needs have many similarities.

The Chemical sector covers a broad spectrum of industry. A high proportion of the chemical companies in the UK are mature and operating in a strongly competitive global market place, under a strong regulatory framework. Over the past decade, consolidation of the industry has occurred at pace. Many manufacturing sites have become satellite bases, with services such as HR, stripped away. Many operate shift systems and cost / time pressures are moving training down the agenda.

Over the past decade, Regulatory and Compliance issues related to HSE have dominated skills investment. It has become an imperative for Chemical Companies to start to invest in up-skilling operations personnel, increasing multifunctional working.

The industry has found it increasingly difficult over the past decade to attract the most able young talent, science is competing against a broad range of courses at University. Additionally, the course content being offered by Colleges and Universities seems less able to meet industries needs. The challenge is to help the industry see the benefits of investing in its workforce, under the current environment. An innovative approach to training and skills related issues is required, both in the development and delivery within Companies.

The Bioscience Sector in West Yorkshire, is for the most part, an emerging sector where many of the Companies are still in the early phase of product and market development. Developing and securing Intellectual Property is a priority. Manufacturing is often sub-contracted out, often to Companies within the Chemical Sector. West Yorkshire has a few well established, mature Bioscience Companies.

The sector is dominated by a number of, highly focussed, very talented, highly trained, individuals. The key issue is the Protection of Intellectual Property, in deed recognising what it is and how to achieve it. As the industry develops, there is a need to supplement these skills with business-based skills. The predicted rapid growth of the sector, requiring increased levels of personnel, will force companies to evaluate the skill base they will require and the training requirements across the board. HR will be an immediate need as they expand and cohesive, coordinated training programmes will be become necessary to ensure the continued success of the business.

The Higher Education Institutions will need to adapt to produce graduates and post graduates with skills and knowledge across a number of disciplines as well as reflecting the needs of industry more closely.

The Bioscience sector which is made up of a number of very small spin-out companies presents a clear challenge which is to 'gain access' and convince the bioscience companies of the need to prepare for expansion of their businesses; to invest time and resource in acquiring the required skills to maximise their evident potential.

# 1. INTRODUCTION

An overview of the 'Skills Broker' remit and the method used to conduct this study

## 1 INTRODUCTION

CIRCE has a contract with the Learning & Skills Council, West Yorkshire to deliver a Skills Brokerage Service to the Chemical & Bioscience cluster in the sub region.

The Skills Broker will make a positive difference to the companies it works with by working with them on identifying skills needs and subsequently funding their suitable training activities at up to 70% funding. In order to ensure that the Skills Broker is focusing its effort in the right areas it is important to review the sectors training and skills needs, this is the purpose of this Research Report.

In conducting this review we have undertaken the following process:

- i) An analysis of existing studies into the skills and training needs of the Chemicals and Bioscience clusters, including sub-regional, regional and National studies.
- ii) We have drawn out and taken account of the views and issues expressed by a number of relevant Sector organisations, such as; COGENT, BBSRC, CIRCE and others.
- iii) Finally, we have visited and spoken directly with companies in our sub region to investigate first hand their skills wishes, issues and concerns.

The range of skills to be delivered by this brokerage service will predominantly focus on the following areas:

- Management & Leadership Skills
- Strategic Management
- Creativity
- Entrepreneurship
- Graduate Absorption and Retention

In addition there will be a range of Sector Specific Training programmes provided, as defined by sector companies.

This research paper takes on board industry's perspective and reviews a range of national & regional research programmes undertaken over the last 6 years into the skills needs of Chemical & Bioscience companies. The outputs of this review have then been discussed with representatives of sector businesses in the sub region to identify the priority Skills Needs over the next two years.

## **2. LITERATURE REVIEW**

An analysis of research reports and studies into the skills and training needs of the Chemicals and Bioscience clusters, including sub-regional, regional and National studies.

## 2. LITERATURE REVIEW

The desk research has focussed on a number of key Research Documents detailed in Appendix 1.

In addition, we have reviewed all relevant outputs regarding Skills Needs in the two Business Sectors produced by the Chemical Industry Association, National Sector Skills Councils and the Chemical and Bioscience Cluster Networks established in the Yorkshire & Humber Region.

### 2.1 A Study into the Training Needs of Chemical Companies in the Humber Sub Region by Humber Chemical Focus

- (i) The future direction of many companies will be towards technically more demanding plants, with the need for greater technical skills and personnel who can operate at higher levels of personal competence in problem diagnosis and solving, and working in flexible team-working environments.
- (ii) Shortages of process operators were not seen as a key issue in 1998, however there was a recognition of an ageing workforce that would require addressing in the medium term.
- (iii) Skill shortages were identified in recruiting Professional Staff, particularly chemical engineers, instrument/control technicians and IT staff.
- (iv) Most companies in the study took training seriously and have an appropriate training infrastructure however most did not have a clear Strategic Approach to Training which addressed medium term and management development issues.
- (v) Training of Staff in Personal Skills, problem solving and team working, whilst recognised by companies, is not reflected in the current training courses.

### 2.2 Cluster Mapping of the Chemicals Sector in the Yorkshire & Humber Region by the DTI.

- (i) Industry Drivers were seen as predominantly global cost competition, the need to drive down unit costs through increased efficiencies and the development of new products and markets using existing core skills and capabilities.
- (ii) Key challenges facing the industry focussed on Safety, Health & Environment Issues and the cost of compliance. The shortages of Technician and Engineering Skills were identified as exacerbating these challenges.

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- (iii) Links with Higher Education Institutions (HEI) were identified as relatively weak, particularly between Senior Management and Academia, resulting in lower levels of collaboration on product development and graduate recruitment.
- (iv) Staff availability and short term operational skills levels were identified as being effectively dealt with but medium term training and skills issues were highlighted, in particular;
  - Technological developments in both manufacturing processes and general business e.g. information technology and e-business, requiring existing staff to upgrade their skill base.
  - The increasing emphasis on development of export trade, with associated need to evaluate and exploit foreign markets either directly or through intermediaries.
- (v) Staff availability and skills were more strongly highlighted as an issue by small and medium sized firms, in particular they highlighted skill shortages in the area of General Management; Sales and marketing; Process Engineering; Research and Development.

### 2.3 Yorkshire & Humber Bioscience Cluster Mapping for Yorkshire Forward by Angle Technology.

- (i) Core bioscience companies (circa. 34 in region) are rapidly expanding with predictions of a 5year expansion of 1000 posts (average of 30 per company). Although often these posts will be technologically highly skilled, core business skills such as Team working, Creativity and Marketing Skills will be required to maximise the benefits of these staff to the overall business performance.
- (ii) Non core Bioscience Companies, e.g. users of biomaterials, suppliers of intermediaries to Bioscience companies and service providers using bioscience techniques have more similar needs in the skills area to core Chemical Sector companies.
- (iii) Traditionally, the Bioscience sector in Yorkshire is sourcing its skilled staff from within the region, often based on existing academic links. However if the cluster is to be successful, these companies will need to source future skills from other regions where more mature entrepreneurial bioscience communities exist. This will require the development of more advanced selection and personal skills by the existing company managers.

2.4 The Value and Competitiveness of the UK Chemical Industry by the Chemicals Innovation & Growth Team established by the DTI.

- (i) The UK Chemical Industry is moving from one based on Commodity Chemicals (i.e. those sold on specification and price) to one based on Speciality Chemicals (i.e. those sold on the basis of performance). This trend will have an impact on the skill needs of the companies.
- (ii) The public and “City” perception of the Chemical Industry is relatively low. The challenge for senior managers in the industry is to recognise this and develop the strategic skills and partnerships with other industry stakeholders to address these issues. This will ensure future high quality entrants and easier access to financial resources.
- (iii) Innovation is essential to the future success of the Chemicals Industry. Over the last few years, cost control and regulatory pressures have resulted in reduced level of product innovation and R&D spending. Senior managers need to adopt new strategic programmes to encourage entrepreneurship and team led creativity from all levels of their staff to address this weakness.
- (iv) The Chemical industry needs a workforce which has the right skills at the right levels. The industry is facing five key challenges:
  - Ensuring its workforce has the right skills sets for the future
  - Filling its skills gaps and upskilling to world class
  - Its increasingly ageing workforce
  - Fewer people studying Chemistry and Chemical Engineering
  - Recognising the need to recruit a more diverse workforce.
- (v) As a result of this report, the Chemistry Leadership Council has been established with two primary networks addressing Innovation and Skills

2.5 Bioscience 2015 – Report by the Bioscience Innovation & Growth Team for the DTI.

- (i) Develop and retain a high quality scientific and managerial talent base – specifically develop a pool of professional managers at both science and business in recognition that the crossover between science and business education and training has traditionally been very weak.
- (ii) Extend the provision of business exposure opportunities amongst science and engineering students e.g. Biotechnology Young Entrepreneurs Scheme.
- (iii) Encourage the development of relevant skills training through SEMTA, the Science, Engineering and Technology Sector Skills Council.

2.6 Skills for the 21<sup>st</sup> Century Chemicals Industry – A report by the Skills Network Group of the Chemistry Leadership Council

- (i) The industry is focussed on investing in capital and technology rather than in people. It needs to take a longer-term strategic look at training (as opposed to meeting short term goals) adopted and driven by managers at all levels in the company.
- (ii) The industry has significant skills gaps at both plant operator and graduate levels. It is likely that over the medium term, the industry will need fewer but more highly skilled and technology literate employees who will be expected to operate more flexibly and across existing skills boundaries.
- (iii) Upskilling the Chemicals industry workforce to NVQ Level 3 is a major challenge to the industry.
- (iv) There is need for a more strategic approach to Innovation in the industry, developing processes to identify future science, technology and management needs and how to develop programmes to develop these.
- (v) Human resources are traditionally seen as a cost rather than a source of value by senior managers. This is a cultural issue that requires addressing.
- (vi) The industry must create a culture that encourages its recruits to be creative and challenge the status quo. This culture change must be fully integrated with skills development programmes that address regulatory issues, ensuring that “thinking outside the box” is encouraged when addressing traditional issues.
- (vii) Small and medium sized companies in particular, which face difficulty in releasing staff, require skills programmes to be delivered whenever possible in the workplace which they see as the centre of education and learning.
- (viii) Companies have identified skills gaps predominantly at management and supervisory levels in the following areas:
  - Leaders
  - High quality supervisors
  - Managers with multidisciplinary and interdisciplinary skills
  - Supply chain and continuous improvement managers
  - Core technical support skills
  - Sub contractor management skills
  - Marketing skills
  - IT skills
  - Innovators

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- (ix) In addition to these specific skill areas, the industry has identified a range of generic skills that should be addressed within more traditional training programmes:
- Good communication
  - Team working
  - Problem solving and forward thinking
  - Organisers and planners
  - Sustainable development competencies
  - The ability to take initiative and responsibility
  - An understanding of the regulatory environment and risk assessment.
- (x) Graduate & Postgraduate Recruitment – Whilst the Chemical Industry is still able to recruit high calibre individuals from the UK, this may not be sustainable if numbers studying relevant disciplines continue to decline. The industry needs new skills to collaborate more effectively with academia, ensuring course content is relevant to need and providing industry based learning opportunities.
- (xi) The widening of university access means that young people who might historically have taken a vocational route are increasingly moving towards more academic courses. There is a need to consider alternative routes to attract young people into technical and process roles by looking for ways to break down the barriers between graduate and vocational qualifications.

### **3. ACTIVITY BY OTHER SECTOR STAKEHOLDERS AND NETWORKS**

Included in this section are activities and views of relevant chemical & bioscience sector bodies who have not been included in the Literature Research Analysis (Section 2).

### 3 ACTIVITY BY OTHER SECTOR STAKEHOLDERS AND NETWORKS

COGENT, the National Sector Skills Council for the Chemicals, Oil and Gas Extraction, Petroleum and Polymer Industries, is taking the lead on sector skills development. It is currently developing a chemical training "gold standard" as a result of recommendations in the "Skills for the 21<sup>st</sup> Century Chemicals Industry" report in July 2004.

Through its "Evolvonline" Elearning portal, it provides learning resources & materials on a range of courses (mainly vocational) currently available to the industry.

COGENT has recognised the importance of management and leadership and multi functional skills as part of the development of the "gold standard". However, it is likely to be a number of years before this strategy is fully implemented.

SEMTA, the Science, Engineering and Manufacturing Technologies Sector Skills Council established a Bioscience Sub Group at the end of 2003 which is developing a skills strategy for the sub-sector. This is not due to be published until 2005.

BBSRC – The Biotechnology and Biological Sciences Research Council has developed a Bioscience Exploitation Guide which provides practical advice for researchers considering commercialising their research.

Yorkshire Forward Cluster development for the Chemical & Bioscience sectors has identified skills development as a key issue for the future success of the sectors.

In the Chemical Sector they highlight both sector specific skills to address regulatory issues and Creativity and Team working skills to support business growth together with encouraging better links between the industry and academia.

In the Bioscience sector, they focus on the development of Business Skills, in particularly financial and business planning skills which they are addressing through programmes such as CONNECT and Business Mentoring schemes in conjunction with the Business Community.

CIRCE, (the Chemical Industries Regional Centre of Excellence) based in West Yorkshire has been providing a range of skills programmes for the chemical industry over the last 5 years. Initially these were traditional responsive programmes to current activity in the industry, often with a regulatory driver. Over recent years these programmes have evolved in response to company demand to address more business related issues such as creativity and entrepreneurship and the creation of business network programmes where companies can learn directly from other companies, for example, the 'Chemtrepreneur Programme'.

Academia in the region are looking to increase their links to the industry, the establishment of the Centres of Industrial Collaboration (5 with Chemistry & Bioscience foci) will help raise awareness of what assistance is available from regional centres.

## **4. COMPANY FEEDBACK REVIEW**

To bring the research up-to-date and to add value to work previously undertaken, CIRCE has independently contacted companies to extract intelligence on current issues and skills needs. The approach taken in this review involved a broad view of the company's business and how skills requirements fitted with top-line business objectives.  
*(Appendix 3 provides a confidential précis of selected elements)*

#### 4 COMPANY FEEDBACK REVIEW

The issues highlighted in the reports summarised in section 2.1 to 2.6 have been discussed with a number of companies within the West Yorkshire Sub Region to ascertain their views, define their priorities and gain their input for the type of training to be offered by CIRCE the 'Skills Broker'.

(i) Companies Contacted:

- Syngenta
- Avecia
- Nektar
- Arch Chemicals
- C6 Solutions
- AH Marks
- Vickers Laboratories
- Retech
- pH Europe Ltd
- Eurotek
- Kalon
- Albion Chemicals
- Tate & Lyle Citric Acid

- (ii) There is a general consensus from the companies contacted that the key short term skills related issue for the Chemical Industry is to ensure they and their staff can effectively meet all the regulatory issues currently being faced by the industry in the areas of Health, Safety and Environmental issues.
- (iii) At the same time, businesses recognise that compliance linked to aggressive Cost Controls will not alone provide a long term solution to the future growth and success of their companies. They need to encourage innovation and creativity from all their staff to develop new products and markets.
- (iv) Representatives from the larger companies also highlighted how consolidation in the industry has led to satellite sites with no formal HR Infrastructure. Line managers, at all levels, are taking on the HR responsibility with little or no formal training.
- (v) All companies contacted recognised the increasing multi functional role of their staff from operator to senior manager level and felt some form of skills development programme which encourages more teamwork across functions and seniority levels would be valuable.
- (vi) The traditional delivery method of delivering skills off site using day release and short course formats were seen as increasingly difficult to adopt as essential cost control measures have led to working practices and manning levels that preclude staff being available for this type of

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course. Companies were keen to investigate in-house modular skills provision with CIRCE to address this issue.

Bioscience companies have indicated that the most pressing short term skills needs are business planning and financial awareness to enable them to access financial instruments (i.e. Venture Capital) to fund product and process development. Business mentoring programmes are currently being developed to address these skills gaps together with links to the CONNECT network in Yorkshire for funding issues.

The main points arising from this review are as follows:

- Responding to short-term skills issues relating to HS&E Regulation and Changes in Working Practice as a result of Cost Control programmes has been the main focus of companies in the Chemical Sector over the last few years. This will continue to be important in the future and any new programmes under development should recognise that this should be one of their components.
- The companies contacted appreciate that the short-term focus on training, forced by compliance, is not on its own enough of an investment in skills if they are to be successful businesses in the medium to long term.
- Whilst there remains a need for short-term skill development programmes, they need to include more “business issues” skills development.
- Companies are reporting difficulty in responding to traditional formats of skill development programmes requiring off site activity and would like for the future more focus on on-site learning programmes.
- Up-skilling their staff to NVQ 3 level as a minimum is becoming a priority with the increasing complexity and multi functional role requirements of their personnel.
- Developing holistic “business focussed” programmes which include all grades and functions of staff is increasingly being recognised as the best way to increase Creativity and Entrepreneurship within their companies, ensuring they have the right products, cost structures and markets for the future growth of their business.

## **5. RESEARCH FINDINGS**

An analysis and bringing together of the information and intelligence gathered through Literature research and company interviews

## 5 RESEARCH FINDINGS

### 5.1 Chemical Sector

***“The Chemicals Industry must ensure that its people and skills investment moves towards the top of its agenda if it is to achieve its objective of long-term sustainable development and profitable growth. ----- There is a need for a major culture change within Chemicals companies on how they value capital in all its forms – and in particular human capital – and their approach to training and up-skilling.”***

***“Innovation and training are not separate entities. Innovators cannot be world class without having world-class skills and training. A workforce with broad based world class skills is an essential element of competitiveness.”***

**Source: Skills for the 21<sup>st</sup> Century Chemicals Industry Report by the Skills Network Group of the Chemistry Leadership Council.**

- Future direction of many companies will be towards technically more demanding plants with the need for greater technical skills and multi-functional understanding of staff.
- The UK Chemical Industry is moving from one based on Commodity Chemicals to Speciality Chemicals. This trend will have a significant impact on skill needs.
- Innovation is essential for the future success of the industry. Senior managers need to adopt new strategic programmes to encourage entrepreneurship and creativity amongst all levels of staff.
- Up-skilling the industry workforce to NVQ level 3 is a major challenge.
- The industry must create a culture that encourages its recruits to be creative and challenge the status quo.
- Companies face difficulty in releasing staff, they require skills programmes to be delivered in the workplace.
- Companies have identified a range of skills gaps predominantly at management and supervisory levels, related to business issues. However, in practice the majority of skills resources are still being focussed on technical & compliance issues.
- The industry needs new skills to collaborate more effectively with Academia both for Product & Process development and future staff recruitment.
- There is a need to consider new routes to attract young people by looking for ways to break down barriers between graduate and vocational qualifications.
- COGENT, the Sector Skills Council, recognises the importance of management and leadership and multi functional skills as part of the development of its “gold standard”. However, it is likely to be number of years before this strategy is fully implemented and available to West Yorkshire Companies.

## 5.2 Bioscience Sector

- Rapid expansion of the workforce in these companies will require predominantly “business based” skills development, particularly team-working and marketing skills.
- Up-skilling in the areas of HR and selection techniques will be required to encourage new staff entrants in the future.
- IP Management and Exploitation skills require continuous development as IP is often at the heart of Bioscience companies.
- Technical managers in Bioscience companies should be encouraged to undertake Business Based skills development programmes.
- There is recognition of these skills needs at National level by the DTI and the Sector Skills Council, however the proposed development programme is unlikely to deliver positive outputs to businesses within the next 2 years.

## 6. CONCLUSION

## CONCLUSION

The Chemical and Bioscience sectors are quite different in many respects; employment levels, added value and not least the maturity of their industries. In terms of industry maturity; chemicals is more typical of a sunset industry and bioscience a typical sunrise industry. Naturally, there are many exceptions in both sectors. The bioscience sector has a number of mature businesses in this region. The chemicals industry also has a number of innovative, niche market, progressive companies producing high value products. Many of the skills issues for the two sectors are the same.

The Chemicals Sector is a mature Manufacturing Based sector operating in a global market place and under a strong regulatory framework within the UK.

The Bioscience sector in West Yorkshire is an emerging sector where many of the companies are still in the early product and market development phase, a stage when developing and securing Intellectual Property is a priority. Manufacturing is often sub contracted to other companies; quite often these sub-contractors are in the Chemical Sector. The sub-region also has a small number of well-established mature Bioscience companies.

Over the last decade, Regulatory and Compliance issues related to Health, Safety and the Environment (HSE) have dominated budgets for training and skills in the Chemical Industry. The continual change in legislation results in HSE training requirements to be consistently high and so forces a disproportionate share of training budgets to be focused upon HSE requirements. Opportunities for skills development in other areas are regularly missed and this is likely to continue to be the case in the near term. The second priority for Chemical Companies has been up-skilling operative staff as part of their Cost Control and Capital Investment agendas, increasing multifunctional working. In many companies, these two activities have absorbed all the available training resources within the business.

The Chemical Industry is now recognising that they face challenges in areas of product & process development, innovation and entrepreneurship and marketing and sales for which the appropriate skills have not been fully developed. Traditionally this was resolved through a steady stream of experienced well trained Operatives and staff who became available from a few large Companies, the number of which used to almost equal the requirement across the sub-region and the cluster. However, the numbers of such qualified employees have dried up over the past five years due to consolidation of the Industry coupled with increasing costs of compliance. Together these factors have resulted in training departments disappearing and HR functions being devolved down to line managers, and in some cases training budgets being severely cut or disappearing altogether. Consequently, Companies who have previously been the beneficiaries of this pool of well trained Operatives and staff, now find themselves having to allocate funds for training with this requirement competing against the high cost of Compliance training within the sector.

The industry has struggled to attract the most able young talent over the past decade; science is competing against a very broad range of courses that can be studied at University. Additionally the sector suffers from the image of being mature, and limited in both opportunities and potential for career progression. The

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unfortunate result for our sector is a reduction in both quantity and quality of new entrants from the university sector.

These challenges require an innovative approach to training and skills, innovative in regard to both training development and delivery for businesses. Regulatory and Compliance issues will continue to dominate, because of the HSE/Compliance imperative and we need to be empathetic to the sectors position. Companies need to believe that money spent on training in non-compliance areas is an investment which will result in bottom-line improvement.

Skills needs should focus on team working at all levels and functions of a company, developing a broad business based approach to training encouraging the flow of ideas and challenging of the status quo.

At the same time, links with Academia need to be strengthened, using the skills agenda to encourage more participation of both business staff and potential graduate entrants to address industry challenges and break down barriers between graduate and vocational qualifications. Various initiatives such as; Children Challenging Industry and the Research Fellows funded by Yorkshire Forward are attempting to address some of these issues, but Universities also need to recognise the need for change towards more multi-disciplined degrees, joint honours degrees and a general broad foundation science first year. Academic institutions need to work more closely with Industry to develop courses that produce students with the right type of Science/Technology skills to meet the industry's current and future needs.

The Bioscience Sector has a predominance of highly skilled, talented individuals with a strong academic background. It is not unusual to see spin-off companies arising from University departments and a key skill issue for many bioscience companies is the protection of Intellectual Property. As the industry develops, there is a need to supplement these skills with business-based skills both to encourage continued financial investment and to develop markets for the products. The rapid growth of the sector will result in high rates of increase in staff levels in the companies. The development of HR and selection skills will be necessary to ensure continuing success. As bioscience companies expand and start to plan in-house manufacturing, they will need to evaluate their required skill base; this will include setting educational requirements for recruitment, and looking at progressive & comprehensive training programmes to meet the needs of their challenging environment.

## APPENDIX 1

### LITERATURE REVIEW

The following reports have been identified as addressing the Skills Issues in the Chemicals and Bioscience Sectors and have been used to inform this research study

- 1 *A Study into the Training Needs of Chemical Companies in the Humber Sub Region, July 1998 – Sponsor - The Humber Chemical Focus, Author PPD Technical Ltd.*
- 2 *Cluster Mapping of the Chemicals Sector in the Yorkshire & Humber Region, November 2001 – Sponsor – DTI, Author – Enviros.*
- 3 *Yorkshire & Humber Bioscience Cluster Mapping, January 2002 Sponsor - Yorkshire Forward, Author - Angle Technology Ltd.*
- 4 *The Value and Competitiveness of the UK Chemical Industry, December 2002 Sponsor - Chemicals Innovation & Growth Team established by the DTI.*
- 5 *Bioscience 2015, November 2003– Report by the Bioscience Innovation & Growth Team established by the DTI.*
- 6 *Skills for the 21<sup>st</sup> Century Chemicals Industry, July 2004 – Report by the Chemistry Leadership Council, Skills Network Group.*

## APPENDIX 2

### SECTOR STAKEHOLDER INFORMATION

#### Chemicals

- 1 Chemical Industry Association (CIA) [www.cia.org.uk](http://www.cia.org.uk)
- 2 COGENT Chemical Industry National Skills Council [www.cogent-ssc.com](http://www.cogent-ssc.com)
- 3 Yorkshire Forward Chemical Cluster [www.chemicals-yorkshire.com](http://www.chemicals-yorkshire.com)
- 4 Chemical Industries Regional Centre of Excellence (CIRCE) [www.circe.co.uk](http://www.circe.co.uk)

#### Bioscience

- 1 SEMTA (Science, Engineering & Technology) National Skills Council  
[www.SEMTA.org.uk](http://www.SEMTA.org.uk)
- 2 The Biotechnology and Biological Sciences Research Council (BBSRC)  
[www.bbsrc.ac.uk](http://www.bbsrc.ac.uk)
- 3 BBSRC Bioscience Exploitation Guide  
[http://www.bbsrc.ac.uk/biobusiness\\_guide/Welcome.html](http://www.bbsrc.ac.uk/biobusiness_guide/Welcome.html)
- 4 Bioscience Yorkshire Network [www.bioscience-yorkshire.com](http://www.bioscience-yorkshire.com)