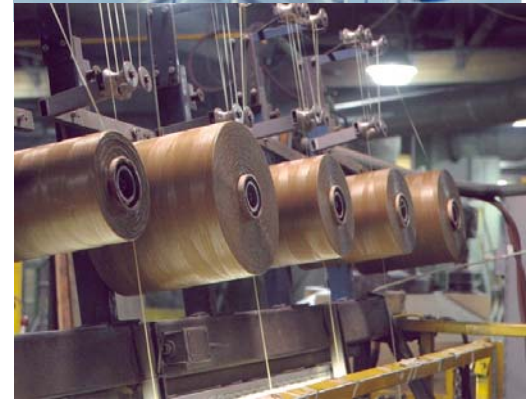


Department of the Environment
Environment & Heritage Service

An Analysis of
Business Sectors
Producing,
Marketing or Using
Chemicals in
Northern Ireland

Final Report

December 2006



PRICEWATERHOUSECOOPERS 

Contents

Section	Page
Executive Summary.....	1
1 Introduction.....	3
2 Methodology.....	5
3 Review of Legislation	9
4 Business Sector Analysis and Prioritisation	11
4.1 Introduction	11
4.2 Business Sector Impact Analysis.....	11
4.3 Sector Analysis for Northern Ireland.....	21
4.4 Geographical Information System (GIS) Mapping.....	28
4.5 Northern Ireland Sector Analysis – Worked Examples.....	30
4.6 Sector Analysis – Prioritisation of future effort.....	35
4.7 Sector Analysis – Summary.....	39
5 Database Development.....	41
6 Conclusions and Recommendations.....	43
7 Next Steps.....	49
Appendix A - Acronyms and Abbreviations.....	50
Appendix B - Methodology/Approach.....	51
Appendix C - Lists of current legislation reviewed	52
Appendix D - Lists of future legislation/high concern lists reviewed.....	54
Appendix E - Information sources/references	55
Appendix F - Chemical Use Information Sources	56
Appendix G - Linking Use information to US SIC codes	57
Appendix H - Review of Current Legislation – Detail	58
Appendix I - Review of Pending/Future Legislation – Detail	61
Appendix J - Review of Legislation – Description of Terms/Chemical Families	65
Appendix K - US SIC codes listings – 2 and 3 digit	67
Appendix L - Business Sector Impact Analysis - detailed findings by sector and SIC code.....	72
Appendix M - SIC code identification frequency by 2-digit SIC code.....	74
Appendix N - Number of companies by 2,3 and 4 - digit SIC code.....	75
Appendix O - Company Postcode, Employee and Revenue Information Attainment by 2-digit SIC code	77
Appendix P - Company and Employee analysis by 2-digit SIC code.....	78
Appendix Q - Prioritisation by Sector – Model Outputs.....	79
Appendix R - Company and employee analysis by 4-digit SIC code for Chemicals and Allied products..	80
Appendix S - Sectors selected for GIS mapping.....	81
Appendix T - Example of database report - Companies by Postcode – BT10.....	83
Appendix U - Trade organisations identified for future activity co-ordination	84
Appendix V - Further Investigations – A proposed approach.....	86

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Executive Summary

Aims and Approach

The Environment and Heritage Service (EHS) takes the lead in advising on, and in implementing, the Government's environmental policy and legislation in Northern Ireland. In line with its objectives and in relation to the current and future implications of regulation, the EHS is currently developing its approach to chemicals regulation for Northern Ireland.

During the course of this project, it was announced that Health and Safety Executive (HSE) and their counterpart, HSENI, will be taking the role of UK Competent Authority for EU Chemicals Regulations for the Registration, Evaluation and Authorisation of Chemicals (REACH). EHS anticipates a supporting role in delivering some of the responsibilities for this legislation. The Environmental Policy Division within DOE will continue as the policy lead on chemicals in relation to the environment.

In order to develop a robust approach, the EHS identified the need to establish priorities for chemicals of concern, in a Northern Ireland context, due to their potential impact on the environment. To inform this, the EHS let a contract with PricewaterhouseCoopers LLP, to complete a baseline project to identify relevant business sectors which may be producing, marketing or using chemicals in Northern Ireland.

The overall aims of the project were to review chemicals of concern, develop a database of substances and undertake a sector analysis of business in Northern Ireland that will assist prioritisation of chemicals and the development of the EHS approach to chemicals regulation.

The approach used to complete this work included:

- Desktop review of current and future regulation;
- Business sector impact analysis;
- Sector analysis in Northern Ireland; and
- Database design, build and test.

Findings/Conclusions

In concluding the work, individual findings have been assigned to key themes identified during the analysis, namely impact of future regulation, sector diversity and sector prioritisation.

Impact of Future Regulation

Reviews of legislation resulted in the listing of over 1500 individual chemicals linked to 48 current items, and 18 future items, of legislation. Our analysis has concluded that current controls impact a large number of business sectors, and pending, or future regulation was identified as having impacts on a broad range of high level business sectors rather than just the chemical producer. The REACH legislation to be implemented across EU member countries in 2007 is a prime example.

The work also highlighted the need for the REACH legislation given that this project identified significant gaps on existing chemical databases. Only 50% of the substances searched on key sources had information on chemicals use and hazard exposure.

Sector Diversity

Over 100 individual sectors and sub sectors were identified as using chemicals in Northern Ireland. Chemicals were potentially being used throughout the value chain in many business sectors from primary material producers right through to retail users. This not only included the traditional sectors one would expect to use chemicals such as chemicals and allied products, and diverse but important sectors in a Northern Ireland context such as aircraft parts, ship repair, jewellery, refrigeration equipment, dry cleaning and dentistry.

Due to the constraints of the methodology used, several sectors were excluded from the analysis including petrol stations, dispensing chemists and also public services e.g. water supply.

Although Northern Ireland has a relatively small chemical manufacturing sector, chemicals may, nevertheless, be an issue for regulation across many other diverse sectors. The analysis revealed that 90% of the individual businesses across all sectors potentially using chemicals were Small and Medium-Sized Enterprises (SMEs) with less than 50 employees. Such findings will assist in developing the most effective approach for regulating chemicals in these sectors.

Sector Priorities

In the analysis completed, various sectors identified as having a high potential for using chemicals also had significant numbers of employees and businesses. It is these sectors that should inform the key priorities set as part of the future EHS approach to chemicals regulation. A prioritisation model was developed to highlight these sectors and which provides a mechanism to help focus future activity and further investigations.

The Chemicals and Allied products sector was identified as the top priority by number of businesses and potential number of chemicals used, even though, in relative terms to other sectors, it was not the largest by employee numbers. Pharmaceutical preparations was identified as a priority because it was the dominant sub sector within Chemicals and Allied Products by number of businesses and employees. Priority 2 sectors identified included: Stone, Clay and Glass products; Primary Metal Industries; Electronic and other Electrical Equipment; Nurseries, Lawn and Garden Supplies; Food and Kindred Products; Textile Mill Products; and Lumber and Wood Products.

Database and GIS Mapping

The database captured all of the information gathered as part of the reviews of legislation and the business sector analysis, including GIS (Global Information System) maps of individual sectors. The database includes details on over 1500 chemicals linked to 66 items of regulation. It also captures company information details on over 2700 individual companies across 100 sectors and sub-sectors, presenting 30 GIS maps of selected business sectors.

A separate User Guide for the database has been developed providing simple step by step instruction on database navigation. The Microsoft Access database developed has provided a live data storage and business intelligence solution. Crucially, it has the capability to be developed further and evolve into an effective information centre and management tool.

Study Limitations

This project has identified priorities based on business sectors potentially using the chemicals listed from the reviews of regulation. From this project, it is not possible to draw underpinned conclusions about the extent of actual use of chemicals in Northern Ireland and the risks that these chemicals pose. This can only be done following informed primary research where the type and volume of chemicals produced or used is obtained from various businesses within individual sectors.

Recommendations and Next Steps

Recommendations are presented regarding communication, application of the methodology, and further investigations as follows:

- Communication of developments in future chemicals regulation, including REACH, will be within the remit of a number of agencies. The findings for this study may be used to facilitate communication of Northern Ireland priorities with these agencies and key stakeholders;
- The methodology used for the project, and the database, are both tools that can be used to support future roles in chemicals regulation, and may also be considered for their applicability to other regulatory regimes in EHS; and
- Further investigations could be undertaken to identify what chemicals are being produced and used in Northern Ireland, and in what volumes, in a prioritised way.

A next step is to consider the set up of a database management team. This should enable EHS to get the best value from the existing tool and assist effective management of future database development.

1 Introduction

1.1 Background - Current and Future Implications of Chemicals Regulation

Chemicals and the everyday materials and products derived from them, bring major benefits to the lives of people globally. Products of the chemical industry are the basis for almost every manufacturing activity across the majority of business sectors. They are to be found in the making of paints, medicines, fertilisers, pesticides, herbicides, water treatment materials, colouring agents, man-made fabrics, detergents, disinfectants, polishes, cosmetics and toiletries.

At present, there are 48 regulatory texts associated with the control of chemicals in Northern Ireland, ranging from hazardous waste to drinking water quality regulations. Traditionally environmental regulation has mainly focused on the direct environmental, health and safety impacts associated with operations producing and handling chemical goods rather than on the products themselves.

Over the past 10 to 15 years, however, there has been a step change in this focus with greater interest (supported by European Union regulation) on the impact of products on the environment with producers becoming responsible for products throughout their life cycle.

In the past 5 years a series of European Union directives and regulations have been implemented or are proposed which are aimed at making producers responsible for products. These regulations will not only physically change how items are made but also drive and stimulate change in product design, product disposal and recycling.

A key item of legislation, currently pending implementation, is the **European Union Chemicals Strategy or REACH** (Registration, Evaluation and Authorisation of Chemicals) legislation. This legislation has captured government, industry and media attention significantly over the last few months. REACH regulation has been in development for approximately 8 years and applies to chemicals which predate key legislation implemented in the European Union in 1981. REACH is required as the large majority (greater than 90%) of the 100,000 chemical substances on the market in the European Union are not captured by the 1981 legislation.

REACH will require registration, in a central database, of chemical substances manufactured or imported into member states in quantities of over one tonne per year. It is estimated that around 30,000 of the 100,000 chemicals on the market in the European Union will be covered by the legislation.

As with current legislation, REACH will impact on a wide range of sectors. Over the last 10 years, new notifications of chemical substances in the European Union under current legislation have included inputs from the following sectors: chemicals, textile, pulp/paper, photographic, personal/domestic, electronic, paints/varnishes and mineral oil/fuel. Under the current timetable for REACH, it will become law in 2007.

It is with this backdrop of impending change that responsible bodies within Government across many European countries are re-assessing their own strategies for regulating chemicals as legislation continually changes and evolves.

During the course of this project, it was announced that Health and Safety Executive (HSE) and their counterpart, HSENI, will be taking the role of UK Competent Authority for EU Chemicals Regulations (REACH). EHS anticipates a supporting role in delivering some of the responsibilities for chemicals regulation. DOE Policy Division will continue as the policy lead on chemicals in relation to the environment.

1.2 Environment and Heritage Service - Approach to chemicals regulation

The Environment and Heritage Service (EHS) takes the lead in advising on, and in implementing, the Government's environmental policy and legislation in Northern Ireland. The Agency carries out a range of activities, which promote the Government's key themes of sustainable development, biodiversity and climate change.

The overall aims of the EHS are to protect and conserve Northern Ireland's natural heritage and built environment, to control and regulate pollution and promote the wider appreciation of the environment and best environmental practices. In line with its objectives and in relation to the current and future implications of chemicals regulation mentioned above, the EHS is currently developing its approach to chemicals regulation in Northern Ireland.

In order to develop a robust approach to chemicals, the EHS identified the need to establish priorities for chemicals of concern, in a Northern Ireland context, due to their potential impact on the environment. To inform this, the EHS, let a contract with PricewaterhouseCoopers LLP, to complete a baseline project to identify relevant business sectors which may be producing, marketing or using chemicals of concern in Northern Ireland.

1.3 Aims and Objectives

The overall aim of the project was to review chemicals of concern, develop a database of substances and undertake a sector analysis of business in Northern Ireland that will assist prioritisation of chemicals.

Within this overall aim, there were six key objectives, as follows:

- Compile a definitive list of substances currently controlled by legislation;
- Compile a list of substances likely to be controlled in future, based on current priorities and information from DEFRA and Environment Agency, in discussion with EHS;
- Identify business sectors likely to produce market or use those substances compiled from the tasks above;
- Analyse the relative size and geographical distribution of these sectors in the context of Northern Ireland;
- Present the data compiled in the tasks above in a suitable database and where appropriate, in GIS (Geographical Information System) format; and
- Identify relevant trade associations and business groups to facilitate future communication with individual sectors.

1.4 Key Outputs

The assignment had the following agreed deliverables or outputs:

- A Microsoft Access database capturing lists of chemicals of concern and related regulatory, exposure and sector analysis including Geographical Information System mapping;
- A Final Report comprising four sections:
 - Final Report
 - Technical Summary Report
 - Database User Guide
 - Interim Report (submitted in June 2006)

The outputs of this project have been targeted for sharing not only with key stakeholders within the EHS who are involved in chemicals regulation but also at external stakeholders, in particular, other interested Government departments and Agencies such as HSE and HSENI.

1.5 Report Structure

This report has been divided into seven sections with additional appendices:

- Section Two summarises the methodology used during the project;
- Section Three reports on the review of legislation, both current and future;
- Section Four reports, in detail, on the sector analysis completed for Northern Ireland including worked examples for individual sectors and prioritisation of sectors for future focus;
- Section Five reports on the database developed, its functionality and capability;
- Section Six brings together the conclusions and recommendations from the work completed;
- Section Seven highlights the key next steps to take forward project outputs.

Throughout this report, various acronyms and abbreviations are used to reference, for example, information sources used as part of the analysis e.g. DEFRA. A list of acronyms or abbreviations used and their descriptions can be found in Appendix A.

2 Methodology

2.1 Summary

The five stage approach used to complete this work over the summer of 2006 is summarised below:

- Stage 1 Project initiation and scoping day;
- Stage 2 (i) Review of current and future regulation;
- Stage 2 (ii) Database design, build and test;
- Stage 3 Business sector impact analysis;
- Stage 4 Sector analysis in Northern Ireland; and
- Stage 5 Report

Appendix B (1 and 2) capture this high level approach diagrammatically, highlighting further detail on individual tasks, timings and the outputs from each of the task. Methods adopted for stages 2, 3 and 4 listed above, are highlighted below.

2.2 Review of Legislation

The review of legislation, both current and future, was required to capture baseline information on individual chemical substances, either controlled or to be controlled, by regulation. Once identified and prioritised, further review of individual chemicals and identification of their use in different industry sectors would underpin the later work on business sector analysis in Northern Ireland.

Desktop reviews of current legislation covered all available legislative texts, 48 in total, as listed in Appendix C of this report.

Desktop reviews of pending or future legislation and associated priority lists of chemicals of concern covered a total of 18 texts or lists as captured in Appendix D. This table combines the texts listed in the EHS Terms of Reference for the project and also, the prioritised lists of chemicals of concern as agreed at the Project Scoping day.

A comprehensive list of the information sources used as part of the reviews of legislation can be found in Appendix E. Section 3 of this report covers in more detail the work completed in the reviews of legislation and the key findings from it.

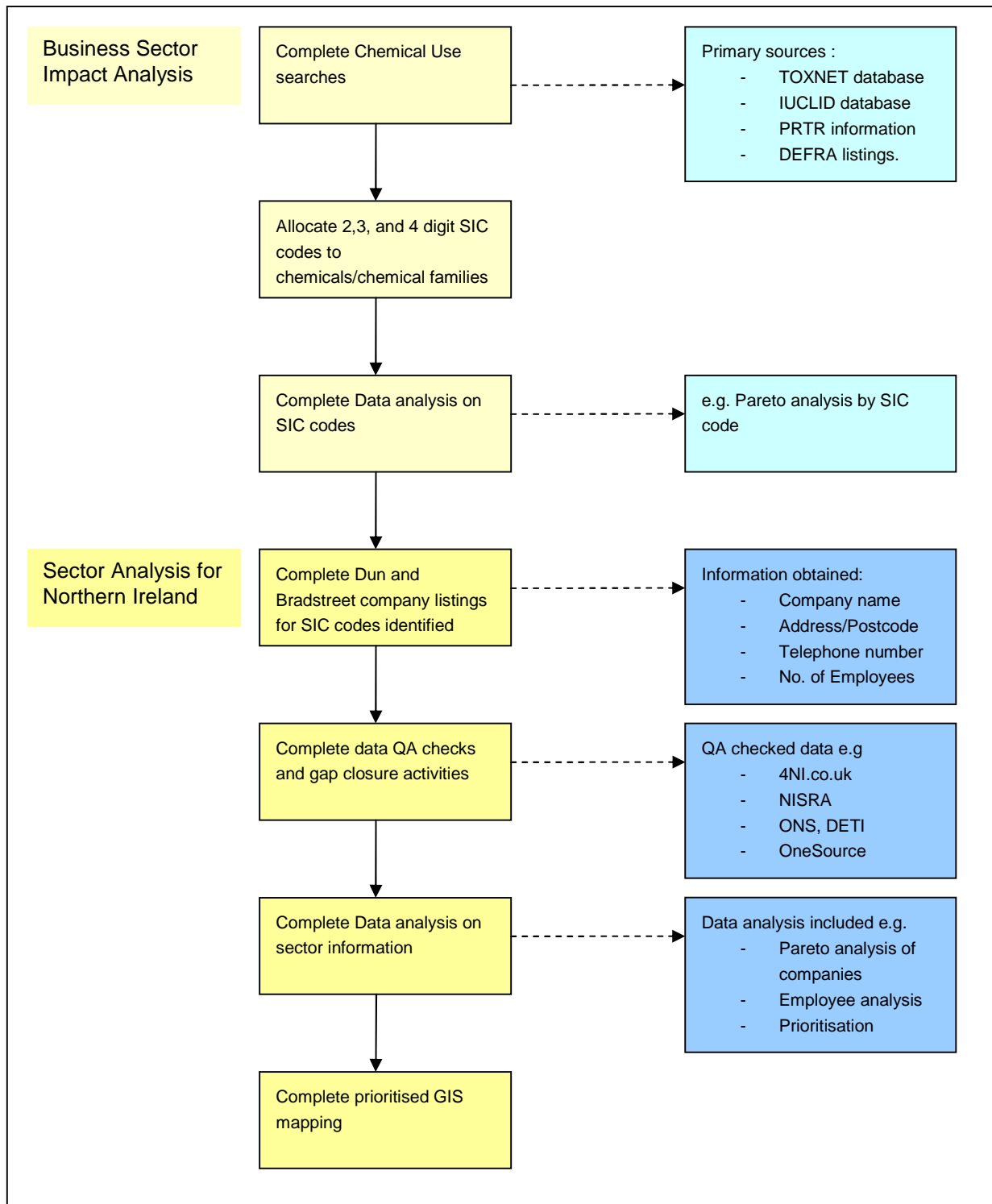
2.3 Business sector analysis and prioritisation

A key element of the project was to complete comprehensive analysis and prioritisation of the business sectors in Northern Ireland likely to either manufacture, market or use the priority chemicals identified in the reviews of legislation. The following steps summarise the high level approach taken in the sector analysis:

- Identification of uses of chemicals from various database searches;
- Allocation of SIC codes or sectors to chemicals based on the use information obtained and analysis of the sectors listed including the frequency of identification to highlight the likelihood of those sectors to be using controlled chemicals;
- Sector analysis through the gathering of company and employee information by sector in order to capture the relative size and geographical distribution of the sectors identified previously; and
- The final plotting of all the relevant sector information on one prioritisation model.

These tasks, stages 3 and 4 of the summary approach are summarised in the diagram below, Figure 2.1

Figure 2.1



Use of chemicals

Information was captured on priority chemicals using a minimum of four separate databases. These databases were selected based on recommended sources of information obtained through consultation with a number of organisations. To underpin these recommendations, a trial was completed in which use information for a series of chemicals was gathered across a number of sources.

Listed in Appendix F are examples of how chemical use information was gathered from the different databases across a trial number of substances. If no use information existed in the databases, web

searches were completed to identify uses. Appendix F also captures the contacts made and the recommended sources of information they advised.

Sector Identification

Business sectors were identified by linking use descriptions by chemical to sectors that may produce, market or use these chemicals through Standard Industrial Classification (SIC) codes. Examples of this are shown in the table in Appendix G.

United States SIC codes were used as the proposed database for gathering sector and related company information, the Dun and Bradstreet database, utilised US SIC code descriptions rather than UK SIC code descriptions. Further background on SIC codes is given in Section 4.2.3. Analysis completed in this section included:

- Capturing sectors identified as being impacted by both current and future legislation; and
- The highlighting of sectors most often identified as potentially using chemicals split by current and future legislation.

Sector Analysis

Data gathering on each sector was via the Dun and Bradstreet database. This captured information by individual company including company name, US SIC code, line of business, company address, telephone number and number of employees. Gaps in information such as postcode were addressed, for example, through web searches to ensure as much detailed information as possible was available for adding to the database and for completion of statistical analysis.

As indicated in Appendix B (3), robust quality checks on other company information related databases were completed to ensure data integrity.

Statistical and data analysis completed as part of this section included:

- Presentation of number of companies by sector;
- Presentation of number of employees by sector;
- Analysis of average number of employees per company by sector;
- Geographical Information System (GIS) plotting of selected sectors; and
- Worked examples on three sectors including use information examples, sector details and sector GIS maps

Further details on this part of the analysis are discussed in Sections 4.3, 4.4 and 4.5.

Prioritisation of the business sectors

In order to inform discussion and recommendations on sectors that should be focused on in terms of their likelihood to use chemicals of concern, a sector prioritisation model was developed. Further details on this part of the analysis are discussed in Section 4.6.

2.4 Development of the database

Whilst the initial stage of database design and development was highlighted in stage 2 of the summary approach, the actual development to the tool was a process of evolution throughout the project as both the review of regulation and the subsequent review and analysis of business sectors in Northern Ireland was completed. Development of the database was executed in four distinct steps:

EHS System Review and Information Requirements

The EHS systems compatibility and information requirements for the database were assessed, collated and agreed at the Project Scoping day.

Design, Build and Review

Following initial design and build, reviews were completed with the EHS core team on a regular basis throughout the project both separate from and during key review meetings. These reviews focused on developing the database functionality and capability through a process of evolution in order to develop and tool that best fitted with EHS requirements.

Testing

A three step approach was used to complete effective testing of the database through its development cycle:

- Initial tests focused on a trial list of substances and relevant information gathered from the reviews of current and pending regulation;
- Secondary testing of the database was executed once the business sector analysis had been completed. This was done by posing a number of questions that the EHS may be asked or that the EHS may ask themselves when looking for information on chemicals. The result of this testing led to further development of the database reporting capability; and
- The system was tested in accordance with standard code testing procedures for Microsoft Access database applications.

Delivery, Training, Handover and User Guide

Training and handover of the database to the core EHS user group was completed in a half day workshop in September 2006. Further information on the EHS Microsoft Access database, its functionality and capability are discussed in Section 5 of this report. A specific document, the Database User Guide has been developed as a separate element of the Final Report for this project.

3 Review of Legislation

The review of legislation, both current and future, was required for the following key reasons;

- To create a baseline of information by individual chemical and the controlling regulation (current or future) for inclusion in the EHS database;
- To ensure chemical use information could be gathered on individual priority chemicals listed that would then be linked to business sectors that potentially produce, market or use those chemicals; and
- To ensure business sector assessments could be completed both separately and combined for current legislation and future legislation as required in the project.

This linking of legislation to individual chemicals, to chemical use and finally business sectors was considered to be fundamental to completing effective sector analyses and eventual prioritisation of those sectors in a Northern Ireland context. This is captured in Section 4 of this report.

3.1 Current legislation

'Current legislation' was defined as all items of regulation that were in force in Northern Ireland in June 2006. The desktop review of current legislation covered all such texts, 48 in total, as listed in Appendix C.

The review of current legislation not only listed chemicals in relation to the relevant regulation but also captured further information on these chemicals for input to the EHS database. Appendix H presents further detail on the review of current regulation focusing on:

- The approach used;
- The key findings; and
- A key findings flow chart.

3.2 Pending/Future legislation

'Pending legislation' was defined as all items of regulation that are still in consultation, discussion or implementation stage, but likely to come into force in the near future (say 2-3 years). These covered, for example:

- Any EU regulation due to be implemented in the UK within the next few years e.g. REACH; and
- Any draft regulation in a consultation process (for amendment or new regulation).

'Future legislation' covered all documents provided by national or international regulatory or public bodies to highlight the substances that may need further focus, in term of health and environmental impacts. It can be for example:

- Priority lists from the Chemical Stakeholder forum or from OSPAR; and
- PRTR (Pollutant Release and Transfer Register) that lists substances that must be monitored.

Both pending and future legislation deal with future control on chemical substances and may overlap hence they are treated together within this report and in the EHS database that has been developed.

Desktop reviews of pending or future legislation and associated priority lists of chemicals of concern covered a total of 18 texts or lists as tabled in Appendix D. This table combines the texts listed in the EHS Terms of Reference for the project and also, the prioritised lists of chemicals of concern as agreed at the Project Scoping day.

The review of pending/future legislation not only listed chemicals against regulation or priority lists but also captured further information on these chemicals for input to the EHS database. Appendix I presents further detail on the review of pending/future regulation focusing on:

- The approach used;
- The key findings; and
- A Key findings flow chart.

Appendix J lists and defines the key terms for which information was captured, where available, by chemical as part of the reviews of legislation. These match the terminology that has been included in the EHS database. Appendix J also discusses the process used for allocating chemicals to chemical families during the reviews of legislation.

Also, a comprehensive list of the information sources used as part of the review of current and future legislation can be found in Appendix E.

3.3 Review of Legislation - Summary findings

As a result of completing this analysis we have been able to create a baseline of information for input into the EHS database. A significant amount of detailed information was gathered and this is summarised below:

- There are over 1500 chemical substances linked to 48 items of current legislation and 18 items of pending/future legislation;
- Of these, some 840 individual substances or groups of substances were listed, once overlaps were taken into account where substances are covered by more than one regulation;
- Some 750 CAS* numbers were available for individual substances and we created codes (for the other 90) for chemical groups in order to capture exposure and hazard information;
- Hazard type and exposure information was sought for all substances covered by current regulation and priority substances covered pending/future legislation. This covered 550 (355 chemical families) of the 840 substances identified previously and of these, approximately 50% had hazard type and exposure information available; and.
- Details of the media impacted by the chemicals e.g. air, soil etc was also captured where specifically mentioned in the regulatory text.

*CAS (Chemical Abstract Service) numbers are unique numerical identifiers for chemical compounds, polymers and alloys. CAS numbers are used in most chemical databases and by the chemical industry.

A comprehensive breakdown of the numbers of substances, families of substances and CAS numbers etc, obtained as part of this review of legislation has been captured in Appendix H (3) for current legislation and Appendix I (3) for pending/future legislation.

It should be noted that whilst detailed information was not collated for all 1500 chemicals, the database built to store this information has the functionality to ensure information on individual chemicals can be added to or edited in future by users of the database.

A key finding when completing the review of current and pending legislation was that for substances with CAS numbers identified, only 50% of the chemicals we searched (using the ESIS database) had information on risk exposure and hazard type. On reflection, this is likely to be due to these substances being registered pre 1980 and they have therefore have not had the same level of testing completed as substances registered since then.

It is exactly this lack of information that is driving the EU REACH initiative as described in the introduction section of this report.

4 Business Sector Analysis and Prioritisation

4.1 Introduction

Having completed the detailed review of current and future legislation the next key element of the project was to complete business sector analysis and prioritisation on those sectors that potentially were producing, marketing or using the chemicals identified. This was completed in two key stages as per the summary methodology highlighted in Section 2 and in Appendix B.

This Section covers in detail the results of the work completed in reviewing business sectors explaining and presenting what was found and also discussing the key issues for consideration. The information presented and analysed in the individual sections in this chapter is summarised below.

Based on the chemical use information obtained for individual substances and the subsequent allocation of SIC codes or sectors to those chemicals, Section 4.2 provides analyses of the sectors identified and the frequency of identification, highlighting the likelihood of those sectors to be using controlled chemicals.

Sections 4.3 and 4.4 provide analyses on the company and employee information gathered by sector as identified previously, capturing the relative size and geographical spread of the sectors in a Northern Ireland context.

Section 4.5 presents selected worked examples for the pharmaceutical, lumber and wood products and textile products sectors within Northern Ireland, whilst section 4.6 focuses on the prioritisation model developed to help identify those sectors potentially producing, marketing or using chemicals.

Section 4.7 summarises concisely the key points highlighted in bold in all the previous sections of Chapter 4.

4.2 Business Sector Impact Analysis

4.2.1 Introduction

This task involved linking the substances or families of substances, captured in the review of current and pending legislation, to specific business sectors that potentially produce, market or use those chemicals. In summary, use information on individual chemical families was obtained from a variety of sources and from that data, business sectors were linked to that use information and hence to the chemical or chemical family.

We contacted several industry groups and other key stakeholders for advice on which existing database e.g. ESIS, would be best suited to source the use data required. **The response indicated that no one all encompassing database existed for this information and those that did exist had significant gaps.** Due to this, we sourced use information from 4 separate databases to capture the data and then completed web searches as required for any gaps. **This situation has again highlighted why the EU want to implement the REACH legislation and develop a central European database that captures the key use information for all chemical substances in the EU marketplace.**

4.2.2 Gathering Chemical Use information

The use information we targeted was identified at chemical family level across 355 individual families. These comprise all chemical families identified as part of the review of current legislation and the priority families identified as part the review of pending/future regulation. See Appendix I (I.3) and Appendix J (J.3) for details of how the numbers were derived from the reviews of legislation. Of these families:

- 285 were associated solely with current legislation;
- 70 chemical families were associated with pending/future legislation and the selected priority lists (40 of the 70 were also highlighted in the reviews of current legislation);
- 99 % of 355 substances/families had uses identified;
- 4 chemical families were not allocated any uses. This was due to generic term or name of the chemical family identified. These generic families contain many individual chemicals with

multiple and widespread uses across a large number of business sectors. These are listed below:

- Sulphur compounds;
 - Particulate matter;
 - Organic compounds; and
 - Metals, metalloids and their compounds.
- All substances/families had a 'Function' or key use (e.g. pesticide, petrochemical, industrial chemical) assigned for inclusion in the database.

The process of identifying chemical use information whilst robust, still had its limitations, for example, **the ability to capture all relevant use information when it is not always readily available due to issues such as intellectual property protection.**

In fact, this intellectual property issue and the potential requirements on disclosing product use information that could be available on a central database, is one of the major concerns that the Chemicals Industry and related business sectors across Europe have with the new REACH legislation.

To maximise chemical use and sector data accuracy and consistency, the information was reviewed by an 'industry' experienced team member. The quality and depth of the chemical use information gained was also shared with the EHS.

4.2.3 Linking uses of chemicals to Business Sectors

Our methodology in linking chemical use information to business sectors was based around identifying appropriate SIC codes (Standard Industrial Classification) that could easily be linked to the uses collated for that chemical.

It was decided that for the purpose of this project, US SIC codes would be used rather than UK SIC codes. This was due to the recommendation to use the Dun and Bradstreet database as the main source of Northern Ireland registered company information by business sector. Dun and Bradstreet, a global firm, operates its databases using US SIC codes for all their company information.

For further understanding, a SIC code is a four digit code that identifies the particular industry sector that a company is a member of. The first two digits identify the broad industrial sector and the last two digits represent a company's specialty within this broad sector.

E.g. 1 73 Business Services
 734 Services to buildings
 7342 Disinfecting & pest control

E.g. 2 28 Chemicals and allied products
 282 Plastics materials and synthetic
 2822 Synthetic rubber

It should be noted that not all industries can be classified in the same manner. Some industries have a more in-depth or diverse range of activities within the wider definition of that industry. For example, Business Services encompasses everything from advertising to pest control. However, in an industry such as Chemical & Allied Products the classification is more precise.

Our approach to capturing sector or SIC code information by substance was to assess the uses of the substance and target individual 4 digit level SIC codes if possible. Where there was insufficient detail contained in the use searches, we allocated 2 or 3 digit codes as appropriate. Worked examples of allocation of US SIC codes to chemical use information have been highlighted in Appendix G.

For further information and background on the US SIC code structure, Appendix K contains listings of US SIC codes and their descriptions for 2 and 3 digit codes.

Through this approach the precision of classification reflected the quality of chemical use data available.

It should be noted that this required judgements to be applied in some cases, based on incomplete data. As a result, there is a risk of some gaps or anomalies in the allocations. These can be refined over time as the use of the database develops.

4.2.4 Business Sector Analysis - EXCLUSIONS

In identifying sectors impacted by chemicals based on the use information gathered several key sectors were NOT considered as part of the project. These sectors and their associated SIC codes are listed below:

01	Agricultural production of crops;
0721	Crop planting, cultivation and protection;
0782	Lawn and garden services;
5989	Fuel dealers, (retail); and
5912	Dispensing Chemists.

SIC codes 01, 0721, 0782 were associated with the potential use of pesticides or biocides and it was agreed with the EHS team that these should not be considered as part of this analysis. These sectors may be targeted in future via manufacturing and supply routes rather than, for example, obtaining details for individual farmers. Also, other data sources exist such as DARD pesticide use reports which can be used to inform the approach to chemicals.

Details of two other sectors were also excluded from the initial analysis. These were Fuel Dealers (SIC code 5989) and Dispensing Chemists (SIC code 5912) both under the Miscellaneous Retail 2-digit code, 59. An explanation of why these were excluded is given below.

Fuel Dealers

Fuel dealers or, for example, petroleum dealers, were not identified specifically in any of the chemical use data hence the code was not matched and included in the sector analysis. Petroleum (or a synonym of petroleum) was not one of the listed priority chemicals on which detailed analysis was required. Other petrochemical substances were identified and listed in the analysis, such as ethylene, naphthalene, oil, butane and propane. Use information was captured for these substances.

The generic product family hydrocarbons did highlight petrochemical manufacture and petroleum in uses among many other high level applications. In this instance, the SIC codes for petroleum refining (2911) and miscellaneous petroleum products (SIC 2999) were allocated. As hydrocarbons is a generic term and covers a very wide group of individual substances with extensive uses, only 4 digit codes associated with chemicals and allied products sector (SIC 28) and the petroleum and coal products sector (29) were assigned.

Dispensing Chemists

Dispensing chemists (retail) were not identified in the sector analysis as using the chemicals of concern listed. None of the 355 chemical families that were listed were assigned the function 'pharmaceutical'. Numerous chemical families were highlighted as having uses related to the manufacture or synthesis of drugs or pharmaceutical products.

The codes allocated to these substances were SIC 2833, medicinals and botanicals and SIC 2834, pharmaceutical preparations. For the purpose of this exercise we have assumed dispensing chemists to be retailing drugs or pharmaceuticals that have already been manufactured rather than manufacturing themselves and therefore using the individual chemicals compounds making up those products.

Public Services

Of the sectors or SIC codes identified as potentially using chemicals, Public Sector organisations were not identified in the businesses/organisations listed in the D&B database under these sector headings e.g. for the Water Service nothing was identified under SIC 494 for Water Supply.

Public Sector organisations are listed to a degree in the D&B information, for example, for schools and hospitals. **In terms of public sector organisations that could potentially be using chemicals, these were acknowledged as including:**

- NI Water Service and the associated water treatment chemicals used in water and wastewater treatment; and
- Hospitals potentially using and disposing of pharmaceutical products or, for example, using cleaning and disinfectant products containing chemicals.

These public service organisations will need to be considered as part of the approach to chemicals regulation. In the context of the sector analysis carried out as part of this review, only the SIC codes identified in the chemical use analysis were searched within the D&B database and the information on these was limited to private sector organisations.

4.2.5 SIC codes or sectors identified by chemical

The table below captures the summary level analysis of the numbers of SIC codes identified across all the families of substances, including the split between current and pending legislation. It captures the number of chemical families, the number of SIC codes listed against those families in total and the average number of SIC codes captured per chemical family assessed. It should be noted that the numbers of SIC codes identified or counted include 2, 3 and 4 digit codes and includes multiples of individual codes i.e. the same code may have been identified many times across a number of substances.

Table 4.2.5.1 – SIC code analysis

	Current legislation only	Pending legislation (priority)	Overall
Substances/ families	285	70	355
Total SIC codes allocated to chemical families	1531	384	1915
Average codes per substance/family	5.4	5.5	5.4
SIC codes identified per substance/family			

The charts in Table 4.2.5.1 show statistically the number individual SIC codes identified per substance for current legislation, pending/future legislation and the combined total. These charts demonstrate that the use information gathered was of sufficient detail to enable an average of between 5 and 6 individual SIC codes to be identified for each substance/family. This applied for substances identified in both current and pending legislation.

It also highlighted that a significant number of substances had greater than 6 SIC codes allocated, demonstrating the fact that many chemical substances or families have extensive uses throughout many industry sectors and sub sectors.

Further analysis was completed on the SIC codes identified across all chemical families reviewed in order to understand the split between 2 digit, 3 digit and 4 digit codes identified. The table below captures this analysis, including the split between current and pending legislation.

Table 4.2.5.2 SIC code split between 2, 3, and 4 digit codes

	Current Legislation only	Pending Legislation (priority)	Overall
2- digit SIC codes	9	7	9
3 - digit SIC codes	27	11	27
4 - digit SIC codes	75	43	75

The table highlights a consistent spread of SIC codes identified from uses (111 in total across 2, 3, and 4 digit SIC codes) and also highlights that the use data was detailed enough to allow significant capture of mostly 4 digit codes. Focusing on the pending legislation (priority) substances, the spread of use was less broad than the current and overall results however this would be expected simply because there were less regulatory texts or lists reviewed and also, new legislation is often targeted towards specific chemicals and associated uses in industry.

For further detail on the SIC codes identified during this analysis, Appendix L contains a table and guidance note capturing the key outputs from the business sector impact analysis.

4.2.6 Sector Identification Frequency

This analysis has been completed to identify the frequency by which individual sectors at two digit SIC level have been identified during the sector impact analysis. To get the total frequency by two digit SIC code, all 3 digit codes and 4 digit codes with the same first two digits have had their frequency of identification added to that of the same 2 digit code to give a total.

e.g. SIC code 22 – Textile Mill products

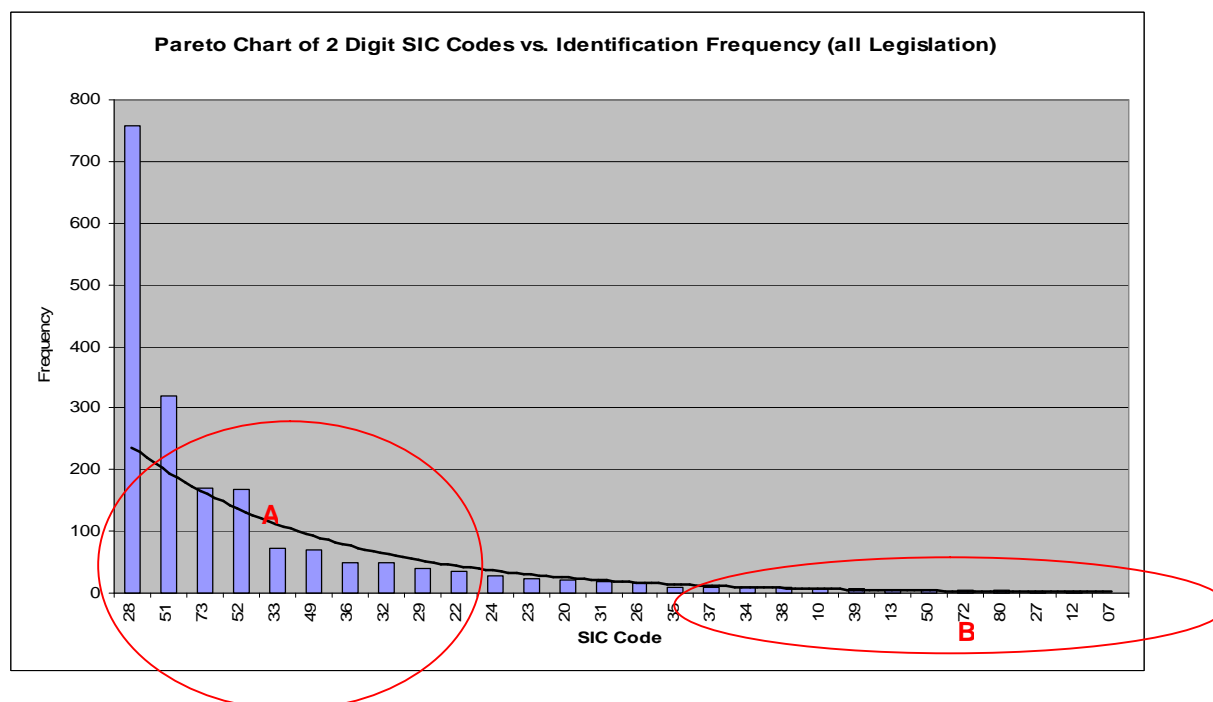
<u>Code</u>	<u>Description</u>	<u>Frequency Identified</u>
22	Textile mill products	28
221	Broadwoven fabric mills, cotton	4
223	Broadwoven fabric mills, wool	4

From the above information, the total frequency of identification of SIC 22 is the sum of the three individual SIC codes i.e. 36. This has been completed for all SIC codes identified in the analysis and represents the base data for the chart below. A summary table is presented in Appendix M.

Initial analysis has been carried out at two digit level for simplicity of presentation and to highlight those broad sectors most likely to be using chemicals however the detail in terms of the 3 and 4 digit sectors identified is tabled in Appendix L.

The following ‘Pareto’ type chart presents the data in a format where the sector or SIC code is plotted along the x-axis and the frequency with which that sector is identified is plotted on the y-axis. To present the typical ‘Pareto’ curve, the sector with the highest frequency of identification is plotted first followed by the next highest and so on until the sector with the lowest frequency of identification is plotted last.

Figure 4.2.6.1 – Analysis of 2 digit SIC codes vs. identification frequency (all legislation)



The key findings from this analysis presented in the chart above (highlighted as A) were that the top ten sectors identified as most likely to be producing, marketing or using chemicals as gathered from current and future lists of regulation were:

- 28 Chemicals and Allied Products;
- 51 Chemicals/Petroleum Wholesale;
- 73 Business Services - Disinfecting and Pest control;
- 52 Gardens Supplies;
- 33 Primary Metal Industries;
- 49 Electric Gas and Sanitary Services;
- 36 Electronic and other Electric Equipment;
- 32 Stone, Clay, Glass and Concrete products;
- 29 Petroleum and Coal Products; and
- 22 Textile Mill Products.

85% of all SIC codes counted were allocated to the top seven from the list above or 25 % of the total 2 digit sectors identified. Also, 40% of all the 2, 3, and 4 digit SIC codes identified were based on the 2 digit SIC code, 28, Chemicals and Allied Products. The high frequency of identification of sectors such as Business Services (Disinfecting and Pest Control) and Garden supplies highlighted the strong link to the pesticide and biocide uses of a large number chemicals controlled currently and to be controlled in the future. At the other end of the Pareto curve above (highlighted as B), 11 of the 2 digit sectors accounted for only 3 % of the total SIC code identification frequency. Examples were:

- 37 Aircraft parts, ship repair;
- 39 Jewellery;
- 50 Refrigeration equipment;
- 72 Dry cleaning; and
- 80 Dentistry.

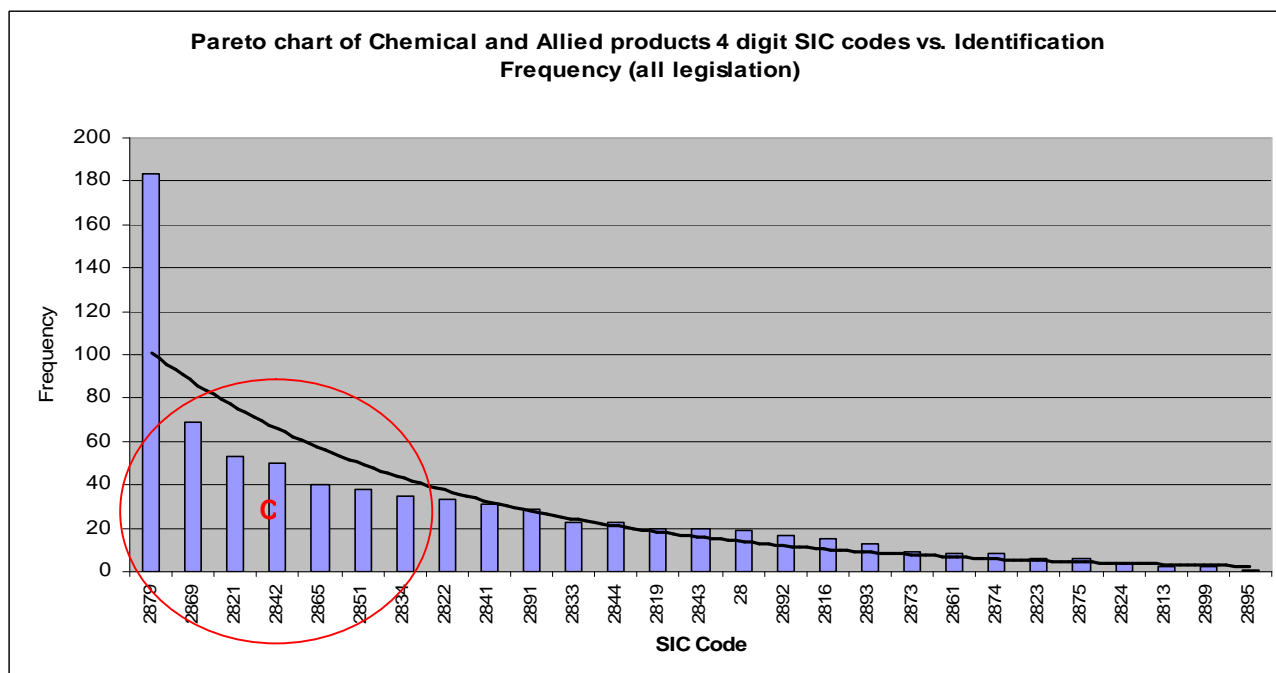
This has highlighted a key point for consideration later in the report, in that specific uses of certain controlled chemicals covered diverse but still relevant sectors within Northern Ireland e.g. aircraft parts, ship repair. Also, business sectors such as dry cleaning, dentistry, and jewellery have predominance of SMEs, noting that the size and number of businesses by sector will be analysed and discussed later in the report.

Sector analysis findings are discussed further in Section 4.7 and also concluded in Section 6.

Chemicals and Allied Products - Detail

In the high level analysis, Chemicals and Allied products was identified with the largest frequency of SIC code identification, 40% of the total. The analysis below breaks down that 40% across all the sub-sectors (4 digit codes) identified within the Chemicals and Allied products 2 digit sector.

Figure 4.2.6.2 – Analysis of 4 digit SIC codes vs. identification frequency (associated with Chemicals and Allied Products for all legislation)



The analysis shows that 20% (highlighted as C above) of all Chemicals and Allied Products SIC codes accounted for 60% of the total SIC codes counted for the whole sector. The chart has also highlighted a greater spread of SIC codes with relatively high frequency of identification reflecting the multiple uses of chemical substances across individual sub sectors within the chemical industry supply chain. Also, the analysis highlights agricultural chemicals which accounts for 25% of total SIC codes identified within the chemicals and allied products sector. This again reflects the controls in place on large numbers of chemicals with pesticide and biocide uses. The top seven codes within Chemicals and Allied products were as follows:

- 2879 Agricultural chemicals;
- 2869 Industrial organic chemicals;
- 2821 Plastics;
- 2842 Speciality cleaning;
- 2865 Organic pigments and dyes;
- 2851 Paints and allied products; and
- 2834 Pharmaceutical preparations

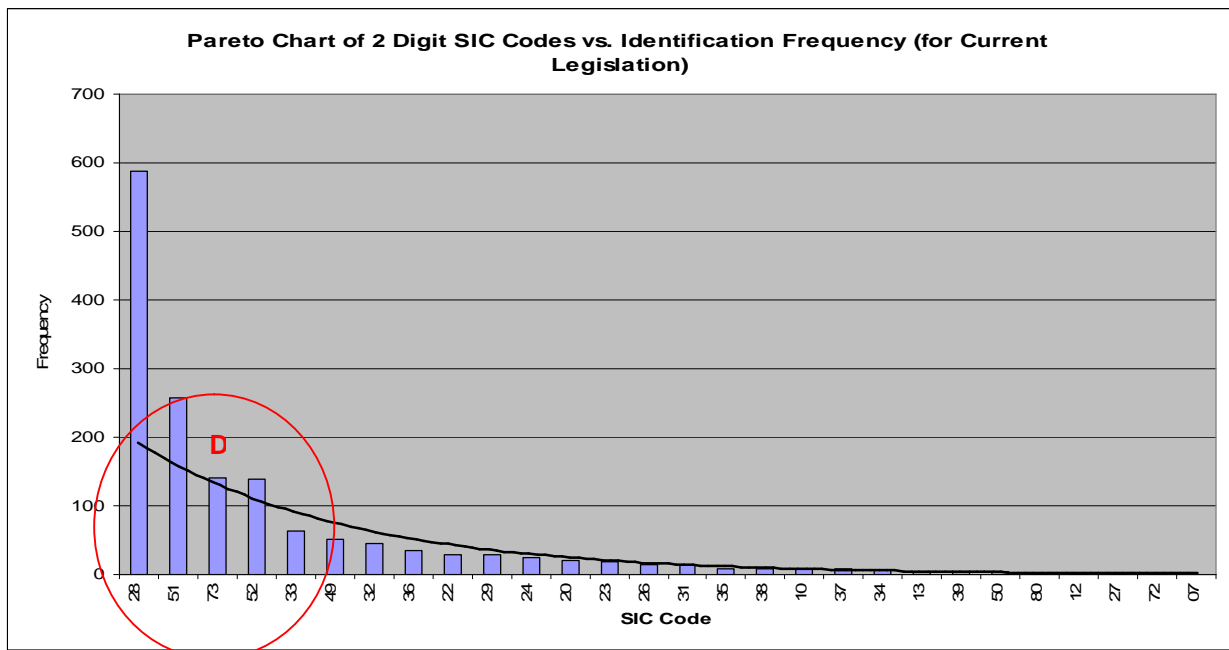
4.2.7 Sector Identification Frequency – Split by Current and Pending/Future Legislation

A key requirement of the project was to assess sector impacts for both current and pending/future legislation. This was important in order to identify any subtle differences in the sectors identified that may influence the EHS future approach to chemicals regulation and for example, short term focus on individual sectors as future legislation is implemented.

Current Legislation

Similar to previous analysis, the Pareto type chart below plots SIC codes identified at 2 digit level against the frequency by which these codes were identified when reviewing chemicals substances linked to the lists of current regulation.

Figure 4.2.7.1 – Analysis of 2 digit SIC codes vs. identification frequency – current legislation



As highlighted above (D), the analysis shows a typical Pareto distribution with 77% of all SIC codes counted for current legislation being covered by 5 sectors or 18% of the total number of 2 digit sectors identified. The top five sectors identified matched the top five from the overall analysis:

- 28 Chemicals and Allied Products;
- 51 Chemicals/Petroleum Wholesale;
- 73 Business Services - Disinfecting and Pest control;
- 52 Gardens supplies; and
- 33 Primary Metal Industries.

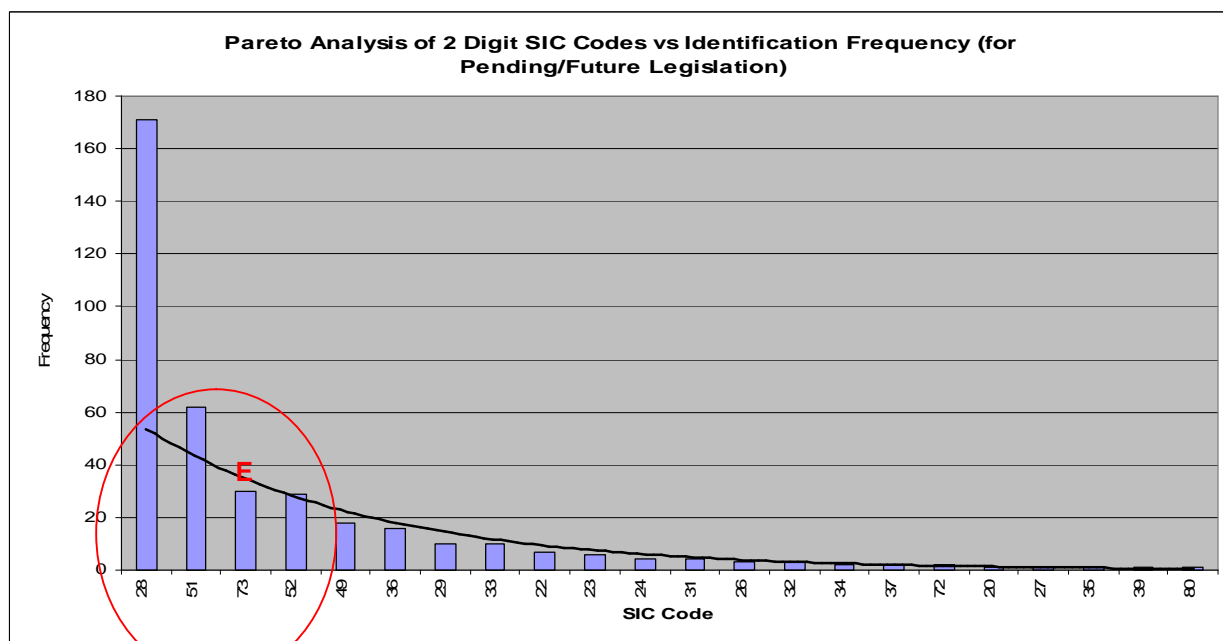
Pending/Future Legislation

For the analysis of pending/future lists of chemicals and the sectors identified from the uses information on these chemicals, it should be noted that only 70 priority substances in total were selected for detailed review. The total number of substances reviewed in detail for both current and pending/future legislation was 355, therefore only 20% of the total were related to pending/future legislation.

However, using Table 4.2.5.2 as reference, 62 different sector codes were identified for pending/future regulation versus 111 sector codes for current legislation. This indicated that although the numbers of substances reviewed was small relative to current legislation substances i.e. 20%, the spread of sectors impacted was still significant i.e. 50 % of the total sectors identified.

The Pareto type chart below plots SIC codes identified at 2 digit level against the frequency of which these codes were identified when reviewing chemicals substances linked to the priority pending/future lists of regulation.

Figure 4.2.7.2 – Analysis of 2 digit SIC codes vs. identification frequency - Future/Pending



As highlighted above (E), the analysis shows a typical Pareto distribution with 76% of all SIC codes identified for pending/future legislation being covered by 4 sectors or 18% of the total number of 2 digit sectors identified. The top four sectors identified matched the top four from both the overall analysis the current legislation analysis. A key difference however in the analysis of sectors associated with pending regulation relative to current was that 6 of the 2 digit sectors identified for current did not appear in the pending analysis. The six identified were:

- 07 Agricultural services;
- 10 Metal mining;
- 12 Coal mining;
- 13 Oil and gas extraction;
- 38 Instruments and related products; and
- 50 Wholesale trade - durable goods (Refrigeration equipment).

This was expected because there were less regulatory texts to consider for future/pending relative to current and also the reviewed lists of substances was much smaller for pending/future legislation. **What must be highlighted is the fact that 22 x 2 digit SIC codes (sectors) were identified with chemicals associated with pending/future legislation. This highlights that pending/future regulation will have a significant impact on a wide variety of sectors as controls on chemicals continue to extend beyond the producer to other elements of the chemicals supply chain.**

4.2.8 Business Sector Impact Analysis - Summary

The key findings from this first stage of the Business Sector Analysis and Prioritisation are summarised below with those in bold highlights matching those findings captured in bold in Sections 4.2.1 to 4.2.7.

- **No single all encompassing database exists for chemical use information and those that do exist have significant gaps (Section 4.2.1). This situation has again highlighted why the EU want to implement the REACH legislation and develop a central European database that captures the key use information for all chemical substances in the EU marketplace;**
- **Other limitations to capturing chemical use data and allocating sectors to that use data included:**
 - o **Intellectual property protection i.e. companies not communicating publicly use information on their products (Section 4.2.2);**
 - o **Allocation of SIC codes required judgements to be applied in some cases. As a result, there is a risk of some gaps or anomalies in the allocations (Section 4.2.3); and**
 - o **Several sectors were EXCLUDED from the analysis including (Section 4.2.4);**
 - **Public services, petrol stations and dispensing chemists**
- Uses were captured for 99% of the 355 chemical families identified for detailed analysis;
- Over 1900 individual SIC codes were then identified across the list of substances with each substance having on average 5-6 different SIC codes allocated;
- 111 individual SIC codes at 2,3 and 4 digit level were identified as potentially using chemicals;
- This analysis has highlighted that in terms of core manufacturing the key sectors that need focus on in terms of likelihood of using controlled chemicals (current/future regulation) were:
 - o Chemicals and Allied products (including wholesale and distribution);
 - o Primary Metal Industries;
 - o Electronic and other electrical equipment; and
 - o Stone, clay and glass products.
- The analysis has also highlighted the non manufacturing sectors most likely to be using controlled chemicals (current/future regulation) were:
 - o Business Services involved in Disinfecting and Pest control;
 - o Gardens supplies (associated with pesticides/biocides); and
 - o Electric, gas and sanitary services (Water Supply).
- **A key outcome from the Pareto type analysis (Section 4.2.6), covering current and future regulation, was a significant spread of diverse sectors that could be using chemicals of concern e.g. Aircraft parts, ship repair, jewellery, refrigeration equipment, dry cleaning, dentistry; and**
- **It was significant that, when comparing the numbers and types of sector identified for current and pending/future regulation (Section 4.2.7), although the substances reviewed for pending/future were only 20% of the total, over 60 individual SIC codes were identified which accounted for around 50% of the total SIC codes identified. This indicates that pending or new regulation will have impacts on a broad range of high level business sectors rather than just the chemical producer.**

4.3 Sector Analysis for Northern Ireland

4.3.1 Background

In order to provide some contextual background to the sector analysis completed in this project, a high level overview assessment was completed on the make up of the Northern Ireland economy, identifying the key business sectors operating here.

The Northern Ireland economy is dominated by Public and Private services, accounting for approximately 75% of the working population. **The Public Sector in Northern Ireland is particularly dominant and accounts for over 35% of the working population. Other important sectors include manufacturing and construction.**

The table below summarises the high level breakdown of the key sectors, the size of the sector captured by the number of employees in employment in 2004. The number of employees has been regularly used in sector economic analysis for both government and private firms to measure relative size of business sectors. This is used later as part of our analysis, together with the number of individual companies within the sectors.

Table 4.3.1.1 Employees by sector in Northern Ireland

Sector	Employees in employment 04 ('000's)
Public Services e.g. health, education	241
Private Services e.g. retail, hotels, transport, communication	263
Other Services	32
Manufacturing	89
Construction	36
Other – e.g. mining, fishing, agriculture, gas	20
Total	681

Manufacturing

Looking at manufacturing specifically and relative size of the individual sectors in terms of total employees in Northern Ireland, the table below presents a breakdown the total manufacturing employment for 2003. **The information highlights that dominant sectors in Northern Ireland include Food, Textiles and Transport Equipment (e.g. Ship building and aircraft manufacture). Importantly and specifically relevant to future EHS approach to chemicals regulation, it also shows that the Chemicals manufacturing sector itself is relatively small i.e. less than 5% of total manufacturing employees.**

Table 4.3.1.2 Employees by manufacturing sector in Northern Ireland

Manufacturing Sector	Employees in employment 03 ('000's)
Food	18.7
Textiles	10.0
Wood	3.3
Pulp and paper	6.4
Coke and Oil	0.1
Chemicals	3.4
Rubber and Plastics	7.0
Other non metallic minerals	5.7
Metals	6.2
Machinery and equipment	6.5
Electrical and Optical	10.2
Transport equipment	11.0
Other	4.2
Total Manufacturing	92.7

4.3.2 Introduction

Having now understood the high level overview of business sectors in Northern Ireland that may be producing, marketing or using chemicals listed in the reviews of legislation, a fundamental aspect of this project was to analyse the relative size of these business sectors as well as understand the geographical distribution (discussed in Section 4.4) of the sectors.

Details on the methodology used in this analysis are captured in Section 2 and Appendix B. In summary the work completed in this section was focused around gathering company information by 2, 3 and 4 digit SIC code identified previously, followed by statistical analysis and assessment of the key information such as:

- Companies identified by sector (SIC code); and
- Number of employees identified by sector (SIC code).

4.3.3 Dun and Bradstreet Data Collection

The database used to capture company information by sector (SIC code) was the Dun and Bradstreet (D&B) database. This database is updated every two/three months to provide, where available, the most up to date information on Northern Ireland registered companies. The version used for this analysis was dated February 2006. Searches were completed for 111 individual SIC codes (see Appendix C) and the raw information collated from D&B included:

- **Business name**
- Business number (if available)
- **US SIC code**
- UK SIC code (if available)
- Line of business
- **Address**
- **Postcode**
- **Telephone number**
- **No. of employees**
- Sales (£)
- Net worth (£)

Items highlighted in red above indicate those that have been included in the Microsoft Access database. The other data has been provided to the EHS in existing spreadsheet templates capturing company information by SIC code. Sales and net worth information was captured to further supplement, if available, the assessment of size of business sectors in addition to having the number of companies and the number of employees.

4.3.4 Quality Assurance

A focused 2 stage approach to quality checking the Dun and Bradstreet data was completed.

1. Company information vs. SIC code

All listings were checked for obvious duplicates, errors and specific amendments. The criteria used was to match the company, its described line of business and its SIC code to ensure a three way match. This was completed line by line by an industry experienced member of the review team covering over 3000 companies identified. As a result of this process:

- o 5 company entries were re-allocated to other SIC codes;
- o 132 company entries were removed (less than 5% of total) if it was not applicable to the SIC code and could not be allocated to other SIC codes we had identified from chemical uses, for example:
 - i. 70 entries in chemicals and allied products such as;
 - 1. coal and smokeless fuel distributors;
 - 2. peat and compost manufacturers; and
 - 3. plastic window frame manufacturers and fitters.
 - ii. 9 entries in paper products that were described as plastics and plastic recycling.

2. Company information on other databases

We completed company specific quality assurance checks on DETI, 4NI and One Source databases, covering over 80 firms (28 for each database) selected at random from the 2 digit SIC codes 26, 28, 29, 32, 33, 36 and 52. The results were as follows:

- 28 firms checked against DETI – 100% match
- 28 firms checked against 4NI – 86% match – four missing on 4NI
- 28 firms checked against One Source – 79% match – 6 missing in One Source of which all were smaller companies. All companies above 50 employees were found.

We cross checked Office of National Statistics data provided by the EHS with our own Dun and Bradstreet data. We were able to do a cross check on number of businesses by sector for a number of the sectors identified in our analysis. The results were as follows:

- Pharmaceutical preparations
 - o ONS - 20 companies identified
 - o D&B – 19 companies identified
- Chemicals and Allied products
 - o ONS - 60 companies identified
 - o D&B – 82 companies identified
- Leather and Leather Goods
 - o ONS - 5 companies identified
 - o D&B – 6 companies identified
- Food and kindred products
 - o ONS - 380 companies identified
 - o D&B – 376 companies identified

These quality assurance checks have provided confidence that the company information obtained from the February 2006 Dun and Bradstreet database disk was of good quality and that basic errors within it have been eliminated. The information we obtained also showed good compatibility with company lists in other databases.

However, it should be noted that these databases, whilst improving year on year, are not error free in terms of the company information provided. Errors typically seen have included:

- **Individual companies assign SIC codes to themselves for database providers and may allocate a wrong code or a single code that does not reflect the entirety of that company's activity;**
- The D&B information is updated every two to three months i.e. can be three months out of date;
- Companies for example in receivership may not always be taken off lists in a timely fashion; and
- Information on non 'limited' and smaller companies is always more prone to error and lack of depth. This is due to the fact there is a high concentration of SMEs in Northern Ireland and it is difficult to capture all the information for all these businesses.

4.3.5 Summary Findings

Number of companies

A total of 3221 companies were identified overall after quality assurance checks. The number of companies identified within each individual SIC code, at 2, 3 or 4 digit level can be found in Appendix N. This list does not have any duplicates of companies taken out i.e. where companies appear in multiple codes within the same 2 digit sector or companies appear in separate 2 digit sectors. For all these companies, we were able to obtain:

- Postcodes for 100% companies listed ;
- Employee information for 89 % of companies listed; and
- Sales information for 12 % of companies listed.

The split of this information by 2-digit SIC code can be found in Appendix O.

It should be noted that for each 2 digit code, company information was not necessarily obtained for that level e.g. for 51 (Wholesale trade and non durable goods) company information was obtained for SIC 516 (Chemicals and allied Products), SIC 517 (Petroleum and Petroleum products) and SIC 5196 (Paint products) as per Appendix N.

Further analysis showed that 2801 companies were listed after duplicates taken out at individual 2 digit level, for example, a company appearing in SIC code 28 as well as SIC code 2813.

We also then eliminated a further 12 companies by taking out duplication across the whole list of companies e.g. companies being identified in more than one 2 digit SIC code group. Therefore, 2789 individual companies identified as 'potentially' producing, marketing or using chemicals.

This information is displayed in Appendix P at 2 digit SIC code level.

4.3.6 Sector Analysis – Detail

As well as capturing the summary high level findings and the associated tables of information we completed further more detailed analysis focusing on the numbers of companies identified by sector, the number of employees by sector and the number of employees per company at sector and overall Northern Ireland level.

Capturing these three items was important in the context of the project.

Analysis of the number of companies gives an insight into the size of the sector but more importantly, the potential spread or distribution of that sector across the country (supported by appropriate mapping of those companies) and the complexity of the sector.

If, for example, a sector identified has many companies with widespread distribution, the approach for controlling chemicals would be different than say a sector with a relatively small number of companies, even if the small number of companies were large users of chemicals.

Analysis of the number of employees within the sector, often closely linked to the number of companies, is very useful in understanding the size of that sector as mentioned previously in the background section on page 23.

Analysing the spread of the numbers of employees by company is useful to inform the approach on chemicals where potentially, those companies with the greatest number of employees will likely use or process greater volumes of chemicals.

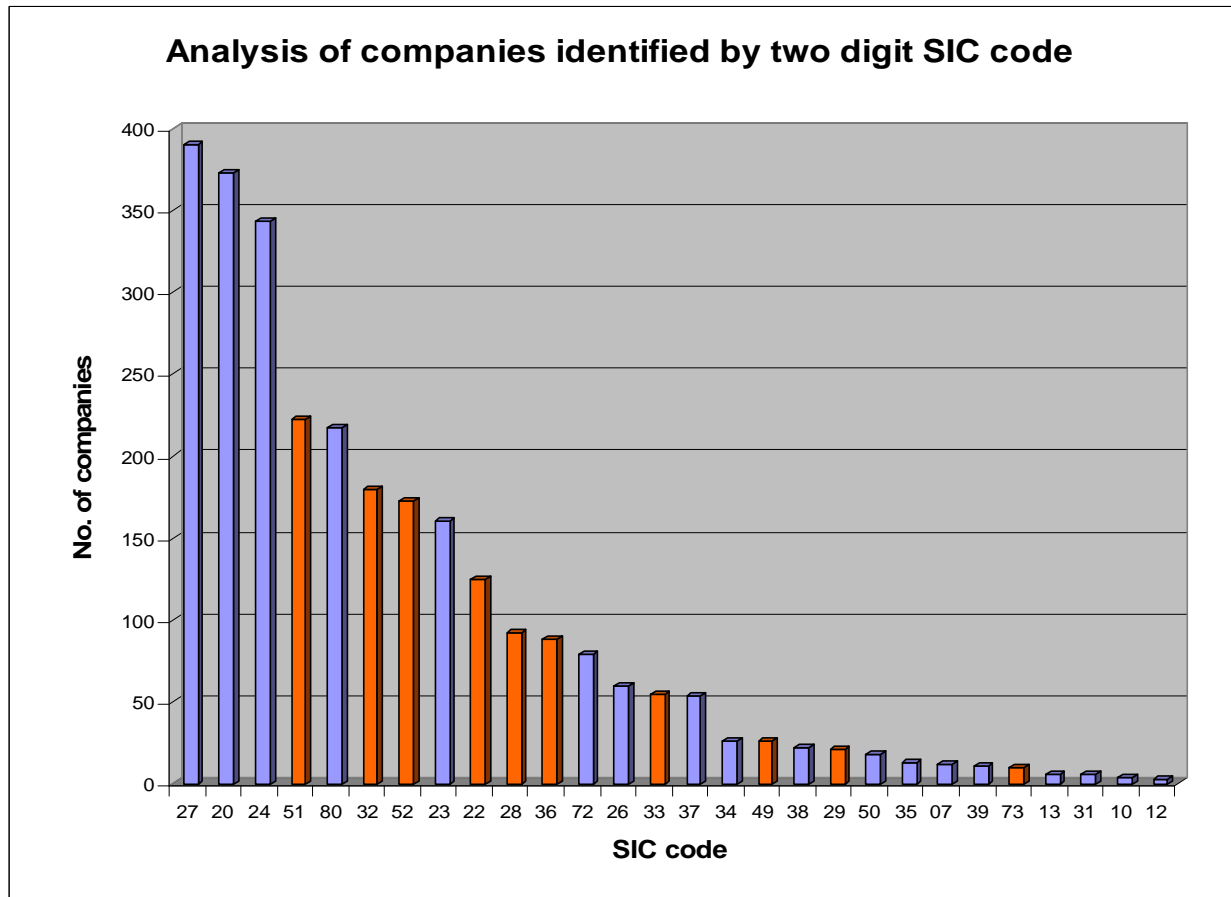
The analysis also informs the approach to chemicals regulation by highlighting the spread of Small and Medium sized Enterprises across individual sectors and Northern Ireland as a whole.

Number of Companies by Sector

The purpose of this analysis was to capture not only size but also the relative spread of individual sectors impacted by assessing the numbers of companies identified within that sector that are potentially using chemicals of concern.

The chart below plots the number of companies identified within each sector against the sector SIC code number. This information is tabled in Appendix O.

Figure 4.3.6.1 – Analysis of numbers of companies by two digit SIC code



The Pareto type chart has indicated that 9 (30%) sectors out of the total of 28 accounted for 75% of all the companies identified. The top six identified were as follows:

- 27 Printing and publishing;
- 20 Food;
- 24 Lumber and wood products;
- 51 Wholesale Trade Non durable goods (Chemicals and Petroleum products);
- 80 Dentistry; and
- 32 Stone, clay and glass products.

Highlighted on the chart in orange bars are the top ten sectors identified in the business sector impact analysis i.e. those sectors that had the most SIC codes identified from the uses information on the chemicals listed. Significantly, 5 out of the top 10 in terms of number of companies were also within the top ten in the impact analysis. These were:

- 51 Wholesale Trade Non Durable goods (Chemicals and Petroleum products);
- 32 Stone, clay and glass products;
- 52 Garden supplies;
- 22 Textiles; and
- 28 Chemicals and Allied Products.

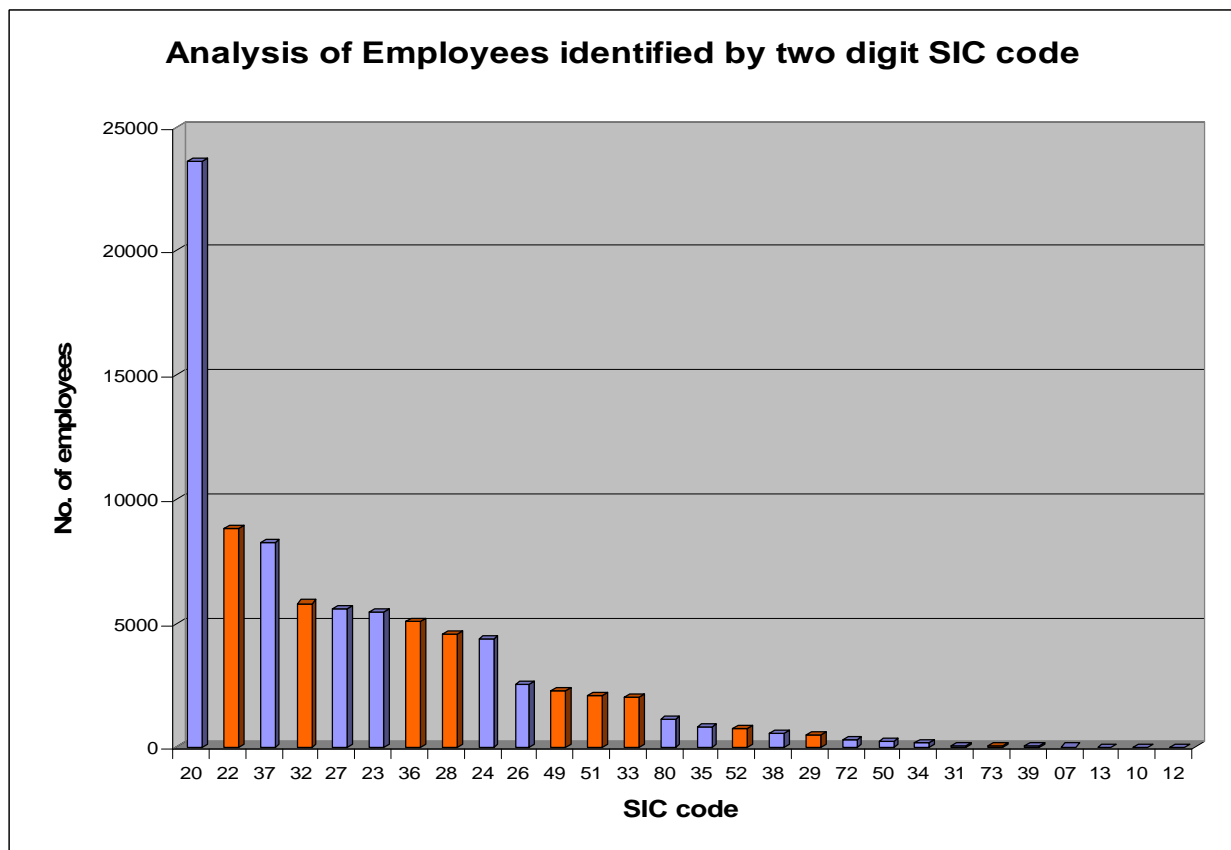
The key consideration, for discussion later (Sections 4.7 and 6), is that there are significant numbers of businesses within some of the business sectors that have been highlighted most as potentially using controlled chemicals. It is these sectors that should inform the key priorities set as part of the future EHS approach to chemicals regulation.

Number of Employees by Sector

To support the information already discussed in Section 4.3.1, we completed analysis of the number of employees by sector based on the information obtained from the Dun and Bradstreet database. This analysis was not completed to give exact numbers on employees by sector but more of a guide to indicate the relative size of sectors. The fact that we were only able to get employee information for 89% of the companies identified supports this use of information as a guide rather than for definitive numbers.

The Pareto type chart below plots number of employees against two digit SIC code or sector. It should be noted that the employee information is not necessarily related to all the sub sectors (3 and 4 digit codes) within that overall sector 2 digit sector e.g. employee information for the two digit sector 07 (agricultural services) is only related to the one code identified within that sector 0711 (Soil preparation services). Employee counts by two digit SIC code (e.g. 28) have taken out duplication within sub sectors (e.g. 2834) to ensure no double counting of employees.

Figure 4.3.6.2 – Analysis of numbers of employees by two digit SIC code



This analysis has highlighted the top three sector employers in Northern Ireland as Food (20), Textiles (22 and 23) and Transportation Equipment (37). This compliments the sector and employee numbers presented from another set of statistics presented in Section 4.3.1.

Also included on the chart are bars highlighted in orange that represent those sectors that were identified the most during the linking of sectors to chemical use information. This has indicated that, of the sectors identified in the analysis, the top 10 in terms of number of employees include 4 of the sectors that were highlighted as most likely to be using chemicals as listed from the reviews of current and future legislation.

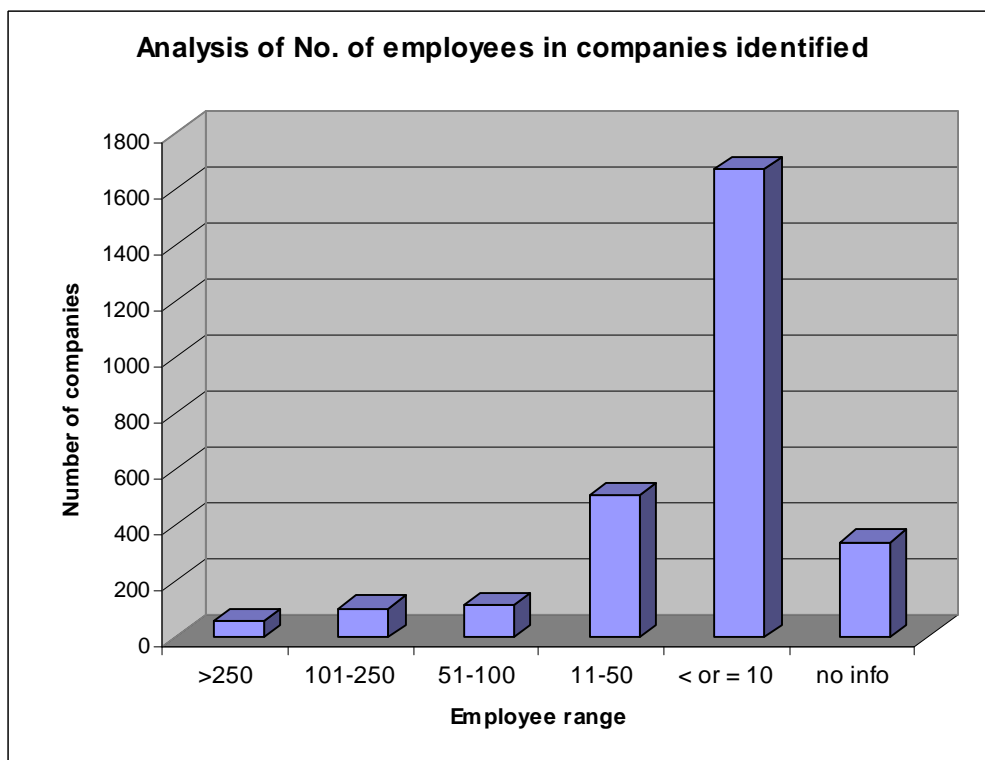
As discussed in the analysis on number of companies by two digit SIC code, it is these sectors that should inform the key priorities set as part of the future EHS approach to chemicals regulation.

Employee spread analysis of all companies identified

From the Dun and Bradstreet information captured we assigned each company to an employee band to gain an understanding by sector and more importantly overall, the spread of business sizes within Northern Ireland relating to numbers of employees.

The underpinning data capturing employee spread is tabled in Appendix P. The chart below plots the data for all companies identified as potentially using chemicals of concern.

Figure 4.3.6.3 – Employees analysis of all companies identified



Analysis of the above chart shows that 12% of the companies listed, typically small businesses, had no employee information at all. 60% of companies had less than 10 employees with 10% of companies having greater than 50 employees. Only 2 % of companies (57 in number), listed in this analysis had greater than 250 employees.

The key findings from the analysis for consideration (Sections 4.7 and 6) were that:

- **There were a relatively small number of large businesses in Northern Ireland which has been traditionally dominated by a large number of SMEs;**
- **If these larger companies were identified in future as using significant amounts of chemicals, their relatively small number would allow ease of control and regulation; and**
- **Due to the large number of businesses with 50 employees or less, i.e. 90%, this presents issues on regulating large numbers of businesses that may use chemicals even in small amounts.**

4.4 Geographical Information System (GIS) Mapping

4.4.1 Introduction

In line with project scope and objectives, GIS modelling of individual sectors was completed during the sector analysis stage of the project. The aim of this work was to present the company information gathered, by location, onto the map of Northern Ireland to give a pictorial view of where the companies within these individual sectors resided within the province.

This was identified as extremely useful for informing future EHS approach to chemicals regulation of a combination of sectors or individual sectors. GIS profiling will provide the EHS with the capability to understand the spread or distribution of companies within individual sectors, large or small.

4.4.2 Prioritisation

In completing the business sector impact analysis a total of 111 individual SIC codes (2, 3 or 4-digit) were identified whilst the number of companies, listed from the Dun and Bradstreet database per individual SIC code, ranged from 0 to 391.

Also, the frequency by which these individual SIC codes were identified in the sector analysis based on chemical use information, varied from 1 to 310. Rather than potentially produce maps of sectors with one or two companies or sectors with large numbers of companies but where the frequency of identification of that sector was very low, a prioritisation process was agreed by which maps would only be plotted if:

- SIC codes had at least one double figure count for number of companies or identification frequency in the impact analysis; and
- If only one of the numbers was in double figures, the other must be greater than 5.

The exceptions to the prioritisation process above were the 'printing and publishing' and 'concrete, gypsum and plaster' sectors. Both these sectors were plotted due to the high numbers of businesses involved.

A total of 30 maps were produced and linked to the Microsoft Access database. To present the data effectively on a map of Northern Ireland, two types of map were generated:

- A ward distribution map that was produced for sectors with over 50 companies identified from the Dun & Bradstreet database; and
- A direct plot map that was produced for those sectors with less than or equal to fifty companies identified from the Dun & Bradstreet database.

Examples of these maps are shown below and the table presented in Appendix S highlights those sectors selected for GIS mapping.

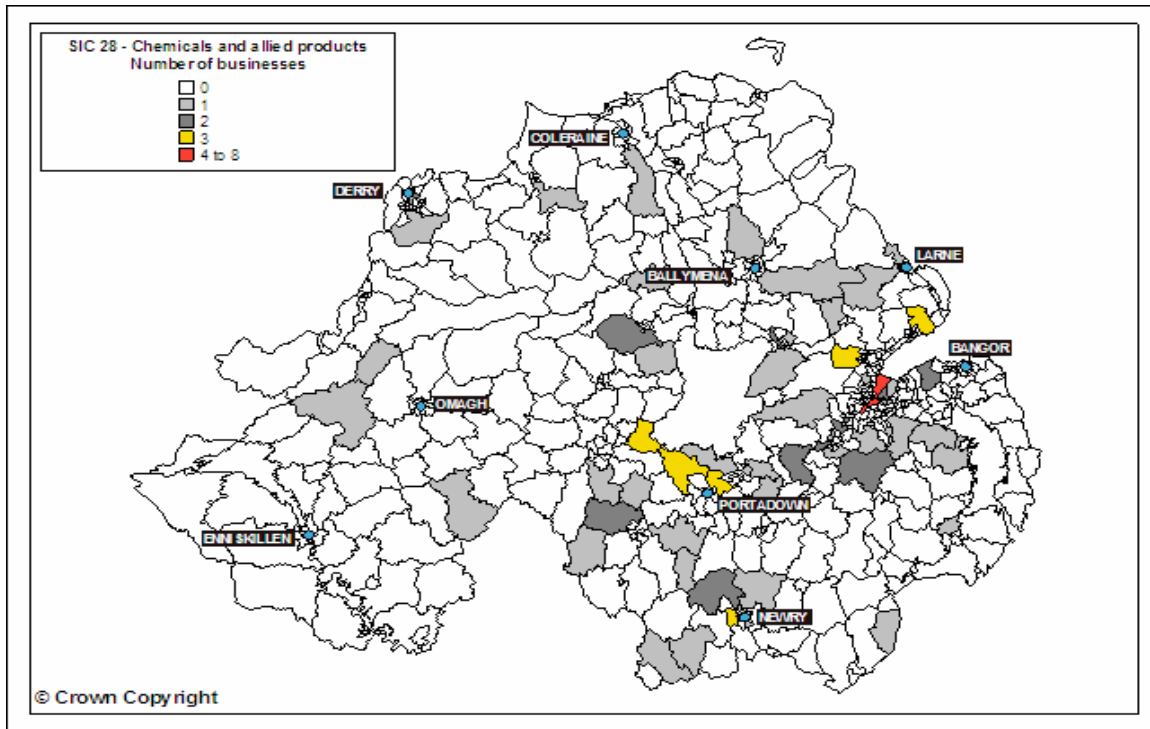
4.4.3 Maps – Ward distribution

This example of a ward distribution map has been generated for SIC code 28, Chemicals and Allied products. To plot the map, the GIS software read the postcodes within a given council ward and added them to give a total per ward. Based on this total individual, wards were then allocated a colour as per the scale shown on the map.

12 ward distribution maps were generated as part of the sector analysis for Northern Ireland.

The example below, highlighted that the main Chemicals and Allied product clusters (red/yellow) were located in Belfast, Portadown, Dungannon, Newry, Carrickfergus and Mallusk. As mentioned previously, this information can be used for a variety of means such as communication or campaigning in certain areas of the country.

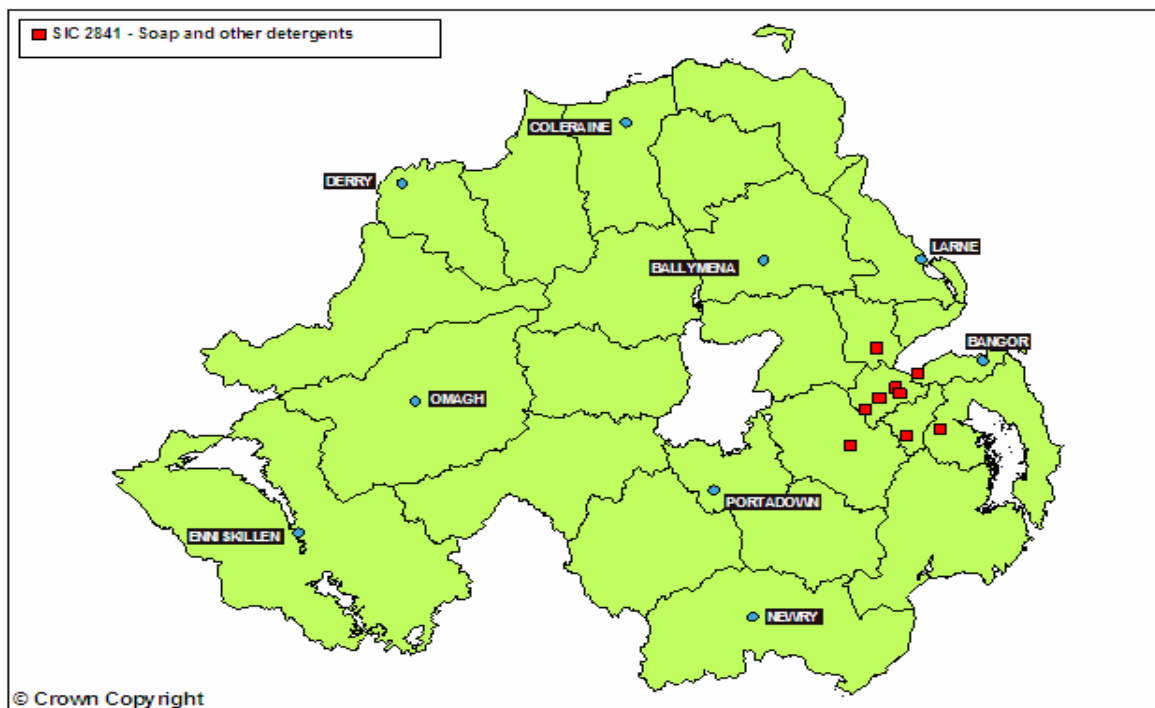
Figure 4.4.3.1 GIS Map – Chemicals and Allied products



4.4.4 Maps – Direct Plot

This example of a direct plot map has been generated for SIC code 2841, Soap and other detergents. 18 direct plot maps have been generated as part of the sector analysis for Northern Ireland. In this example below, nearly all the Soap and Detergents sub sector (SIC 2841) companies were located within the greater Belfast area. This matches with what we have already identified in the ward distribution map for SIC code 28 which highlighted significant chemicals sector clustering around the Belfast area.

Figure 4.4.4.1 GIS Map – Soap and other detergents



4.5 Northern Ireland Sector Analysis – Worked Examples

4.5.1 Introduction

In order to demonstrate the effectiveness of the work completed in the business sector analysis section of the project as described in Sections 4.2, 4.3 and 4.4, three work examples were chosen to demonstrate how the information collated and presented in this report and the database can be used to assess issues on specific business sectors. The three sectors chosen were:

- Pharmaceutical preparations, SIC 2834;
- Lumber and Wood products, SIC 24; and
- Textile products, SIC 22 and 23.

They were chosen to highlight the diversity of sectors identified and the detail of information that was able to be obtained on each. Also, specific to Northern Ireland, textiles was identified as one of the key manufacturing sectors and within the chemicals sector as a whole, pharmaceutical preparations was identified as a key sub-sector within the overall chemical sector.

4.5.2 Pharmaceutical preparations

Uses and sector identification

Pharmaceutical preparations related companies were captured under a 4 Digit SIC code, 2834, within the umbrella of the overall 2 digit SIC code, 28, capturing Chemicals and Allied products. This code was identified from the uses detail of numerous chemical families and it appeared 35 times in the business sector impact analysis.

Examples of chemical families identified from the reviews of current and future legislation and uses descriptions have been highlighted below and are include in the EHS database:

Table 4.5.2.1 Chemical Families and Uses - Pharmaceutical

Chemical family	Function	Uses
Amines	Industrial organic chemical	Anti-malarial drugs/ synthetic fibres e.g. nylon/ coloured dyes.
Nitric acid	Acid/Alkali	Manufacture of pharmaceuticals/ photo engraving in printing industry/ jewellery manufacturing/ engineering industry/ fertilizers/ dye intermediaries/ explosives/ etching steel/ rubber chemicals.

Sector analysis in Northern Ireland

The pharmaceutical preparations sub sector in Northern Ireland was 7th in highest in terms of frequency of SIC code identification within the overall Chemicals and Allied products analysis, see Figure 4.6.4.2, page 19. Analysis of the Pharmaceutical preparations sub-sector has also shown:

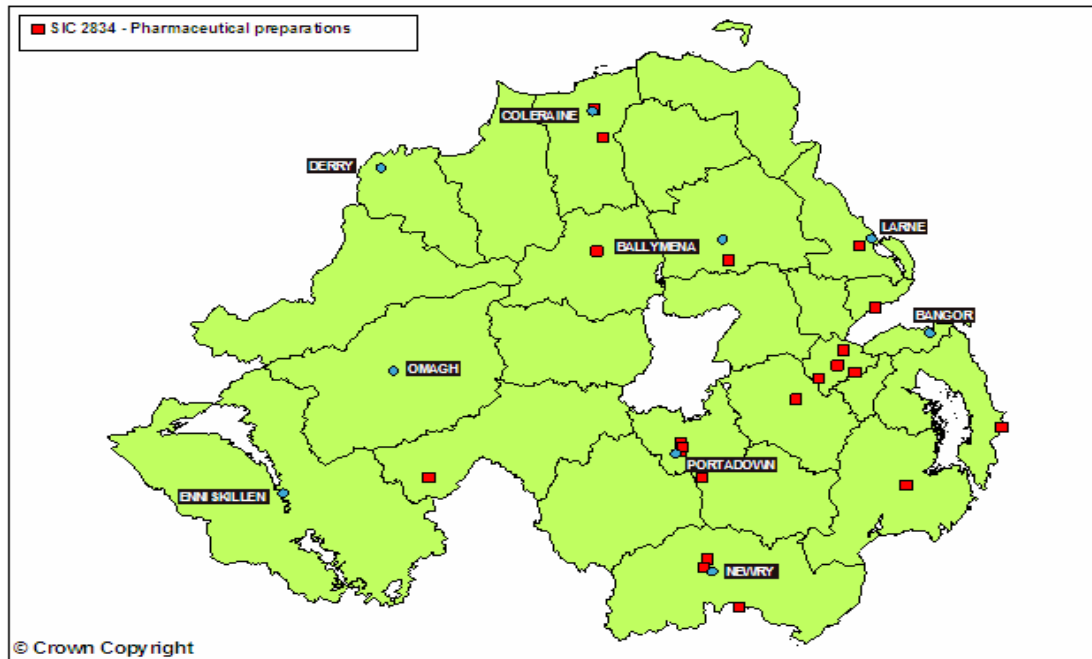
- 19 companies in total accounting for 23 % of the total for Chemicals and Allied products
- 2591 employees in total, 57 % of the total for Chemicals and Allied products
- 26% of pharmaceutical companies employ more than 100 FTEs vs. 12 % for chemicals overall

This demonstrates that Pharmaceuticals is the dominant sub sector in Northern Ireland within Chemicals and Allied products sector, in relation to size of company based on number of employees.

Pharmaceutical preparations - GIS mapping.

The GIS map below shows the spread of businesses in Northern Ireland captured in the Dun & Bradstreet information under the SIC code 2834. The chart has highlighted that the majority of businesses under this SIC code are located around the greater Belfast area with clusters around Newry and Portadown.

Figure 4.5.2.1 GIS Map for Pharmaceutical preparations



4.5.3 Lumber and Wood Products

Uses and sector identification

Lumber and Wood products related companies have been captured under a 2 digit SIC code, 24. This code was identified from the uses detail of numerous chemical families and appeared 28 times in the business sector impact analysis. Due to the potential for timber and wood treatments across all sub categories of SIC code 24, we applied the 2 digit code to all wood related uses.

Examples of chemical families identified in the review of current and future legislation and uses descriptions captured from databases searched, have been highlighted below:

Table 4.5.3.1 Chemical Families and Uses – Lumber and Wood Products

Chemical family	Function	Uses
Dichlorvos	Industrial chemical organic	A hazardous organophosphate, a veterinary medicine, in public hygiene as an aerosol insecticide and space spray. Timber/wood treatment.
Pentachloroethane	Industrial chemical organic	Solvent for oil & grease in metal cleaning/ separation of coal from impurities/ dry cleaning/ timber drying agent.

Sector analysis in Northern Ireland

The Lumber and Wood products sector in Northern Ireland was 11th in highest in terms of frequency of SIC code identification from all 28 sectors captured in the analysis.

Analysis of the Lumber and Wood products sector in NI has shown:

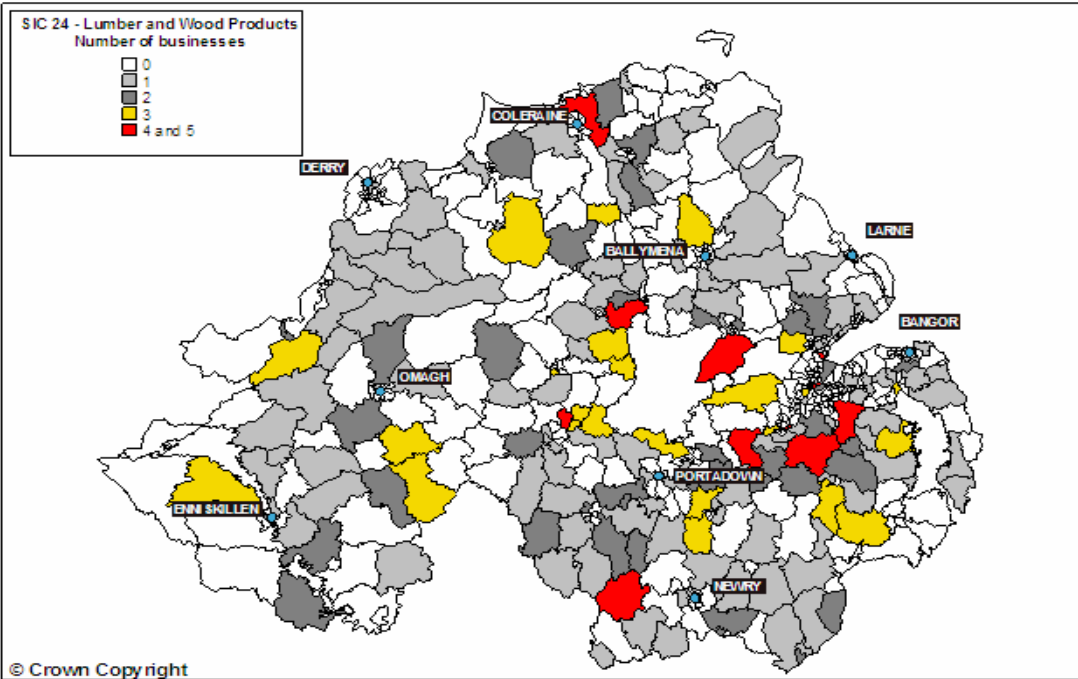
- 343 companies in total accounting for 12 % of the total companies identified overall;
- 4400 employees in total or 5 % of the total employees identified across all sectors; and
- Less than 2 % of companies employ more than 100 FTEs.

This analysis demonstrates lumber and wood products to be a significant sector in terms of number of businesses and potential to be using chemicals of concern, however, the sector is made up essentially of SMEs with an average of 10 employees per company.

See Appendix P for detailed information on companies and employee information by 2 digit sector.

GIS mapping

Figure 4.5.3.1 GIS Map for Lumber and Wood products



The GIS map plotted above shows the spread of businesses in Northern Ireland captured in the Dun and Bradstreet information under the SIC code 24. In line with the large number of businesses identified for the sector, the density map has indicated a large spread of related businesses across Northern Ireland. Cluster areas (highlighted in red) include Coleraine, South Armagh, Carryduff/Hillsborough, Moira and Antrim.

A key issue for consideration that this analysis identified was how best to target and approach such sectors. This is discussed later in the report.

4.5.4 Textiles

Uses and sector identification

Textile products have been classified under the 2-digit SIC codes 22 (Textile Mill Products) and 23 (Apparel and other Textile products). These codes were identified from the uses detail of numerous chemical families. SIC code 22 appeared 36 times in the business sector impact analysis with SIC code 23 appearing 24 times.

During sector impact analysis, both codes were regularly allocated to the same chemical family particularly for 'general' use in textiles industry.

Examples of chemical families listed from the reviews of current and future legislation and uses descriptions found in the database searches are highlighted in the Table 4.5.4.1:

Table 4.5.4.1 Chemical Families and Uses – Textiles

Chemical family	Function	Uses
Ammonium sulphide	Industrial inorganic chemical	Textile industry/ photography (developers)/ colouring brasses, bronzes, iron/ control in soda ash production/ synthetic flavours/ amusement products (obnoxious properties)
Carboxylic acids	Acid/Alkali	Pharmaceuticals/ leather tanning/ textile dyeing/ plastics/ lacquers/ solvents/ making soaps, detergents, and shampoos.

Sector analysis in Northern Ireland

The Textile Mill Products sector in Northern Ireland was 10th highest in terms of frequency of SIC code identification from all 28 sectors captured in the analysis. Further assessment of the Textile Mill products sector in NI has shown:

- 125 companies in total accounting for 4.5 % of the total companies identified overall;
- 8800 employees in total or 10 % of the total employees identified across all sectors; and
- 16 % of companies employ more than 100 FTEs.

This analysis demonstrates Textile Mill Products to be a significant sector in terms of number of businesses and employees within those businesses. Also, there are 20 Textile Mill firms in Northern Ireland with over 100 employees.

The Apparel and other Textile Products sector in Northern Ireland was 12th in highest in terms of frequency of SIC code identification. Further assessment of this sector has shown:

- 161 companies in total accounting for 6 % of the total companies identified overall;
- 5450 employees in total or 6.5 % of the total employees identified across all sectors; and
- 10 % of companies employ more than 100 FTEs

This analysis, as with Textile Mill Products, shows Apparel and other textile products sector to be a significant sector in terms of number of businesses and employees within those businesses. Also, there are 16 firms within this sector in Northern Ireland with over 100 employees.

Combining both the textile related sectors, this analysis has highlighted textiles, as expected, to be a major sector within Northern Ireland with a reasonably high potential to be using chemicals of concern listed from the reviews of regulation.

GIS mapping

The GIS maps for both SIC 22 and 23 related to textile industry show a widespread dispersion of the industry across Northern Ireland with significant clusters around the Belfast, Craigavon, North Down and Magherafelt/Maghera areas.

A key point to note has been the significant decline of the textile industry as a whole in Northern Ireland over the last 10 to 15 years. GIS maps plotted 15 years ago would have looked significantly different to today's maps.

Figure 4.5.4.1 GIS Map for Textile mill products

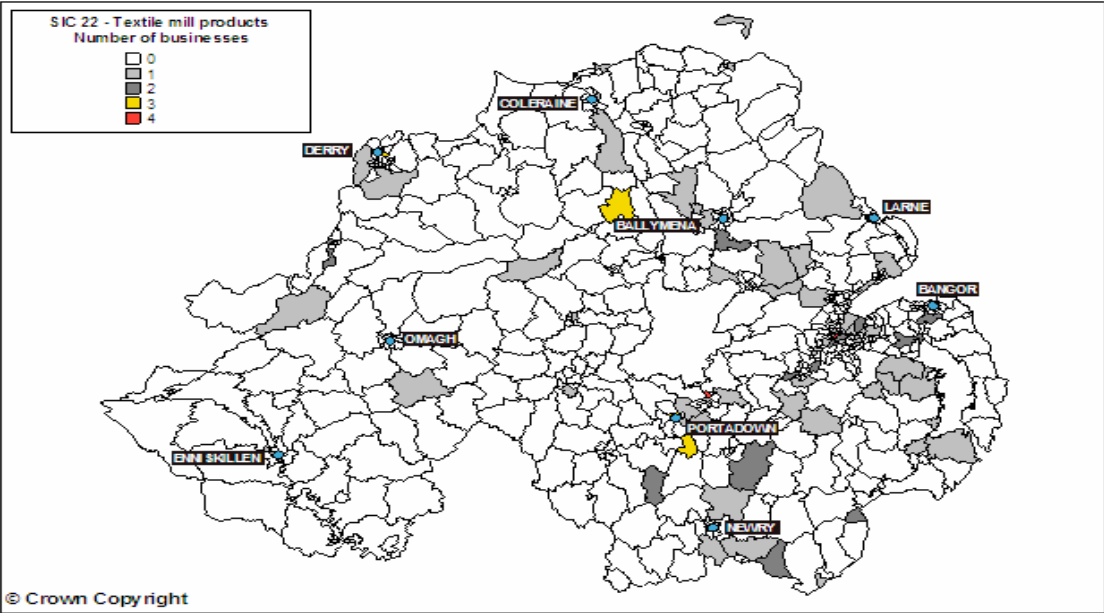
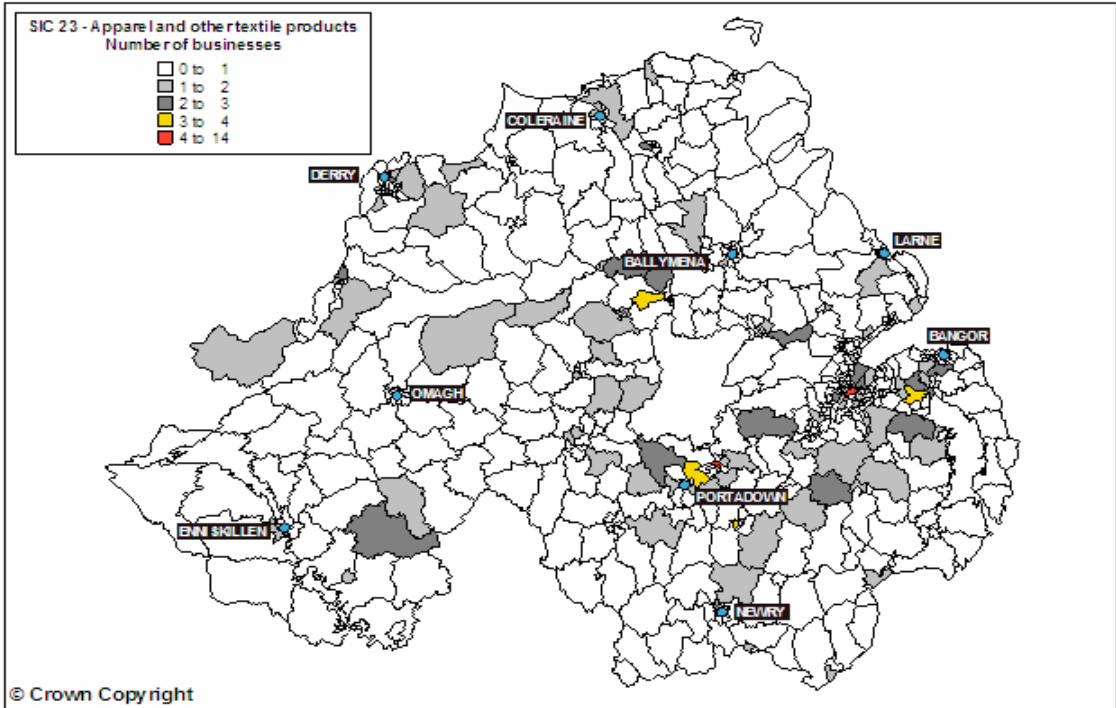


Figure 4.5.4.2 GIS Map for Apparel and other textile products



Key issues for consideration in managing this sector include:

- Managing ongoing downsizing of the industry, factory closures and the environmental risk presented by decommissioning of equipment used for processing chemicals of concern; and
- Maintaining effective and pro-active communication and dissemination of information within a declining industry.

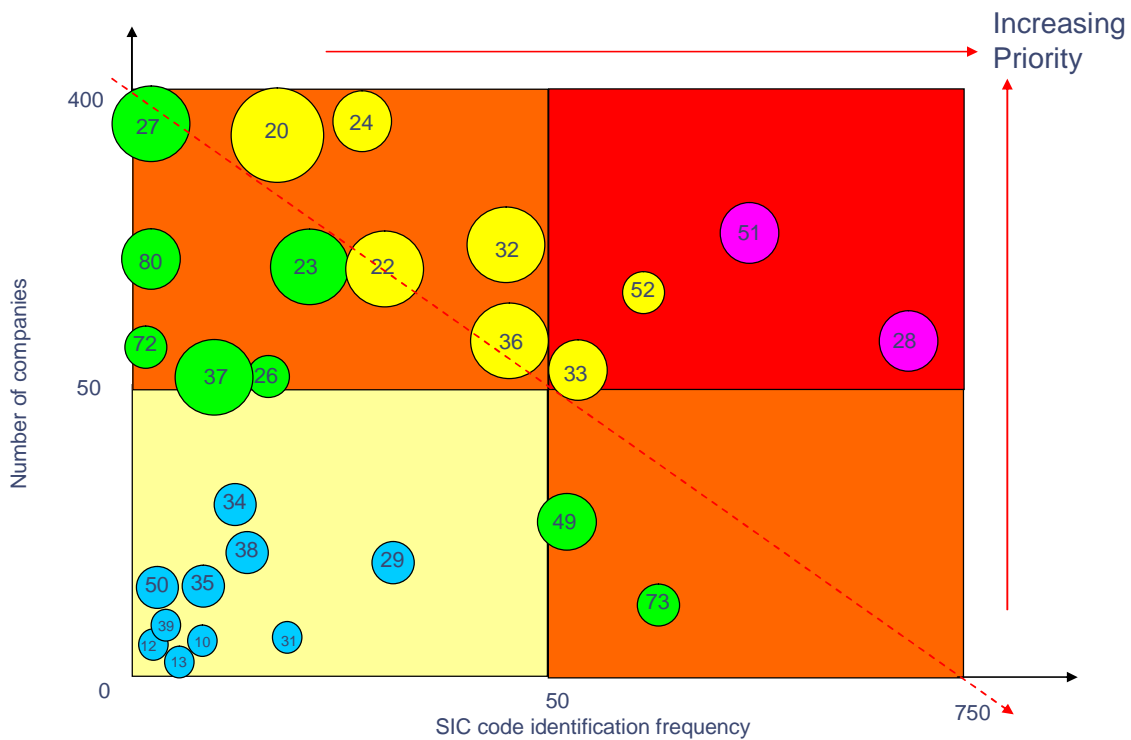
4.6 Sector Analysis – Prioritisation of future effort

4.6.1 Prioritisation Model










In completing the sector analysis and to assist with the prioritisation process, the model below (Figure 4.6.1) was developed. The prioritisation model is helping pull together all the key information gathered during the business sector analysis and plot it in such a way that it helps prioritise which sectors should be considered and targeted in future.

The model has plotted the SIC code identification frequency on the x-axis, the number of companies per sector on the y-axis and captured the number of employees in the sectors identified relative to the size of the individual circles representing each sector. The number of companies and SIC code identification frequency (by 2-digit sector) can be found in Appendix O and Appendix M respectively. The number of employees by 2-digit sector can be found in Appendix P.

Figure 4.6.1 – Prioritisation model



Prioritisation model key:

KEY		<u>Number of employees</u>	
<u>Priority</u>			> 10000 FTEs
	Priority 1		5000-9999 FTEs
	Priority 2		1000-4999 FTEs
	Priority 3		100-999 FTEs
	Priority 4		< 100 FTEs

Caveats

This model was developed to act as a guide in identifying the potential sectors that should be the focus of attention.

This model does not substitute a real risk assessment that captures the ACTUAL chemicals used by business, the ACTUAL hazard ranking of those chemicals and the ACTUAL tonnes stored or used of the chemicals by the business. True assessment of risk to people and environment cannot be completed until the information above is obtained.

Given the above caveats, it is essential that further work be completed before individual sectors are targeted for specific action. This will be discussed later in the report.

Prioritisation

To allocate priorities to sectors, a simple approach has been taken where a dividing line has been drawn from the top left (y-axis) to the bottom right (x-axis) of the model. Any sectors plotted above and to the right of the line have been allocated either priority 1 or 2. Any sector identified plotted below and to the left of the line have been allocated priority 3 or 4.

The model has highlighted the following in relation to sectors and the priority each of the sectors may be given.

Priority 1 (purple)

The Chemicals and Allied Products (28) and Wholesale of Chemicals and Allied Products/Petrochemicals (51) stand out as the sectors for further investigation. Combined, these sectors account for over 300 individual companies and over 7000 employees.

Priority 2 (yellow)

These sectors, that include Stone, Clay and Glass products (32), Primary Metal Industries (33) and Electronic and other electrical equipment (36) fall into priority 2. From our analysis, these sectors have significant levels of employment and/or numbers of companies and have been identified regularly when allocating business sectors or SIC codes to chemical uses.

Priority 3 (green)

These sectors, which include Printing (27), Transport Equipment (37), and Business Services (Pest control, 73) fall into priority 3. These sectors have either been identified as:

- Having large numbers of companies (and potentially employees) but the sector was not identified often when allocated sectors or SIC codes to chemical uses e.g. SIC 37, Transport equipment; or
- Having minimal numbers of businesses listed but the sector was identified a significant number of times during the allocation of SIC codes to chemical uses e.g. SIC 73, Business Services (Pest Control)

Priority 4 (blue)

These sectors that include Metal Mining (10), Coal Mining (12) and Leather and Leather Products (31) fall into priority 4. The sectors have typically been plotted in the lower left quadrant of the model, indicating small numbers of businesses for the codes searched and also a small number of identifications of that sector during the allocation of SIC codes to chemicals based on the use information obtained.

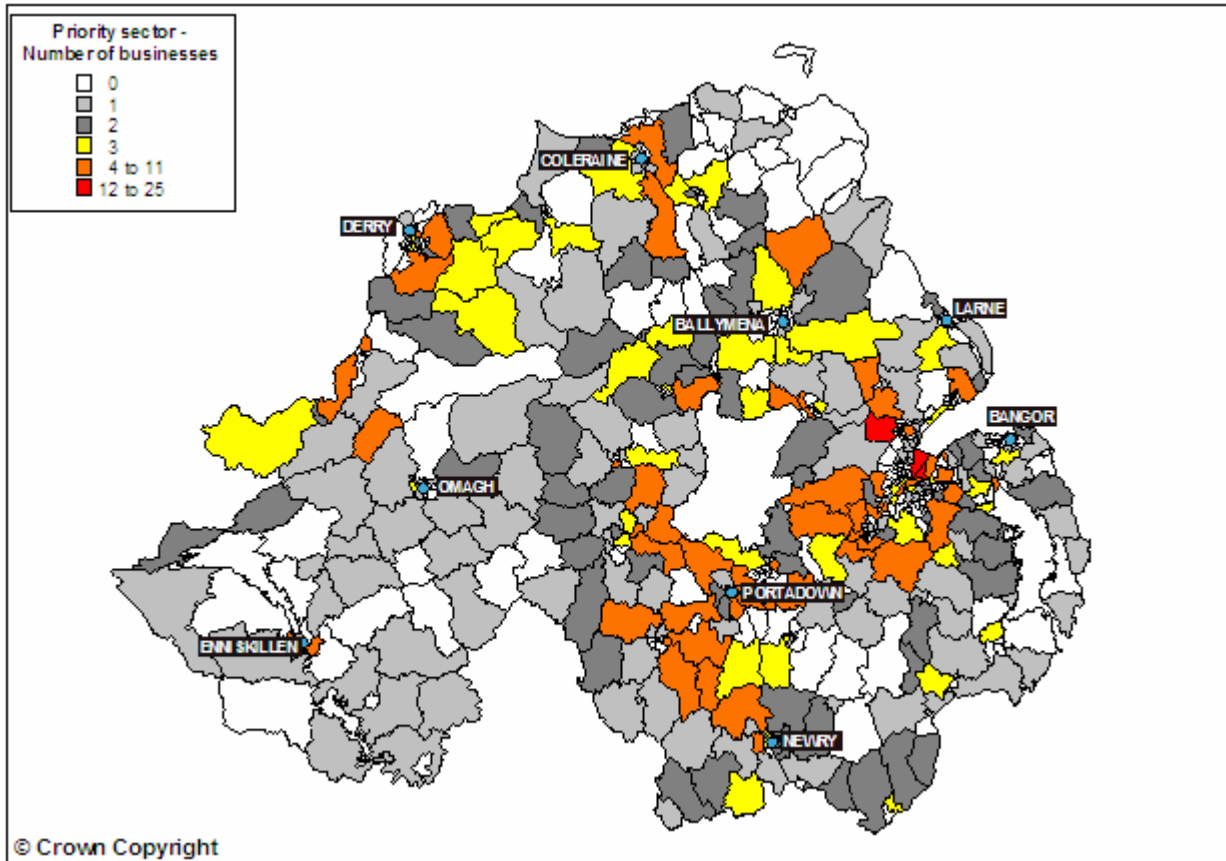
Appendix Q lists the sectors and their allocated priority as well as capturing employee, company and identification frequency detail in one table.

4.6.2 GIS profiling of priority sectors

To provide more a more detailed picture of the dispersion of 6 of the priority 1 and 2 sectors, we combined all the company information and plotted it onto a single GIS map for Northern Ireland. We selected the six sectors that were either inside or closest to the top right quadrant of the prioritisation model. The sectors were:

- Priority 1 – Chemicals and Allied Products (28) and Wholesale of Chemicals/Allied products/Petrochemicals (51).
- Priority 2 – Stone, Clay and Glass products (32), Primary Metal Industries (33), Electronic and other Electrical Equipment (36), Nurseries, Lawn and Garden Supplies (52)

Figure 4.6.2.1 – GIS plot – layering priority sectors



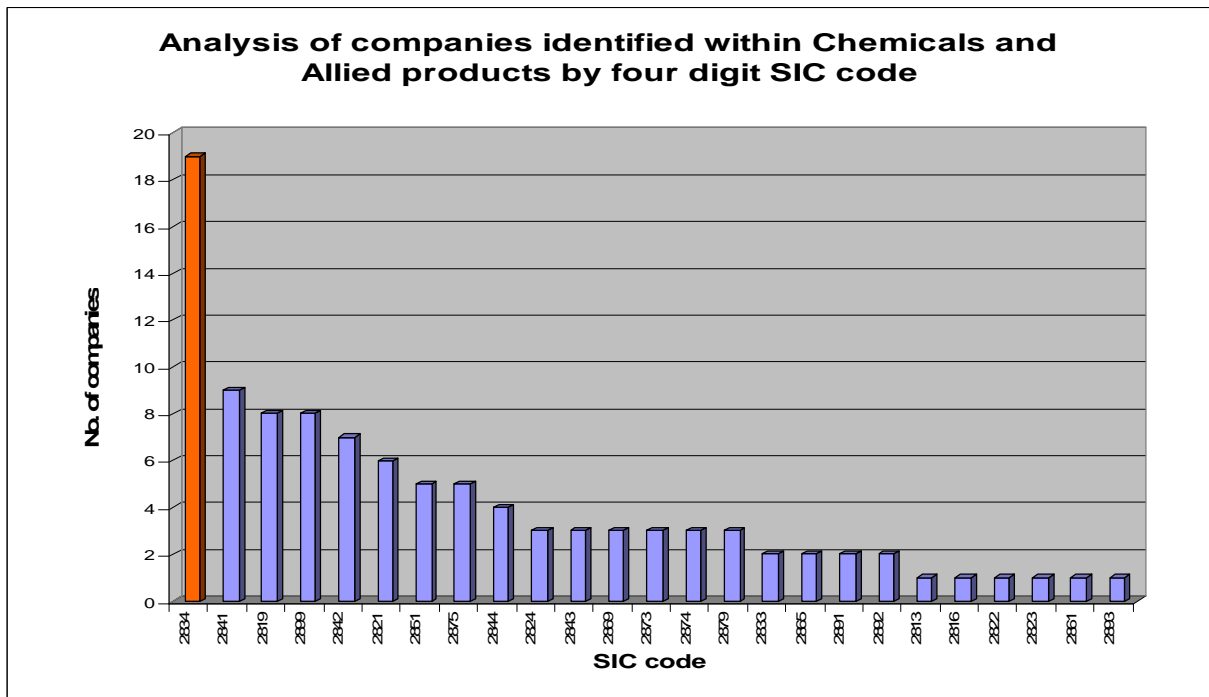
Layering the top six priority sectors into one GIS map highlights that the focus areas in terms of the geography of Northern Ireland, not surprisingly, are located around the more densely populated areas e.g. Greater Belfast, Craigavon, Newry, Armagh, Derry, Strabane, Ballymena and Antrim. The map also however highlights that there is still widespread dispersion of businesses across Northern Ireland that may use chemicals of concern, even in the top six priority sectors. The GIS map above has indicated around 85-90% of individual council wards having a least one business that may be using one or more of the chemicals listed in the review of legislation.

4.6.3 Prioritisation within Chemicals and Allied products

Having identified the Chemicals and Allied Product sector as a high priority sector for future focus, a further prioritisation assessment was completed at 4 digit SIC code level.

The Pareto type analysis below has highlighted the Pharmaceutical Preparations sub sector, SIC 2834, as a key area of focus within the overall Chemicals and Allied products sector. The chart plots the 4 digit sub sectors and the number of companies within those sub sectors. See Appendix R for a detailed information table.

Figure 4.6.3.1 – Analysis of Chemicals and allied products sub sectors vs. number of companies within those sub sectors



The analysis shows Pharmaceutical Preparations as by far the dominant sub-sector within chemicals in Northern Ireland. Supporting statistics are as follows:

- 19 pharmaceutical preparations companies were identified in total or 23 % of the total number of companies for Chemicals and Allied products;
- 2591 employees in total were identified within these companies accounting for 57 % of the total employees for Chemicals and Allied products;
- 26% of pharmaceutical companies employ more than 100FTE vs. 12 % for chemicals overall indicating a higher predominance of larger companies vs. other sectors; and
- 2 key employers in Northern Ireland were identified in this sub sector, accounting for 40% of the total Chemicals and Allied products workforce.

4.7 Sector Analysis – Summary

4.7.1 Process

It should be reflected on that outputs from the sector analysis have been informed by the following series of detailed and rigorous activities:

- The identification and listing of controlled chemicals from the reviews of current legislation and listing of chemicals of concern from pending/future regulation as summarised in Section 3;
- The identification of uses of these chemicals using various database searches;
- The allocation of SIC codes or sectors to chemicals based on the use information obtained;
- The analysis of the sectors identified including the frequency of identification, this highlighting the likelihood of those sectors to be using controlled chemicals;
- The gathering of company and employee information by sector in order to capture the relative size of the sectors identified previously; and
- The final plotting of all the relevant sector information on one prioritisation model.

Limitations

Before summarising further the key findings from this work, the limitations of the sector analysis and prioritisation assessment should be noted again. We have identified priorities based on businesses potentially using the chemicals listed from the reviews of regulation. The process of identifying these sectors and businesses whilst robust, still had its limitations (see summary section 4.2.8), for example:

- A single all encompassing database did not exist for capturing chemical use information, and those that did exist, had significant gaps. This situation has again highlighted why the EU want to implement the REACH legislation and develop a central European database that captures the key use information for all chemical substances in the EU marketplace;
- The ability to capture all relevant use information e.g. not always available due to issues such as intellectual property protection;
- The allocation of SIC codes required judgements to be applied in some cases. As a result, there is a risk of some gaps or anomalies in the allocations; and
- We only identified private sector businesses as part of the sector review but acknowledged the potential use of chemicals in Public Sector organisations such as the Water Service.

Also identified as a limitation when completing the search of Dun and Bradstreet information (Section 4.3.4) was the aspect of businesses allocating their own SIC code for database providers and potentially allocate a wrong code or a single code that does not reflect the entirety of that company's activity e.g. Bombardier/Shorts classified as Aircraft manufacture however in their work they may well do metal coating or electroplating using chemicals.

Due to the above limitations we cannot definitively state we have or don't have significant issues with the control of chemicals in Northern Ireland or within specific sectors in Northern Ireland. These statements can only be made based on detailed, informed primary research where the types and volumes of chemicals are actually known.

What we have done however is complete robust preliminary work to act as a baseline and a guide that will inform future approaches to these sectors in order to collate actual data on chemicals in the Northern Ireland supply chain.

4.7.2 Key Findings

Northern Ireland Overview

Background information was reviewed on the Northern Ireland economy (Section 4.3.1) separate from the Dun and Bradstreet analysis completed as part of the project. It highlighted a public sector dominated economy accounting for over 35% of the working population. Dominant private sectors were identified as Manufacturing and Construction.

Dominant sectors in manufacturing were identified as Food, Textiles and Transport Equipment (e.g. Ship building and aircraft manufacture). The Chemicals sector itself in Northern Ireland was relatively small based on number of employees, accounting for less than 5% of the total manufacturing workforce.

This potentially gives an impression that from the point of view of manufacture, chemicals do not present a major issue in a Northern Ireland context and, that chemical volumes in the supply chain are small, relative to the size of the chemicals sector. Whilst this may be true, it still needs to be proved and has not been answered by the work completed in this project. See chapter 6, Recommendations for further discussion on this issue.

Sector Overview

A key outcome from the sector impact analysis (sections 4.2.6 and 4.2.8) covering current and future regulation was that there was a significant spread of diverse sectors that could be using chemicals of concern e.g. Aircraft parts, ship repair, jewellery, refrigeration equipment, dry cleaning, dentistry.

This supports the knowledge that controlled chemicals are used throughout the value chain encompassing many manufacturing and other sectors e.g. agriculture to aircraft manufacture, textiles to timber treatment.

It was also significant that when comparing the numbers and types of sector identified for current and pending/future regulation (sections 4.2.7 and 4.2.8) that although the substances reviewed for pending/future were only 20% of the total, over 60 individual SIC codes were identified which accounted for around 50% of the total SIC codes identified. This indicates that pending or new regulation will have impacts on a broad range of high level business sectors rather than just the chemical producer.

The information obtained by sector from the Dun and Bradstreet database identified over 2700 individual companies as potentially using chemicals, those companies having a combined workforce of over 80000 FTE's.

A key finding (section 4.3.6) was that there were significant numbers of businesses within some of the business sectors that have been highlighted most as potentially using controlled chemicals. It is these sectors that should inform the key priorities set as part of the future EHS approach to chemicals regulation.

A key point to note was that of the businesses identified, 90% had less than 50 employees, highlighting the predominance of SMEs in Northern Ireland. The D&B analysis we completed was complimentary to the information gathered separately on the Northern Ireland sectors as discussed above.

Prioritisation

The prioritisation model (section 4.6), enabled individual sectors to be identified for future focus and were allocated to priorities 1 to 4. The Chemicals and Allied products sector was identified as the top priority, even though in relative terms to other sectors it wasn't the largest by employee numbers. Also, with the Chemicals and Allied products sector it self, the sub-sector Pharmaceutical Preparations was identified as a priority due to it being by far the dominant sub sector within chemicals.

4.7.3 Moving Forward

The recommendations for moving forward based on the findings from this project are captured in detail in the Recommendations (Section 6) and Next Steps (Section 7) sections of this report.

5 Database Development

5.1 Introduction

A key element of this project was the development of a database that, as a minimum, was capable of effectively storing all the information gathered during the project including the lists of chemicals, associated regulation and the relevant business sector data associated with the uses of those chemicals.

Following initial specification at the Project Scoping day and further review with the EHS team, the system that has been developed is a bespoke relational database built using Microsoft Access 2002. The database solution consists of Forms, Tables, Queries and Reports which together provide a live data storage and business intelligence solution.

5.2 Functionality

The following key elements of functionality have been built into the database:

- Display screen filter capability across all 1500 chemicals listed via 6 filter parameters;
- Display screen 'reporting' capability enabling printing of filtered information in a standard report format;
- Reporting capability (6 individual reporting options) allowing drill down by selection of 2 parameters and running a report or print off in a standard format e.g. chemicals identified by regulation;
- Detailed information display by chemical capturing information in 3 individual screen tabs:
 - Chemical detail;
 - Regulation and Exposures; and
 - Sector Information.
- 'Add' and 'Edit' capability for the whole database across all parameters; and
- Sector information screen with reporting (by company list) and GIS presentation capability.

5.3 Database Content

The core data stored in the database includes:

- Information on chemicals identified during the review of current and pending legislation including CAS number, hazard and exposure information;
- Information on selected priority chemicals and the business sectors (by US SIC – Standard Industry Classification) identified as potentially using these chemicals; and
- Lists of company details for each business sector identified and GIS (Geographical Information System) maps for selected sectors.

Basic information by chemical

The key information gathered as part of the reviews of current and pending/future legislation has been captured in the table below. The database has over 1500 individual chemicals listed and for each chemical, has varying levels of information gathered, this based on the priority given to that chemical in terms of information gathering and also, the depth of information that was obtained during the searches.

Table 5.1 Base information by chemical

Information	Comments
Chemical name	Over 1500 substances linked to 48 items of current legislation and 18 items of pending/future legislation.
CAS number	About 750 CAS numbers identified for individual substances with 90 created for chemical groups.
Chemical Family	All chemicals were allocated a total of 656 chemical families or group of substances.
Control Status (Current /Future)	Captured for all chemicals listed related to current or future legislation.

Hazard type e.g. Health	Captured for over 200 individual chemicals as listed in current legislation where data available from database searches completed using the CAS number.
Function e.g. Industrial Chemical	Captured for the 355 priority substances/families (550 individual chemicals) identified for review as part of business sector analysis.
Controlling Regulation or priority list e.g. PPC (NI) 2003	Captured for all chemicals listed.
Exposure information e.g. Carcinogenic, Toxic etc	Captured where information available based on CAS numbers. Approximately 50% of chemicals with CAS numbers had exposure information available.
Media	Captured for individual chemicals where clearly defined in current regulatory text or relevant to priority lists.

Chemical Use, Business Sector and Company Information

From the lists of chemicals captured, a total of 355 chemical families covering 550 individual chemicals were reviewed as part of the business sector analysis. The database captures general use information on these chemical families, sector information (by US SIC code at 2, 3 and 4 digit level) and Northern Ireland company listings for each of the sectors identified. GIS (Geographical Information System) maps have also been created for priority sectors. The table below summarises the data obtained for the database.

Table 2.2

Information	Comments
General use information	Obtained for 351 of the 355 (99%) chemical families reviewed.
Sector information	An average of 5-6 sectors identified for each chemical family.
Company information <ul style="list-style-type: none"> o Company name; o Address; o Postcode; o Tel. number; and o No of employees. 	2789 individual companies identified (duplicates removed) as potentially producing, marketing or using chemicals: <ul style="list-style-type: none"> - 100% addresses found; - 100% postcode captured; and - 89% employee information obtained.
GIS Maps	30 priority maps generated in total linked to sectors.

5.4 Reporting Capability

A key element of functionality built into the database was an effective reporting capability to enable the user to filter and search for relevant information from an extensive amount of raw data. In agreement with the EHS the reports developed were as follows:

- Chemicals by Regulation;
- Chemicals by Sector;
- Chemicals by Company;
- Chemicals by Media;
- Companies by Postcode; and
- Sectors by Regulation.

A screenshot of a sample report on companies by postcode for postcode BT10 is presented in Appendix T. This report gives the EHS the capability to search for companies potentially using chemicals to a local postcode area. The report detail highlights the company names, addresses and associated sectors.

5.5 Summary

The database developed is a powerful and user friendly tool that has captured complex data from a series of spreadsheets. Having edit capabilities will ensure that the database can be kept live and up to date by the key user group rather than remaining a simple static set of data. The database also has the capability to be developed further and to evolve into an effective information centre and management tool, for the regulation and control of chemicals.

6 Conclusions and Recommendations

The findings, conclusions and recommendations below have been informed by the following series of detailed and rigorous activities that have been summarised in Sections 3 and 4 respectively:

- The identification and listing of controlled chemicals from the reviews of current legislation and listing of chemicals of concern from pending/future regulation;
- The identification of uses of these chemicals using various database searches;
- The allocation of SIC codes or sectors to chemicals based on the use information obtained;
- The analysis of the sectors identified including the frequency of identification, this highlighting the likelihood of those sectors to be using controlled chemicals;
- The gathering of company and employee information by sector in order to capture the relative size and spatial distribution of the sectors in a Northern Ireland context; and
- The final plotting of all the relevant sector information on one prioritisation model.

6.1 Findings

Review of Legislation

As a result of completing this data collection exercise (see Section 3) a detailed baseline of information was created for input into the EHS database. Over 1500 chemical substances were listed, these linked to 48 items of current legislation and 18 items of pending/future legislation. In order to gather further information (e.g. exposure data) on these chemicals, CAS number searches were completed for all substances identified within the regulation (current and pending).

A notable finding was that when searches were carried out on substances with CAS numbers using the ESIS database, **only 50%** of the chemicals had information on risk exposure and hazard type. This is likely to be due to these substances being registered pre 1980 and they have therefore not had the same level of testing carried out as for substances registered post 1980.

It is highly likely that this lack of information, by individual chemical, is a key driving force behind the EU REACH initiative as described in the introduction section of this report.

It is also worth commenting that whilst the information collated above was included in the EHS database, further development of this database and the information stored in it should be considered relative to the EU REACH programme that will, over the next few years, develop a European central database for all substances in the EU marketplace with all the relevant detailed hazard and exposure information.

Business Sector Analysis

Limitations

Before concluding further the key findings from the business sector analysis, the limitations of this analysis and prioritisation section should be noted (summarised previously in Sections 4.2.8 and 4.7).

In order to source chemical use data effectively and efficiently, we contacted several industry groups and other key stakeholders for advice on which existing database e.g. ESIS, would be best suited to source the data we required (Section 4.2.1). The response indicated that no single, all encompassing database existed for this information and those that did exist had significant gaps. Due to this, we sourced use information from 4 separate databases to capture the data and then completed web searches as required to close any gaps in information.

A notable limitation through the approach to capturing chemical use data included the issue of companies protecting their intellectual property and not communicating publicly use information on their products (Section 4.2.2).

Further limitations of the approach were around the allocation of SIC codes as part of the sector impact analysis (Section 4.2.3) and the precision of classification reflecting the quality of chemical use data available. It should be noted that this required judgements to be applied in some cases and as a result, there is a risk of some gaps or anomalies in the SIC code allocations.

Several sectors were EXCLUDED from the analysis (Section 4.2.4) as listed below:

- *Fuel dealers* or, for example, petroleum dealers, were not identified specifically in any of the chemical use data and included in the sector analysis. Petroleum spirit itself was not one of the listed priority chemicals that detailed use information was captured on;
- *Dispensing Chemists* (retail) were not identified in the sector analysis as using the chemicals of concern listed. None of the 355 chemical families that were listed were assigned the function 'pharmaceutical'. Numerous chemical families were highlighted as having uses related to the manufacture or synthesis of drugs or pharmaceutical products. For the purpose of this exercise we assumed that dispensing chemists retail drugs or pharmaceuticals that have already been manufactured rather than manufacturing themselves; and
- *Public Services* - Of the sectors or SIC codes identified as potentially using chemicals, Public Sector organisations were not identified in businesses/organisations listed in the D&B database under these sector headings e.g. the Water Service was not identified under SIC 494 (Water Supply). In terms of public sector organisations that could potentially be using chemicals, these were acknowledged as including:
 - o NI Water Service and the associated water treatment chemicals used in water and wastewater treatment; and
 - o Hospitals potentially using and disposing of pharmaceutical products or, for example, using cleaning and disinfectant products containing chemicals.

In the context of the sector analysis carried out as part of this review, only the SIC codes identified in the chemical use analysis were searched within the D&B database and the information on these was limited to private sector organisations. Public Service organisations mentioned above will need to be considered in future and importantly the database built as part of the project provides a live tool for updating information on any sector linked in future to listed chemicals.

Also identified as a limitation when completing the search of Dun and Bradstreet information (Section 4.3.4) was the aspect of businesses allocating their own SIC code for database providers and potentially allocate a wrong code or a single code that does not reflect the entirety of that company's activity e.g. Bombardier/Shorts classified as Aircraft manufacture however in their work they may well do metal coating or electroplating using chemicals.

In terms of an overall high level limitation of the project, we cannot definitively state Northern Ireland has or doesn't have significant issues with the control of chemicals as a whole or within specific sectors in the Province. These statements can only be made based on detailed, informed primary research where the types and volumes of chemicals are actually known.

Sector Impact Analysis

Chemical use information was obtained at chemical family level across 355 individual chemical families (Sections 4.2.1 and 4.2.2). These comprised all chemical families identified as part of the review of current legislation and the priority families identified as part the review of pending/future regulation.

Over 1900 individual SIC codes were identified (Section 4.2.5) across the list of 355 substances with each substance having on average 5-6 different SIC codes allocated. This has highlighted that the detail obtained in the uses analysis was of sufficient depth and quality to enable several business sectors to be identified as using the substances.

Also, 111 different SIC codes or sectors at 2,3 and 4 digit level have been identified as potentially using chemicals. This identified that controlled chemicals are being used extensively across many business sectors. The sector impact analysis highlighted that in terms of core manufacturing the key sectors that need focus on in terms of likelihood of using controlled chemicals were:

- o Chemicals and Allied products (including wholesale and distribution);
- o Primary Metal Industries;

- Electronic and other Electrical Equipment; and
- Stone, Clay and Glass products.

The analysis has also highlighted the non manufacturing sectors most likely to be using controlled chemicals were:

- Business Services involved in Disinfecting and Pest control;
- Garden supplies (associated with pesticides/biocides); and
- Electric, gas and sanitary services (Water Supply).

A significant point to note was that when comparing the numbers and types of sectors identified for current and pending/future regulation (see Section 4.2.7), although the substances reviewed for pending/future were only 20% of the total, over 60 individual SIC codes were identified which accounted for around 50% of the total SIC codes identified.

Sector Analysis for Northern Ireland

Sector analysis for Northern Ireland was completed to inform the EHS on the relative size, complexity and distribution of the sectors identified in the impact analysis, resulting in the following findings.

Background to Northern Ireland

Background information was reviewed on the Northern Ireland economy (Section 4.3.1) and it highlighted the economy as being dominated by the Public Sector, accounting for over 35% of the working population. The dominant private sectors were Manufacturing and Construction and within Manufacturing, the dominant sectors were identified as Food, Textiles and Transport Equipment (e.g. Ship building and aircraft manufacture).

The Chemicals sector itself in Northern Ireland was relatively small based on number of employees (< 5% of total manufacturing employees), when compared individually to other sectors such as food and textiles and in relation to overall employment in Northern Ireland.

Dun and Bradstreet Sector Analysis

The information obtained by sector from the D&B database (Section 4.3.3) identified over 2700 individual companies as potentially using chemicals, those companies having a combined workforce of over 80000 FTE's.

Pareto analysis (Section 4.3.6) by company and by number of employees by individual sector (2-digit) highlighted a number of key findings;

- In the analysis of companies, 5 sectors out of the top 10 in terms of number of companies per sector were ALSO within the top ten in the impact analysis completed previously. These were:
 - 51 Wholesale Trade Non Durable goods (Chemicals and Petroleum products);
 - 32 Stone, clay and glass products;
 - 52 Garden supplies;
 - 22 Textiles; and
 - 28 Chemicals and Allied Products.
- In the analysis of employees, 4 sectors out of the top 10 in terms of number of employees per sector were ALSO within the top ten in the impact analysis. These were:
 - 22 Textiles;
 - 32 Stone, clay and glass products;
 - 36 Wholesale Trade Non Durable goods (Chemicals and Petroleum products); and
 - 28 Chemicals and Allied Products.
- The D&B analysis we completed was complimentary to the information we gathered separately on the Northern Ireland economy as discussed above with the top three sectors in terms of employment matching the top three noted from the background information; and
- From the business lists obtained, 90% of companies had less than 50 employees, highlighting the predominance of SMEs in Northern Ireland.

GIS Mapping

To provide a spatial overview of the distribution of businesses in Northern Ireland, GIS (Geographical Information System) mapping was completed (Section 4.4) on a number of priority sectors. This was a useful exercise to complete within the project and gave useful business spread analysis for various sector and sub-sectors. The benefit of doing this was to highlight potential cluster areas for businesses within certain sectors and give a real picture as to the distribution of companies within the sector across Northern Ireland.

Business Sector Prioritisation

A model was developed (Section 4.6) to pull together all the key information gathered during the business sector analysis and plot it in such a way that it helped prioritise which sectors should be considered and targeted.

This model does not substitute a real risk assessment that captures the ACTUAL chemicals used by business, the ACTUAL hazard ranking of those chemicals and the ACTUAL tonnes stored or used of the chemicals by businesses. True assessment of risk to people and environment cannot be completed until the information above is obtained.

In the model, Chemicals and Allied products was identified as the top priority even though in relative terms to other sectors it wasn't the largest by employee numbers. Also, further analysis within the Chemicals and Allied products sector itself, the sub-sector Pharmaceutical Preparations was identified as a priority due to it being by far the dominant sub sector within chemicals.

Database Development

A key element of this project was the development of a database (Section 5) that as a minimum was capable of effectively storing all the information gathered during the project including the lists of chemicals and their associated regulation as well as the relevant business sector data associated with the uses of those chemicals.

The system that has been developed to achieve the above is a bespoke relational database built using Microsoft Access 2002, providing a live data storage and business intelligence solution.

The database developed is a powerful and user friendly tool that has captured complex data from a series of spreadsheets. Crucially, the database also has the capability to be developed further and evolve into an effective information centre and management tool for regulation and control of chemicals.

This is discussed further in the recommendations section of this chapter.

6.2 Conclusions

In concluding the findings of the work completed, these have been assigned to key themes that have been identified from the analysis, these themes being impact of future regulation, sector diversity and sector prioritisation.

Impact of Future Regulation

Our analysis has concluded that pending or new regulation will have impacts on a broad range of high level business sectors rather than just the chemical producer and the REACH legislation to be implemented in EU member countries in 2007, is a prime example of that.

Our work has also highlighted the need for the REACH legislation given that we identified significant gaps in information on existing databases (e.g. ESIS) such as chemical use information and hazard exposure information on individual substances.

Sector Diversity

Given the number of individual sectors and sub sectors identified as part of the sector analysis for Northern Ireland, this work has identified that chemicals were potentially being used throughout the value chain in many business sectors from primary material producers right through to retail users.

This not only included the traditional sectors one would expect to use chemicals, such as chemicals and allied products, but also diverse but important sectors in a Northern Ireland context, such as aircraft parts, ship repair, jewellery, refrigeration equipment, dry cleaning and dentistry.

Also, in addition to the diversity of sectors identified, a key highlight of the analysis was the fact that 90% of the individual businesses across all sectors were SMEs with less than 50 employees.

Sector Priorities

In the analysis completed, various sectors identified as having a high potential for using chemicals also had significant numbers of employees and businesses. It is these sectors that should inform the key priorities set as part of the future approach to chemicals regulation.

The prioritisation model developed to highlight these sectors (section 4.6), captured the priority 1 and 2 sectors and their 2 digit SIC codes, as listed below;

- Priority 1 – Chemicals and Allied Products (28) and Wholesale of Chemicals/Allied products/Petrochemicals (51); and
- Priority 2 – Stone, Clay and Glass products (32), Primary Metal Industries (33) and Electronic and other Electrical Equipment (36), Nurseries, Lawn and Garden Supplies (52), Food and Kindred Products (20), Textile Mill Products (22), Lumber and Wood Products (24)

A key conclusion from this prioritisation is that the model should be used to help focus and prioritise future activity for further investigations to inform the control and regulation of chemicals.

6.3 Recommendations

This was a baseline project for chemical, regulation and Northern Ireland sector information data capture. It has also provided, and will continue to provide, an educational background into the business sector make up of Northern Ireland and in particular the key sectors in Northern Ireland that potentially use controlled chemicals.

During the course of this project, it was announced that Health and Safety Executive (HSE) and their counterpart, HSENI, will be taking the role of UK Competent Authority for EU Chemicals Regulations (REACH). EHS anticipates a supporting role in delivering some of the enforcement responsibilities for chemicals regulation. The outputs from this work will assist the EHS in this role.

In the findings and conclusions section we have highlighted not only the positive outputs from the work completed but also its limitations and the inability to draw underpinned conclusions about the extent of actual use of chemicals in Northern Ireland and the risks that these chemicals pose.

Due to these gaps in knowledge we recommend a follow up programme of work to help shape the approach to chemicals regulation based on actual information on chemical use in the Northern Ireland marketplace.

Recommendations are presented below regarding communication, application of the methodology and further investigations.

Communication

As noted above, future chemicals regulation, particularly under REACH, will be within the remit of a number of agencies, notably HSE and HSENI. It is therefore recommended that the report is shared with these key stakeholders. Future communication with stakeholders may be facilitated by contact with industry bodies, professional bodies, and sector focus groups. A list of industry bodies with appropriate contact details, identified by this project is given in Appendix U.

A key issue to note was that trade organisations for significant sectors in Northern Ireland were not operational, at the time of our analysis. These included the Northern Ireland Timber Trade Association, the Northern Ireland Textile and Apparel Association and the Northern Ireland Aerospace Consortium.

Due to the fact there is a wide spread of business or industry sectors in Northern Ireland and that the local economy as a whole is small compared to, for example, various regions in Great Britain, trade and industry associations locally for certain sectors either do not exist or may not be that strong or influential.

Application of methodology

The methodology used for this project, and the database, are both tools that can be used to support the future EHS role in chemicals regulation. The approach to identifying industry sectors and analysis of the geographical spread of these sectors is a useful tool in highlighting priorities for further investigation.

These tools may deliver additional benefits for other regulatory regimes within EHS, and this potential could be explored by relevant EHS units.

Further investigations

The limitations of this project have already been highlighted in that sectors and businesses have only been identified as potentially using controlled chemicals. Further investigations could be undertaken to understand, as far as possible the actual volumes of controlled chemicals or chemicals of concern that are circulating in the Northern Ireland chemicals supply chain. A proposed approach is outlined in Appendix V.

These recommendations should be given full consideration.

7 Next Steps

The following points summarize the key issues that need to be managed going forward now that the baseline project has been completed.

The findings and conclusions from this project contribute to further work by providing a baseline of information on chemicals and sectors in Northern Ireland that may be using them and by communicating the outputs and by application of the methodology, the benefits from the initial project can be realised. Full consideration should be given to the recommendations.

Database Management

It is important that consideration is given to how best to use and develop the database tool that has been provided as an output of this project. This should include whether the database can be of use operationally within EHS.

We would recommend that EHS considers setting up a database management group to undertake responsibilities such as:

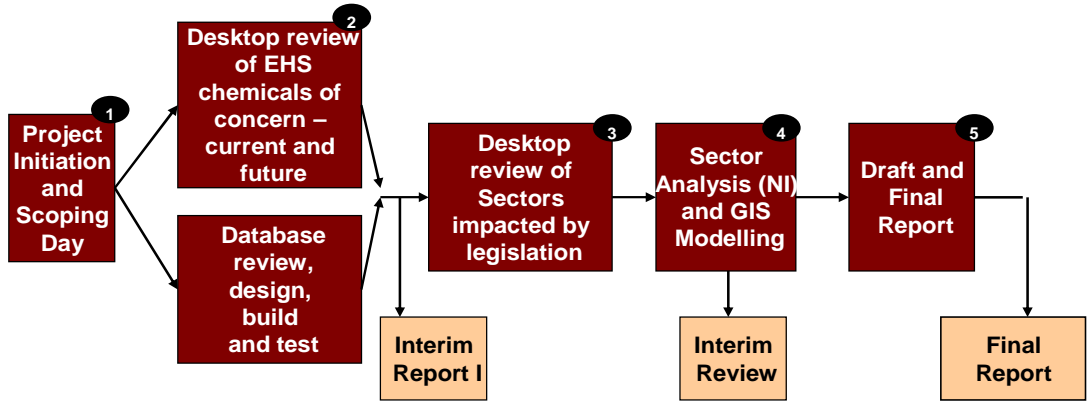
- Ensuring database management and support resource availability going forward in relation to:
 - Development support e.g. further reports, functionality;
 - Data refreshing and updating e.g. company information; and
 - Security management.
- Considering other database functionality such as:
 - Live incident register for chemicals; and
 - Inventory register of volumes of chemicals actually used by different companies in Northern Ireland.

Appendix A - Acronyms and Abbreviations

Acronyms & Abbreviations	
CAS	Chemical Abstracts Service
CEFIC	Conseil Européen de l'Industrie Chimique / European Chemical Industry Council.
CFC's	Chlorofluorocarbons
CHIP	Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.
CPPIC	Canadian Pollution Prevention Information Clearinghouse
CRM	Carcinogenic, Reprotoxic, Mutagenic
CSF	Chemicals Stakeholder Forum
DEFRA	Department for Environment, Food & Rural Affairs
DEFRA RRS	DEFRA's Risk Reduction Strategy
DETI	Department of Enterprise Trade and Investment
DTI	Department of Trade & Industry
EA	Environment Agency
ECB	European Chemical Bureau
EINECS	European Inventory of Existing Commercial Chemical Substances
EPA	Environmental Protection Agency
ESIS	European chemical Substances Information System
ESR	Existing Substances Regulation
FTEs	Full Time Equivalents
GIS	Geographical Information Systems
HBFC's	hydrobromofluorocarbons
HSE	Health & Safety Executive
IUCLID	International Uniform Chemical Information Database
MSDS	Material Safety Data Sheet
NISRA	Northern Ireland Statistic & Research Agency
OECD HPV	The Organisation for Economic Co-operation & Development – High Production Volume Programme
ONS	Office of National Statistics
OPSI	Office of Public Sector Information
OSPAR	Commission for the Protection of the Marine Environment of the North-East Atlantic
PBT	Persistent Bioaccumulative Toxic
PCB	Polychlorinated Biphenyls
PRTR	Pollutant Release & Transfer Registers
REACH	Registration, Evaluation and Authorisation of Chemicals
SIC	Standard Industrial Classification
UNECE – POPS	United Nations Economic Commission for Europe – Persistent Organic Pollutants
VOC	Volatile Organic Chemicals
vPvB	Very Persistent & Very Bioaccumulative
WFD	Water Framework Directive

Appendix B - Methodology/Approach

1. High level 5 stage approach



2. Summary approach – key tasks, timings and outputs

Step	Project Initiation and Scoping Day				Desktop review of EHS chemicals of concern and database build				Desktop review of Sectors impacted by legislation				Sector Analysis (NI) and GIS modelling				Draft and Final Report			
Tasks	<ul style="list-style-type: none"> Meet with EHS project manager and key EHS members to agree: <ul style="list-style-type: none"> - Approach (detail) - Key milestone dates - Reporting & Contacts - People commitments Agree and issue Letter of engagement Run project Scoping Day in advance of Step 2 Provide advice and guidance on EHS strategy, priorities and database development 				<ul style="list-style-type: none"> Complete data gathering on 'trial' substances selected at Scoping Day Review existing and future legislation (eg REACH) controlling Chemicals in NI and compile a list of EHS chemicals of concern in line with priorities set in step 1. Review, design, build and test compatible database with data for trial substances identified above Complete Interim Report 1 				<ul style="list-style-type: none"> Review business sector information from EHS listed sources eg Defra, DTI, Environment Agency Review business sector information from additional sources eg CEFIC, Chemical Industries Association (CIA), Institute of Chemical Engineers (ICHEM) Identify trade associations and business groups for future communications Populate database with sectoral information 				<ul style="list-style-type: none"> Complete Sector analysis in NI by business, size and location/postcode Populate database with information GIS model development compatible with EHS IT systems and chemical database Develop GIS data layers to at least local council level Develop and present status for interim review meeting (7 weeks) 				<ul style="list-style-type: none"> Close and Gaps identified at Interim Review Develop draft final report for submission week twelve EHS review of Draft report Complete Final Report 			
Outputs	<ul style="list-style-type: none"> Confirmed approach List of EHS Chemicals of concern Database specification 				Interim Report 1				Database populated by chemical/business sector				<ul style="list-style-type: none"> Interim Review Completed database and GIS profiling 				<ul style="list-style-type: none"> Draft Report Final Report 			
Key Dates	05/05				13/06				14/07				Draft 07/08				23/10			

Appendix C - Lists of current legislation reviewed

Regulation
Marketing and Use of Dangerous Substances (no2) Regulations (Northern Ireland) 1994 SR1994/223
Dangerous Substances (Notifications and Marking of sites) Regulations SI 1990/304
Dangerous Substances and Preparations (safety) (Consolidation) (Amendment) Regulations 2004/1417
Dangerous Substances and Preparations (safety) (Consolidation) (Amendment n3) Regulations 2002
Dangerous Substances and Preparations (safety) (Consolidation) and Chemicals (Hazard Information and Packaging for supply) (Amendment) Regulations 2000
The Hazard Waste Regulations (Northern Ireland) 2005
The Transfrontier Shipment of Waste Regulations 1994 as amended
The Pollution Prevention and Control Regulations (NI) 2003
EU Regulation on Substances that Deplete the Ozone Layer 2037/2000 amended by 2038/2000 and 2039/2000
National Emissions Ceilings Regulations SI 2002/3118
Plant Protection Products Regulations (Northern Ireland) 2004
The Surface Waters (Dangerous Substances) Classification Regulations (Northern Ireland) 1998
Water Supply (water quality) (Northern Ireland) Regulations 2002
Control of certain Azodyes and Blue Colourants Regulations 2003 (reg 4 only)
Control of Substances Hazardous to Health Regulations (Northern Ireland) SR2003/34
The Environmental Protection (control on Ozone Depleting Substances) Regulations (NI) 2003
The Sludge (Use in Agriculture) Regulations (Northern Ireland) 1990
Air Quality Regulations (NI) 2003 and amendment
Asbestos (Prohibition) Regulations (Northern Ireland) SR 1993/25
The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) Regulations (NI) 2000
Asbestos Products (safety) (amendment) regulations SI 1987/1979
The Batteries and Accumulators (containing Dangerous Substances) (Amendment) Regulations (Northern Ireland) (2002) SR 2002/300
The Dangerous Substances and Preparations (safety) (Consolidation) Regulations 1994
The Pollution Prevention and Control (combustion plant) (no.1) Direction (Northern Ireland) 2003
Marketing and Use of Dangerous Substances (no 4) Regulations (NI) SR 2004/509

Regulation
Marketing and Use of Dangerous Substances (No. 4) Regulations (Northern Ireland) 2003/548
Asbestos (Prohibition) Regulations (NI) SR2000/99
Controls on certain Azodyes and Blue Colourant (Amendment) Regulations SI 2004/2913
Creosote (Prohibition on use and marketing) (no 2) Regulations SI 2003/1511
Marketing and Use of Dangerous Substances (NI) 2003
Marketing and Use of Dangerous Substances (No 2) Regulations NI. 2003
Marketing and Use of Dangerous Substances (no 3) Regulations (NI) SR 2004/302
Marketing and Use of Dangerous Substances (no 3) Regulations NI SR 2003/165
Marketing and Use of Dangerous Substances Regulations (NI) SR 2004/76
Notification of Installations Handling Hazardous Substances Regulations SI 1982/1357 as amended by SI 1984/1244 and SI 2002/2979
Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005
Chemical (Hazard Information and Packaging for Supply) Regulations (NI) 2002 and amendments
The Water (Northern Ireland) Order 1999
Asbestos Products (safety) Regulations SI 1985/2042
Evaluation and Control of Risks of Existing Substances 793/93 EU regulation
Export of Dangerous Chemicals Regulations (Northern Ireland) SI 1992/460
Health & Safety at Work (Northern Ireland) Order SI1978/1039
Marketing and Use of Dangerous Substances (no3) Regulations (Northern Ireland) 1994 SR1994/224
Notification of new substances regulations (Northern Ireland) 1994
Notification of New Substances Regulations SI 1993/3050 as amended by SI 1994/3247 SI 1995/2646 and SI 2001/1055
Private Water Supply Regulations (Northern Ireland) 1994 - Water and Sewerage 1994 No. 237
The Batteries and Accumulators (containing Dangerous Substances) Regulations (Northern Ireland) SR 1995/22
Radioactive substances: Pollution Inventory reporting form for radioactive waste

Appendix D - Lists of future legislation/high concern lists reviewed

Regulation/Chemicals of Concern/List
Defra – Persistent Organic Pollutants (POPs) pending regulation
Defra - Risk Reduction Strategy (RSS)
Defra – RSS pending reg
Environment Agency M&U list
Environment Agency M&U list future
UK REACH programme
Defra consultation
DTI consultation 2006
Existing Substances Regulation EU list
EU consultation
HSC consultation
OSPAR list
POPs
UK Chemical Stakeholder Forum list
UK PRTR
Water Framework Directive
Directive 2005/90/EC
EU proposal (Plant protection)

Appendix E - Information sources/references

Reference	Information Source
	Common sources for current and pending legislation reviews
websites	European Chemical Bureau: ecb.jrc.it
	ESIS database (European Chemical Substances Information System): ecb.jrc.it
	Scorecard (www.scorecard.org)
	Environmental Protection Agency (US): www.epa.gov
	PBT profiler developed by the EPA (US): pbtprofiler.net
Other	Samsung Electronics, Standards for control with Environmental Impacts within Products (4th Edition September 2005) (SEC Registration No. 0QA-2049) – Document for cooperating suppliers
	Regulation provided by EHS
	Guidance Document for the Implementation of the EU PRTR- draft- European Commission (20 Dec. 2005)
	Review of Controlled Substances – Current Legislation
websites	OPSi (Office of the Public Sector information)
Other	Regulation provided by EHS (hard copy)
	Review of Controlled Substances – Pending Legislation
websites	Defra (www.defra.gov.uk/environment/chemicals)
	DTI (www.dti.gov.uk)
	European Chemical website: ec.europa.eu
	HSE (www.hse.gov.uk)
	Environment Agency (www.environment-agency.gov.uk)
	CEFIC (www.cefic.be)
	CIA (Chemical Industry Association)
	OSPAR (www.ospar.org)
	UNECE (www.unece.org)
other	Barlow, Lyde and Gilbert EHS newsletter – Spring 2006.(http://www.blg.co.uk)
	Reach proposal: Council text, 19 December 2005
	Chemical Stakeholders Forum- List of Chemicals of concern (last updated-July 2005)
	EHS High priority list (30 substances)
	WFD list (provided by EHS)
	POPs list
	OSPAR List of Chemicals for Priority Action (Update 2005) (Reference number 2004-12)
	4 Existing Substances Review priority lists (ECB website)
	Business Sector Analysis for Northern Ireland
	European Chemicals Bureau Website – ESIS/IUCLID information
	EC – Guidance Document for the implementation of the European PRTR (Draft)
	DEFRA industry lists as provided by EHS
	www.TOXNET.nlm.nih.gov
	www.cc.gc.ca (Environment Agency in Canada)
	Web searches by chemical family - specific and general use capture
	Producers websites for individual chemicals identified
	Environment Agency
	Dun and Bradstreet
	Office of National Statistics
	Department of Enterprise Trade and Investment for Northern Ireland
	The Companies Registry
	Northern Ireland Statistics and Research Agency
	One Source, 4NI.co.uk website
	Industry and Trade Association Analysis
	Invest NI, PwC supported NI Cluster Programmes, NI Trade Associations Directory, DETI

Appendix F - Chemical Use Information Sources

The table below lists the organisations contacted and their recommended sources for obtaining chemical use information. Highlighted are the sources we picked as priority.

Contacts Made	Recommended Sources/Website
Chemicals Industry Association	ECB Website - IUCLID database Canadian Environment Agency
IChemE	N/A
European Chemicals Bureau	ECB Website - ISIS database ECB Website - IUCLID Database PRTR paper on Air/Water pollutants
Environment and Heritage Service	DEFRA List
Environment Agency	ESIS website Trade associations CHIP regs – approved supply list – HSE
Canadian Environment Agency	www.ec.gc.ca/toxics CPPIC TOXNET.nlm.nih.gov

In order to prove this approach to capturing use data was robust, the 4 key information sources were tested on 14 of substances listed in the database, the tests results are highlighted in the tables below.

Search List	Substances covered	% coverage	Comments
TOXNET	9	64	
IUCLID	5	36	
PRTR	5	36	
DEFRA	6	43	
Cumulative	12	86	* For two out of the 14 substances picked there was no info from the above sources – BLUE COLORANT

These results highlighted that of the 14 substances selected from the database for review, 12 or 86% of them had use information contained in the 4 primary information sources. The table below captures the type of information that was able to be obtained from the relevant information sources for individual chemicals.

Chemical name/ substance	PRTR	DEFRA	IUCLID	TOXNET
4,4 – methylene dianiline	N/A	Mastics, sealants adhesives and roofing felt	Chemicals industry (synthesis), Polymers industry, adhesives, binding agents	Corrosion inhibitor, preparation of azo dyes, analytical reagent, curing agent polyurethanes
Isodrin	CHEMICAL INDUSTRY (Chemical installations for the production on an industrial scale of basic organic chemicals/ Chemical installations for the production on an industrial scale of basic plant health products and of biocides) WASTE & WASTEWATER MANAGEMENT (Installations for the disposal or recovery of hazardous waste/ Landfills/ Independently operated industrial waste-water treatment plants	N/A	N/A	insecticide
Triclosan	N/A	N/A	N/A	Pesticide, Bacteriostat and preservative for cosmetic and detergent preparations. Medication – antiseptic and disinfectant

Appendix G - Linking Use information to US SIC codes

The table below highlights how chemical use information collated was used to identify sectors that may be producing, marketing or using those chemicals.

Chemical name/ substance	PRTR	DEFRA	IUCLID	TOXNET	SIC Code	Sector
4,4 – methylene dianiline	N/A	Mastics, sealants, adhesives and roofing felt	Chemicals industry (synthesis), Polymers industry, adhesives, binding agents	Corrosion inhibitor, preparation of azo dyes, analytical reagent, curing agent, polyurethanes	2821 2869 2891	Plastics, Materials, Synthetics Industrial organic chemicals Adhesives and sealants
Isodrin	CHEMICAL INDUSTRY (Chemical installations for the production on an industrial scale of basic organic chemicals/ Chemical installations for the production on an industrial scale of basic plant health products and of biocides) WASTE & WASTEWATER MANAGEMENT (Installations for the disposal or recovery of hazardous waste/ Landfills/ Independently operated industrial waste-water treatment plants	N/A	N/A	insecticide	2879 4952	Agricultural chemicals nec Sewerage systems
Triclosan	N/A	N/A	N/A	Pesticide, Bacteriostat and preservative for cosmetic and detergent preparations. Medication – antiseptic and disinfectant	2833 2841 2844 2879	Medicinals and botanicals Soaps and detergents Perfumes, cosmetics and toiletry Agricultural chemicals nec

Appendix H - Review of Current Legislation – Detail

H.1 Approach

The table below summaries the approach to this work, the 4 step process followed, the outputs from those steps and the information sources used.

Step	1	2	3	4
Activity	Scoping Day	Identify number of substances by regulation	Identify overlaps and allocate substances into families (where possible)	Data collection by substance
Outputs	- clarity on approach and substances to be covered - agreed preliminary database template	- list of 792 substances - media identified linked to legislative text - purpose of regulation identified i.e. ban, control, phase out	- amalgamated list of 359 families/ substances	- 428 CAS numbers identified - Risk exposure info collated if available - see spreadsheet/ database
Main Information Sources	- EHS Annex 1 legislation lists	- legislation hard copy - OPSi website - EU legislation website - EHS strategic approach to chemicals paper	- PRTR EU text guidance paper - Regulations	- European database (ESIS database)

H.2 Key findings

Prioritised list of substances

Following an initial trawl of current legislation over 2800 substances were identified. In reviewing this number of substances versus capturing the detail targeted in the database, it was agreed with the EHS not to include 2 pieces of legislation that were listed in Annex 1 of the Terms of Reference. These were:

- o The Transfrontier Shipment of Waste Regulations 1994; and
- o Dangerous substances and Preparations (safety) (Consolidation) and Chemicals (hazard Information and Packaging for supply) (Amendment) regulations 2000.

These two legislative acts covered 2085 substances and materials. Eliminating these two regulatory texts from further analysis has resulted in a prioritised list of 792 substances or 534 individual substances with no overlaps. Overlapping substances are those which appear in one or more item of current regulation.

It should be noted that for 8 of the current regulations, no specific substances were identified

Identification of overlaps and amalgamation of substances into family groups

In order to accelerate the capture of function, use and general use information as well as assist with future assessments of sector use of individual substances or families, 792 substances were grouped into 359 substances or families using the following approach:

- o Direct overlaps of substances within different regulations were eliminated leaving 534 substances
- o Groups of substances mentioned in current regulation were reviewed. The main groups of substances adopted were those listed in the EU PRTR guidance paper.
- o Where the same chemical substance appeared in different items of legislation but under a different name, a common name was defined in order to easily collate all information related to that substance. An example was chloroform and trichloromethane.
- o Some substances, such as CFC's, were most often treated as a group in all regulations hence these have been listed as groups of substances rather than individual CFC's. Where a regulation dealt with a group of substances without detailing the individual substances, we have considered the group as a substance.

Appendix J details the assumptions made for recording groups of substances and individual substances.

Collecting data on substances and families

For all 359 amalgamated substances or family groups, searches were undertaken to identify a CAS number and risk exposure information related to that CAS number using the EU ESIS database. The results of this were as follows:

- 428 CAS numbers in total were identified within the 359 substances or families.
- Due to CAS numbers not existing for groups of substances, where a group of substances was named in the regulation a reference number (G number) was defined for that group.
- Only 3 'individual' substances (not including the 46 families and associated substances) did not have a CAS number. All 3 substances were biocides. 21 other substances did not have a CAS number but were included in a family containing other substances.
- For substances without a CAS number exposure information was identified.
- No exposure information identified for substances with no CAS number and 50% of substances with a CAS number did not have exposure information in the ESIS database.
- Follow up searches were completed for risk exposure information on these substances through for example MSDS, however information did not exist or was patchy and incomplete
- Searches on additional and reliable risk exposure information, was only focused on substances from the EHS priority list (pending/future regulation).

Further Analysis

To assist with any future prioritisation of chemicals for further detailed analysis or focus, the table below shows a breakdown of the number of substances covered by multiple regulations as well as examples of the substances.

Most and least regulated substances

Legislative substance categories	Number of substances	Example substances
> 7 (i.e. substances impacted by more than 7 different legislative acts)	3	Lead and compounds, Cadmium and compounds, Mercury and compounds
5-7	9	Arsenic and their compounds. Asbestos, Tetrachloroethane, Ammonia, Azodyes, Benzene, Copper and compounds, Sulphur oxides, Phosphorous and compounds
3-4	29	e.g. PCB's
<3	318	

The table below shows a breakdown of the number of substances controlled, banned and phased out by current legislation. As substances can have various applications, a substance can be controlled, banned or phased out depending on that application.

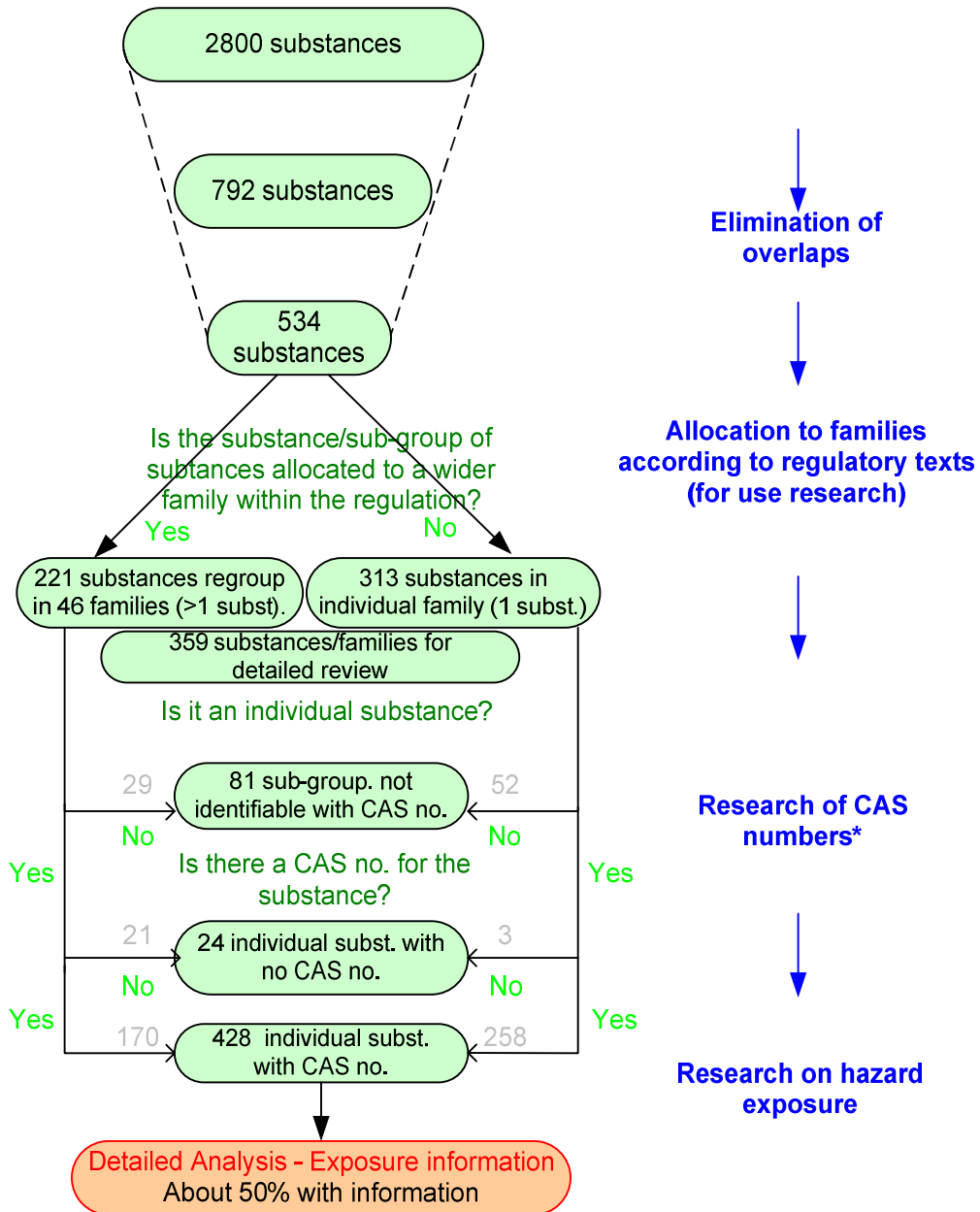
Substances controlled, banned or phased out – current legislation

Current status	Number of substances	Examples
Controlled	352	Selenium (water supply), Ammonia (private water supply), Aromatic amines in waste.
Phased out	6 (all are controlled)	Ammonia, VOC, Nitrogen and Sulphur oxides (reduction target for air emissions 2010 and subsequent years). CFCs (placing on the market) and HCFS (production)

Banned	24 (whose 17 are also controlled)	Hydrogen cyanide in work environment, Creosote in wood treatment, azo dyes in textiles and leather articles.
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H.3 Key findings – Flow Chart – Current Legislation

The diagram below demonstrates diagrammatically how the overall substances identified during the review of regulation, break down into the substances with no overlaps, families, substances with CAS numbers etc



*: Substance with no CAS number can be an individual substance not registered (e.g. nitrate ion) or a sub-group of substances (e.g. copper compounds)

Appendix I - Review of Pending/Future Legislation – Detail

I.1 Approach

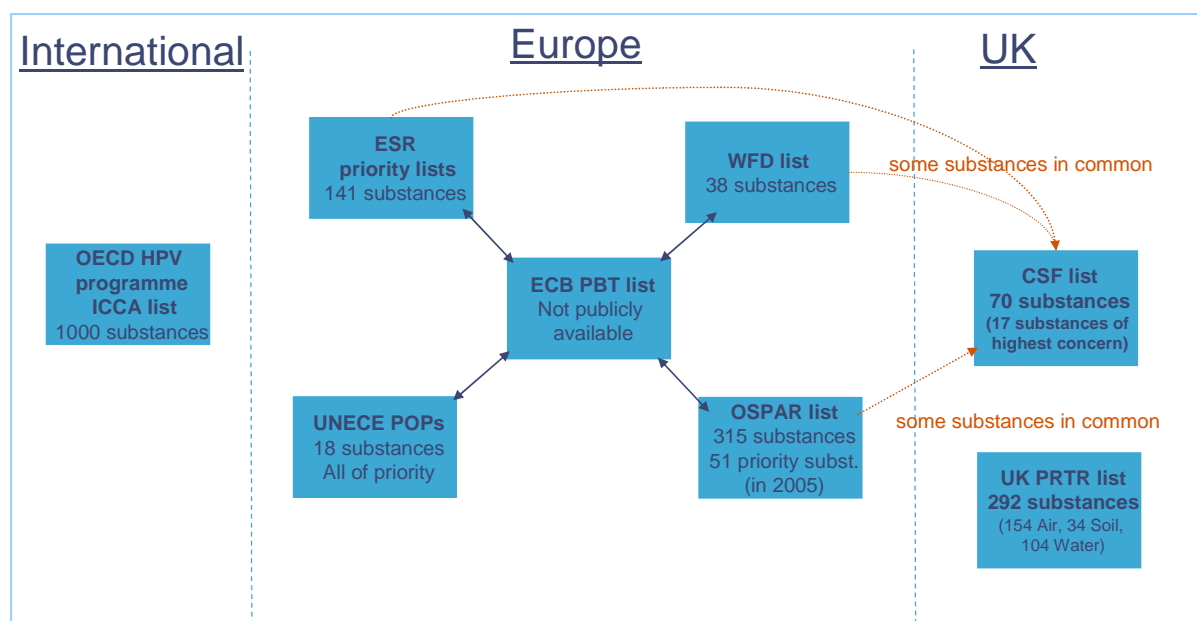
The table below summarises our approach to this work, the 3 step process followed, the outputs from those steps and the information sources used.

Step	1	2	3
Activity	Scoping Day	Collation of priority and non priority lists	Data collection on priority list
Outputs	<ul style="list-style-type: none"> - clarity on approach and priority lists to be covered - agreed target lists to identify priority substances (for detailed analysis) - agreed lists to identify non priority substances (for capturing minimum information) 	<ul style="list-style-type: none"> - list total of 711 substances (including overlaps) - 91 priority substances identified (including overlaps) - list of 70 priority substances (no overlaps), see Appendix E 	<ul style="list-style-type: none"> - CAS numbers identified for all substances - detailed analysis completed for 91 priority substances <ul style="list-style-type: none"> - CAS - Risk Exposure - Media
Main Information Sources	<ul style="list-style-type: none"> - EHS references – Annex 2 of Terms of Reference - CSF list - WFD - OSPAR - ECB PBT - ESR - UNECE – POPS - OECD HPV programme - DEFRA RRS 	<ul style="list-style-type: none"> - as per list in Step 1 - other information sources listed in Annex G 	<ul style="list-style-type: none"> - Information from current legislation analysis - EA website - DEFRA website and guidance - ESIS - Scorecard website - EPA website

I.2 Key findings

Prioritised list of substances - Figure 3 shows the different key lists of substances and the number of substances identified as high concern/priority within each list (where relevant and available).

Figure 3 – Key sources of chemical substances identified as high concern



From a review of other information sources, the following regulations/guidance were identified and considered:

- Restriction on Hazardous Substances (ROHS) directive which bans certain substances at certain concentrations
- DEFRA consultation: in addition to the 9 substances of concern already identified by EHS, also considered was the family of Mercury compounds, subject to a consultation since April 2006.
- Information on the EU chemicals web site: substances of concern were phthalates, toluene (consultation to implement EU directives in the UK issued in April 2006 by DTI) and organotin compounds (complete risk assessment in 2005). The above mentioned DTI consultation dealt also with the Directive 2005/90/EC prohibiting the placing on the market for general public of 42 CRM substances. These substances were added to the pending list.
- Eight protective plants active substances might get restricted EU market access within the next few months. A compromise plan has been reviewed since June 2006. These substances were added to the pending list.
- HSE consultations: Crystalline silica in workplace was identified as a substance of concern and added to the pending list. Also, it was understood that a consultation was also in progress regarding an amendment of the biocidal products regulations. It should be noted that the current text on biocidal regulation was not in the scope of the review of current legislation.
- REACH Regulation: REACH is currently scheduled to become law in spring 2007. Our review did not identify any specific named substances which will be subject to REACH. REACH mentions certain substances/activities which will be exempt such as gases (where risks are clearly understood, for example, nitrogen), radioactive substances and minerals and ores. The evaluation and authorisation parts of REACH will largely focus on substances which are of high concern regarding PBT criteria.

We identified a total of 711 substances as relevant. Over a third of these consisted of substances from the UK PRTR list. The table below gives a breakdown of the 711 substances by list and splits information further into priority and non priority substances. Of the 711 substances identified initially by list, cutting out duplication left a total 443 individual substances within this overall pending list.

Priority versus non priority substances

Chemicals of concern or List	Number of priority substances	Number of non priority substances	Total
Defra POPs pending reg	5	-	5
Defra RRS	-	6	6
Defra RRS pending reg	4	-	4
EA M&U list	11	-	11
EA M&U list future	5	-	5
UK Reach prog.	9	-	9
Defra consultation	1	-	1
DTI consultation 2006	-	1	1
ESR EU list	-	141	141
EU consultation	-	2	2
HSC consultation	-	1	1
OSPAR list	-	51	51
POPs	18	-	18
UK CSF list	-	71	71
UK PRTR	-	292	292
WFD	38	-	38
Directive 2005/90/EC	-	47	47
EU proposal (Plant protection)	-	8	8
TOTAL	91	620	711

Collecting data on prioritised substances

Identification of CAS number of all substances was undertaken and for 411 of the 443 substances we identified a CAS number.

Amongst these 443 substances, 59 substances were allocated to 19 families (groups containing 2 or more substances named within the future regulation). Therefore, 403 substances or families were identified in total.

Considering EHS priority lists (91 substances in total), 70 different substances were identified. For these substances PBT criteria were considered where these were available (EU and US information) in addition to exposure information such as CMR and Toxicity criteria which was available on the ESIS database.

Further Analysis

The data collected was further analysed to identify how many and the type of substances that were currently regulated and that were to be regulated further or were also on the identified pending list. The table below shows the results from this analysis.

Substance overlaps between current and pending regulation

Description/Overlap	Number of substances
Substances overlapping current/pending legislation	106
Total number of substances on the Pending Priority list	70
Total number of substances on the Pending Priority list covered by current legislation	40

Of the 70 priority substances identified, 40 substances are already covered by current regulations.

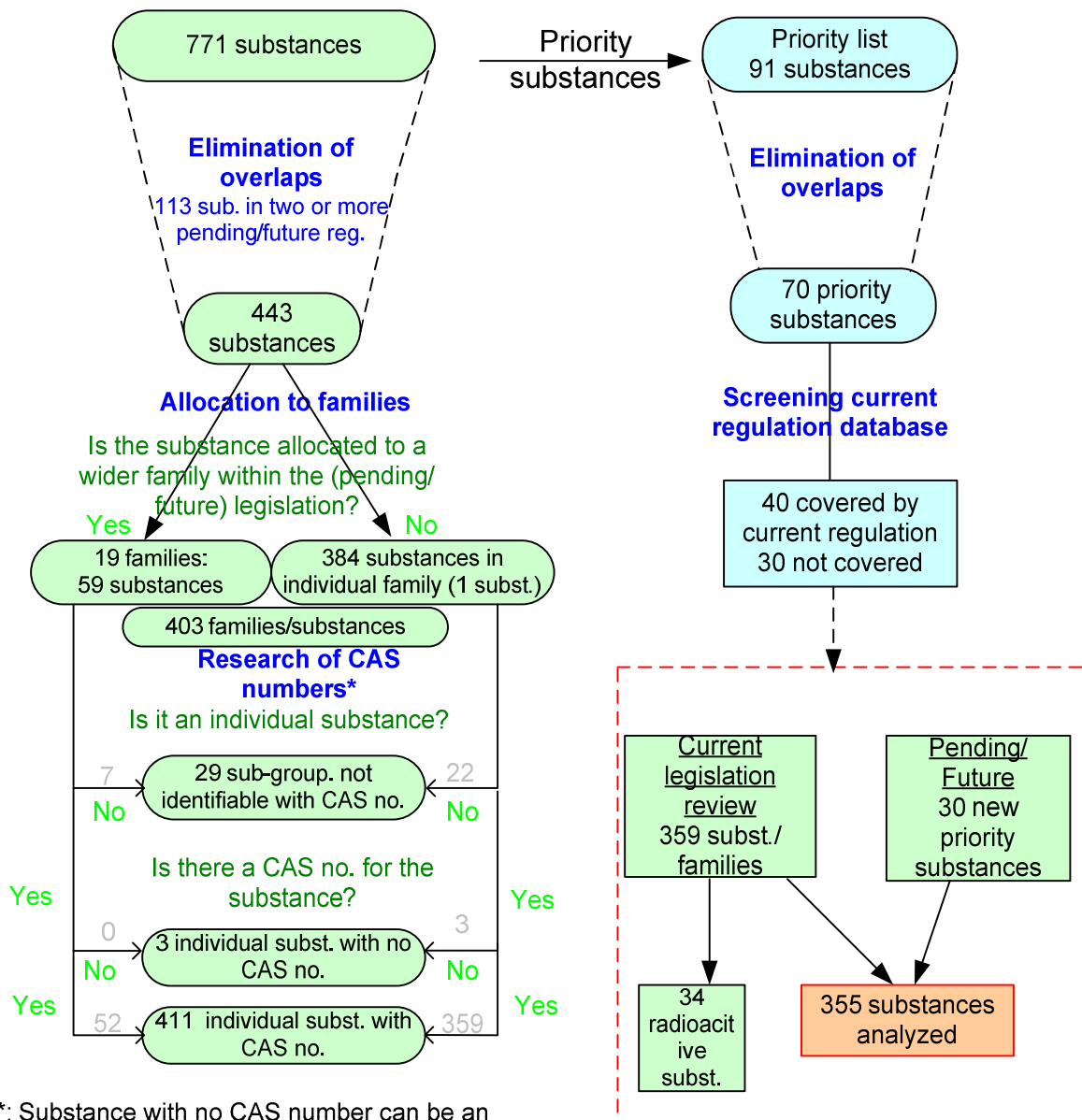
To assist with any future prioritisation of chemicals for further detailed analysis or focus, the below indicates the number and type of substances identified on different priority lists.

Table 3.3.4 – Substances identified on different lists

Category	No. of Substances	Substance Name
> 5 lists	6	PBDE, Cadmium&compounds, PAHs, short chain chlorinated paraffins, trichlorobenzene, Nonylphenol and nolyphenol ethoxylates
4-5 lists	11	Anthracene, DEHP, benzene, Medium chain chlorinated paraffins, Mercury&compounds, Naphtalene, organotin compounds, TBBPA, trichloroethylene., PFO's, tetrachloroethylene
2-3 lists	95	
1 list	291	

I.3 Key findings – Flow Chart – Pending/Future Regulation

The diagram below demonstrates diagrammatically how the overall substances identified during the review of regulation, break down into the substances with no overlaps, families, substances with CAS numbers etc.



*: Substance with no CAS number can be an individual substance not registered (e.g. nitrate ion) or a sub-group of substances (e.g. copper compounds)

Appendix J - Review of Legislation – Description of Terms/Chemical Families

J.1 Description of Terms

Common Terms

Chemical Name: chemical name used in the regulation to identify the chemical substance.

CAS number: CAS registry numbers are unique numerical identifiers for chemical substances. Codes we allocated separately, starting with G (such as G-Pb(7439-92-1)&c.), are not CAS numbers. These codes have been developed to facilitate searching within the database (see Appendix J2 for more details).

Chemical Family or Synonym: indicates either the chemical family the substance is part of or the chemical name that has been used in the database to gather all information regarding the substance (it might be the same name or a synonym).

Current regulation

Currently Banned/ Phased out/ controlled: indicates if the regulation mentioned deals with ban, phasing out or control of the substance. Phasing-out timetable is detailed within comments captured.

Media: media exposed to the substance. Media can be Air, Water, Surface water, Soil, work environment, Biota. Only Media clearly defined in the regulation have been captured in the database.

Ban/restriction details: details about the regulation reviewed related to the substance.

Pending/Future regulation

“high concern” list name: list that contains the substance.

Exposure information (current and pending/future)

Health hazard criteria: indicates if the substance is carcinogenic, mutagenic, reprotoxic and toxic.

Dangerous to the environment: indicates if the substance is dangerous to the environment and gives additional comments if available within the ESIS database.

PBT criteria and comments: indicates if the substance is considered as PBT (Persistent, Bioaccumulative and Toxic) vPvB (very Persistent very Bioaccumulative) and gives some additional comments (e.g. information source). Main information comes from EU and EPA (US) websites.

J.2 Allocating Chemical Families

This section summarises assumptions adopted in developing the database and collating the data.

1. Groups of chemicals:

A group of chemicals has been considered only if it has been mentioned in one or several regulatory texts. If no detail has been given in the legislation about which specific substances in this group are covered by the regulation, it has been dealt with the same ways as an individual substance in the database. For example, *Lead and compounds has been mentioned in the hazard waste Regulations (Northern Ireland) 2005 without giving detail about substances covered within this family. Therefore we have considered Lead compounds as a "substance" and belonging to the family "Lead and Compounds". "Lead and compounds" does not have a CAS number and there are 4 substances or subgroups of substances mentioned in the regulation which are compounds of lead.*

Chemical Name	CAS number	Chemical Family or Synonym
Lead & Lead compounds	G-Pb(7439-92-1)&c.	Lead and compounds (as Pb)
Lead	7439-92-1	Lead and compounds (as Pb)
Lead carbonates and sulphates	G-Pb(7439-92-1)&c.	Lead and compounds (as Pb)
Lead alkyls	G-Pb(7439-92-1)&c.	Lead and compounds (as Pb)

When a group of substances is mentioned in the regulation with detail of the substances within the group, all different substances have been included in the database with a link to the group mentioned in the regulation. For example, *ozone depleting substances (ODS) in the EU ODS directive*

Chemical Name	CAS number	Chemical Family or Synonym
C3H4FBr3	75372-14-4	ODS (HBFCs)
C2H2F2Br2	75-82-1	ODS (HBFCs)

As exposure information is linked to the CAS number we have created our own reference code for some family groups. This has been developed to facilitate searching the database, in particular, for risk exposure information as a CAS number or other reference number is required to support searches.

2. Substances:

If one substance has been mentioned in a regulatory text without any reference to which chemical family group the substance belongs to, the substance has been considered on its own. e.g *2,4-D (ester) is considered in several pieces of regulation. Even though the wide family "Ester" is in the database (mentioned in other legislation), we have considered the substance 2,4-D separately. In the database we have indicated where possible which chemical family the substance belongs to.*

Chemical Name	CAS number	Chemical Family or Synonym
2,4-D	94-75-7	2,4-D (ester)
esters	G- Esters	esters

-If a substance is named with different names in the legislation, we have chosen one name (indicated in "chemical family, Synonym or group") common to all different synonym. *example:*

Chemical Name	CAS number	Chemical Family or Synonym
hydrobromic acid	10035-10-6	hydrobromic acid
hydrogen bromide	10035-10-6	hydrobromic acid

3. Regulations: Media: only Media clearly defined in the regulation has been indicated. Otherwise the cell has been remained blank.

Appendix K - US SIC codes listings – 2 and 3 digit

Two- and Three-Digit Standard Industrial Classification (SIC) Code Table

01 AGRICULTURAL PRODUCTION-CROPS

- 011 Cash Grains
- 013 Field Crops, Except Cash Grains
- 016 Vegetables and Melons
- 017 Fruits and Tree Nuts
- 018 Horticultural Specialties
- 019 General Farms, Primarily Crop

02 AGRICULTURAL PRODUCTION-LIVESTOCK

- 021 Livestock, Except Dairy and Poultry
- 024 Dairy Farms
- 025 Poultry and Eggs
- 027 Animal Specialties
- 029 General Farms, Primarily Livestock

07 AGRICULTURAL SERVICES

- 072 Crop Services
- 074 Veterinary Services
- 075 Animal Services, Except Veterinary
- 076 Farm Labor and Management Services
- 078 Landscape and Horticultural Services

08 FORESTRY

- 081 Timber Tracts
- 085 Forestry Services

09 FISHING, HUNTING, AND TRAPPING

- 091 Commercial Fishing

10 METAL MINING

- 101 Iron Ores
- 102 Copper Ores
- 103 Lead and Zinc Ores
- 104 Gold and Silver Ores
- 106 Ferroalloy Ores, Exc Vanadium
- 108 Metal Mining Services
- 109 Miscellaneous Metal Ores

12 COAL MINING

- 122 Bituminous Coal and Lignite Mining
- 123 Anthracite Mining
- 124 Coal Mining Services

13 OIL AND GAS EXTRACTION

- 131 Crude Petroleum and Natural Gas
- 138 Oil and Gas Field Services

14 NONMETALLIC MINERALS, EXCEPT FUELS

- 141 Dimension Stone
- 142 Crushed and Broken Stone
- 144 Sand and Gravel
- 145 Clay, Ceramic, & Refractory Minerals
- 147 Chemical and Fertilizer Minerals
- 149 Miscellaneous Nonmetallic Minerals

15 GENERAL BUILDING CONTRACTORS

- 152 Residential Building Construction
- 153 Operative Builders
- 154 Nonresidential Building Construction

16 HEAVY CONSTRUCTION, EX. BUILDING

- 161 Highway and Street Construction
- 162 Heavy Construction, Exc Highway

17 SPECIAL TRADE CONTRACTORS

- 171 Plumbing, Heating & Air Conditioning
- 172 Painting and Paper Hanging
- 173 Electrical Work
- 174 Masonry, Stonework & Plastering
- 175 Carpentry and Floor Work
- 176 Roofing, Siding and Sheet Metal Work
- 177 Concrete Work
- 179 Misc. Special Trade Contractors

20 FOOD AND KINDRED PRODUCTS

- 201 Meat Products
- 202 Dairy Products
- 203 Preserved Fruits and Vegetables
- 204 Grain Mill Products
- 205 Bakery Products
- 206 Sugar and Confectionery Products
- 207 Fats and Oils
- 208 Beverages
- 209 Misc. Foods and Kindred Products

21 TOBACCO PRODUCTS

- 211 Cigarettes
- 212 Cigars
- 213 Chewing and Smoking Tobacco
- 214 Tobacco Stemming and Redrying

22 TEXTILE MILL PRODUCTS

- 221 Broadwoven Fabric Mills, Cotton
- 222 Broadwoven Fabric Mills, Manmade
- 223 Broadwoven Fabric Mills, Wool
- 224 Narrow Fabric Mills
- 225 Knitting Mills
- 226 Textile Finishing, Exc Wool
- 227 Carpets and Rugs
- 228 Yarn and Thread Mills
- 229 Misc. Textile Goods

23 APPAREL & OTHER TEXTILE PRODUCTS

- 231 Men's and Boys' Suits and Coats
- 232 Men's and Boys' Furnishings
- 233 Women's, Misses', and Juniors' Outerwear
- 234 Women's and Children's Undergarments
- 235 Hats, Caps and Millinery
- 236 Girl's and Children's Outerwear
- 238 Misc. Apparel and Accessories
- 239 Misc. Fabricated Textile Products

Two- and Three-Digit Standard Industrial Classification (SIC) Code Table

24 LUMBER AND WOOD PRODUCTS

- 241 Logging
- 242 Sawmills and Planing Mills
- 243 Millwork, Plywood and Structural Members
- 244 Wooden Containers
- 245 Wood Buildings and Mobile Homes
- 249 Misc. Wood Products

25 FURNITURE AND FIXTURES

- 251 Household Furniture
- 252 Office Furniture
- 253 Public Building & Related Furniture
- 254 Partitions and Fixtures
- 259 Misc. Furniture and Fixtures

26 PAPER AND ALLIED PRODUCTS

- 261 Pulp Mills
- 262 Mills, Exc. Building Paper
- 263 Paperboard Mills
- 265 Paperboard Containers and Boxes
- 267 Misc. Converted Paper Products

27 PRINTING AND PUBLISHING

- 271 Newspapers
- 272 Periodicals
- 273 Books
- 274 Miscellaneous Publishing
- 275 Commercial Printing
- 276 Manifold Business Forms
- 277 Greeting Cards
- 278 Blankbooks and Bookbinding
- 279 Printing Trade Services

28 CHEMICALS AND ALLIED PRODUCTS

- 281 Industrial Inorganic Chemicals
- 282 Plastics Materials and Synthetic
- 283 Drugs
- 284 Soaps, Cleaners and Toilet Goods
- 285 Paints and Allied Products
- 286 Industrial Organic Chemicals
- 287 Agricultural Chemicals
- 289 Misc. Chemical Products

29 PETROLEUM AND COAL PRODUCTS

- 291 Petroleum Refining
- 295 Asphalt Paving and Roofing Materials
- 299 Misc. Petroleum and Coal Products

30 RUBBER & MISC. PLASTICS PRODUCTS

- 301 Tires and Inner Tubes
- 302 Rubber and Plastic Footwear
- 305 Hose & Belting & Gaskets & Packing
- 306 Fabricated Rubber Products, Nec
- 308 Misc. Plastics Products, Nec

31 LEATHER AND LEATHER PRODUCTS

- 311 Leather Tanning and Finishing
- 313 Footwear Cut Stock
- 314 Footwear, Exc. Rubber
- 315 Leather Gloves and Mittens
- 316 Luggage
- 317 Handbags and Personal Leather Goods
- 319 Leather Goods, Nec

32 STONE, CLAY, AND GLASS PRODUCTS

- 321 Flat Glass
- 322 Glass and Glassware, Pressed or Blown
- 323 Products of Purchased Glass
- 324 Cement, Hydraulic
- 325 Structural Clay Products
- 326 Pottery and Related Products
- 327 Concrete, Gypsum and Plaster Products
- 328 Cut Stone and Stone Products
- 329 Misc. Nonmetallic Mineral Products

33 PRIMARY METAL INDUSTRIES

- 331 Blast Furnace and Basic Steel Products
- 332 Iron and Steel Foundries
- 333 Primary Nonferrous Metals
- 334 Secondary Nonferrous Metals
- 335 Nonferrous Rolling and Drawing
- 336 Nonferrous Foundries (Castings)
- 339 Misc. Primary Metal Products

34 FABRICATED METAL PRODUCTS

- 341 Metal Cans and Shipping Containers
- 342 Cutlery, Hand Tools and Hardware
- 343 Plumbing and Heating, Exc. Electric
- 344 Fabricated Structural Metal Products
- 345 Screw Machine Products, Bolts, etc.
- 346 Metal Forgings and Stampings
- 347 Metal Services, Nec
- 348 Ordnance and Accessories, Nec
- 349 Misc. Fabricated Metal Products

Two- and Three-Digit Standard Industrial Classification (SIC) Code Table

35 INDUSTRIAL MACHINERY & EQUIPMENT

- 351 Engines and Turbines
- 352 Farm and Garden Machinery
- 353 Construction and Related Machinery
- 354 Metalworking Machinery
- 355 Special Industry Machinery
- 356 General Industrial Machinery
- 357 Computer and Office Equipment
- 358 Refrigeration and Service Machinery
- 359 Industrial Machinery, Nec

36 ELECTRONIC & OTHER ELECTRIC EQUIPMENT

- 361 Electric Distribution Equipment
- 362 Electrical Industrial Apparatus
- 363 Household Appliances
- 364 Electric Lighting and Wiring Equipment
- 365 Household Audio & Video Equipment
- 366 Communications Equipment
- 367 Electronic Components and Accessories
- 369 Misc. Electrical Equipment & Supplies

37 TRANSPORTATION EQUIPMENT

- 371 Motor Vehicles and Equipment
- 372 Aircraft and Parts
- 373 Ship and Boat Building and Repairing
- 374 Railroad Equipment
- 375 Motorcycles, Bicycles and Parts
- 376 Guided Missiles, Space Vehicles, Parts
- 379 Misc. Transportation Equipment

38 INSTRUMENTS & RELATED PRODUCTS

- 381 Search and Navigation Equipment
- 382 Measuring and Controlling Devices
- 384 Medical Instruments & Supplies
- 385 Ophthalmic Goods
- 386 Photographic Equipment and Supplies
- 387 Watches, Clocks, Watchcases & Parts

39 MISC. MANUFACTURING INDUSTRIES

- 391 Jewelry, Silverware and Plated Ware
- 393 Musical Instruments
- 394 Toys and Sporting Goods
- 395 Pens, Pencils, Office, & Art Supplies
- 396 Costume Jewelry and Notions
- 399 Misc. Manufacturing

40 RAILROAD TRANSPORTATION

- 401 Railroads

41 LOCAL & INTERURBAN PASSENGER TRANSIT

- 411 Local and Suburban Passenger Transportation
- 412 Taxicabs
- 413 Intercity and Rural Bus Transportation
- 414 Bus Charter Service
- 415 School Buses
- 417 Bus Terminal and Service Facilities

42 TRUCKING AND WAREHOUSING

- 421 Trucking and Courier Services, Exc Air
- 422 Public Warehousing and Storage
- 423 Trucking Terminal Facilities

44 WATER TRANSPORTATION

- 441 Deep Sea Foreign Trans. of Freight
- 442 Deep Sea Domestic Trans. of Freight
- 444 Water Transportation of Freight, Nec
- 448 Water Transportation of Passengers
- 449 Water Transportation Services

45 TRANSPORTATION BY AIR

- 451 Air Transportation, Scheduled
- 452 Air Transportation, Nonscheduled
- 458 Airports, Flying Fields & Services

46 PIPELINES, EXCEPT NATURAL GAS

- 461 Pipelines, Exc Natural Gas

47 TRANSPORTATION SERVICES

- 472 Passenger Transportation Arrangement
- 473 Freight Transportation Arrangement
- 478 Miscellaneous Transportation Services

48 COMMUNICATIONS

- 481 Telephone Communication
- 482 Telegraph and Other Communications
- 483 Radio and Television Broadcasting
- 484 Cable and Other Pay Television Services
- 489 Communications Services, Nec

49 ELECTRIC, GAS & SANITARY SERVICES

- 491 Electric Services
- 492 Gas Production and Distribution
- 493 Combination Utility Services
- 494 Water Supply
- 495 Sanitary Services
- 496 Steam and Air-Conditioning Supply
- 497 Irrigation Systems

50 WHOLESALE TRADE-DURABLE GOODS

- 501 Motor Vehicles, Parts & Supply
- 502 Furniture and Home Furnishing
- 503 Lumber and Other Construction Materials
- 504 Professional and Commercial Equipment
- 505 Metals and Minerals, Exc Petroleum
- 506 Electrical Goods
- 507 Hardware, Plumbing & Heating Equipment
- 508 Machinery, Equipment and Supplies
- 509 Miscellaneous Durable Goods

Two- and Three-Digit Standard Industrial Classification (SIC) Code Table

51 WHOLESALE TRADE-NONDURABLE GOODS

- 511 Paper and Paper Products
- 512 Drugs, Proprietarys and Sundries
- 513 Apparel, Piece Goods and Notions
- 514 Groceries and Related Products
- 515 Farm Product Raw Materials
- 516 Chemicals and Allied Products
- 517 Petroleum and Petroleum Products
- 518 Beer, Wine and Distilled Beverages
- 519 Misc. Nondurable Goods

52 BUILDING MATERIALS & GARDEN SUPPLIES

- 521 Lumber and Other Building Materials
- 523 Paint, Glass and Wallpaper Stores
- 525 Hardware Stores
- 526 Retail Nurseries and Garden Stores
- 527 Mobile Home Dealers

53 GENERAL MERCHANDISE STORES

- 531 Department Stores
- 539 Misc. General Merchandise Stores

54 FOOD STORES

- 541 Grocery Stores
- 542 Meat & Fish Markets
- 544 Candy, Nut and Confectionery Stores
- 545 Dairy Product Stores
- 546 Retail Bakeries
- 549 Misc. Food Stores

55 AUTOMOTIVE DEALERS & SERVICE STATIONS

- 551 New and Used Car Dealers
- 552 Used Car Dealers
- 553 Auto and Home Supply Stores
- 554 Gasoline Service Stations
- 555 Boat Dealers
- 556 Recreational Vehicle Dealers
- 559 Automotive Dealers, Nec

56 APPAREL AND ACCESSORY STORES

- 561 Men's and Boys' Clothing Stores
- 562 Women's Clothing Stores
- 563 Women's Accessory & Specialty Stores
- 565 Family Clothing Stores
- 566 Shoe Stores

57 FURNITURE AND HOMEFURNISHINGS STORES

- 571 Furniture and Home Furnishings Stores
- 572 Household Appliance Stores
- 573 Radio, Television, & Computer Stores

58 EATING AND DRINKING PLACES

- 581 Eating and Drinking Places

59 MISCELLANEOUS RETAIL

- 591 Drug Stores and Proprietary Stores
- 592 Liquor Stores
- 593 Used Merchandise Stores
- 594 Misc. Shopping Goods Stores
- 596 Nonstore Retailers
- 598 Fuel Dealers
- 599 Retail Stores, Nec

60 DEPOSITORY INSTITUTIONS

- 601 Central Reserve Depository
- 602 Commercial Banks
- 603 Savings Institutions
- 606 Credit Unions
- 608 Foreign Bank & Branches + Agencies
- 609 Functions Closely Related to Banking

61 NONDEPOSITORY INSTITUTIONS

- 611 Fed. & Federally-Sponsored Credit
- 614 Personal Credit Institutions
- 615 Business Credit Institutions
- 616 Mortgage Bankers & Brokers

62 SECURITY AND COMMODITY BROKERS

- 621 Security Brokers, Dealers
- 622 Commodity Contracts Brokers, Dealers
- 623 Security & Commodity Exchanges
- 628 Security & Commodity Services

63 INSURANCE CARRIERS

- 631 Life Insurance
- 632 Medical Service & Health Insurance
- 633 Fire, Marine & Casualty Insurance
- 635 Surety Insurance
- 636 Title Insurance
- 637 Pension, Health & Welfare Funds
- 639 Insurance Carriers, Nec

64 INSURANCE AGENTS, BROKERS & SERVICE

- 641 Insurance Agents, Brokers and Service

65 REAL ESTATE

- 651 Real Estate Operations and Lessors
- 653 Real Estate Agents and Managers
- 654 Title Abstract Offices
- 655 Subdividers and Developers

Two- and Three-Digit Standard Industrial Classification (SIC) Code Table

67 HOLDING & OTHER INVESTMENT OFFICES

671 Holding Offices
672 Investment Offices
673 Trusts
679 Miscellaneous Investing

70 HOTELS AND OTHER LODGING PLACES

701 Hotels and Motels
703 Camps and Recreational Vehicle Parks
704 Membership-Basis Organization Hotels

72 PERSONAL SERVICES

721 Laundry, Cleaning and Garment Services
723 Beauty Shops
726 Funeral Service and Crematories

73 BUSINESS SERVICES

731 Advertising
732 Credit Reporting and Collection
733 Mailing, Reproduction, Stenographic
734 Services to Buildings
735 Misc. Equipment Rental and Leasing
736 Personnel Supply Services
737 Computer and Data Processing Services
738 Misc. Business Services

75 AUTO REPAIR, SERVICES, AND PARKING

751 Auto Rentals, No Drivers
752 Automobile Parking
753 Automobile Repair Shops
754 Automobile Services, Exc Repair

76 MISCELLANEOUS REPAIR SERVICES

762 Electrical Repair Shops
764 Reupholstery and Furniture Repair
769 Misc. Repair Shops

78 MOTION PICTURES

781 Motion Picture Production & Services
782 Motion Picture Distribution & Services
783 Motion Picture Theaters
784 Video Tape Rental

79 AMUSEMENT & RECREATION SERVICES

792 Producers, Orchestras and Entertainers
793 Bowling Centers
794 Commercial Sports
799 Misc. Amusement, Recreation Services

80 HEALTH SERVICES

801 Offices and Clinics of Medical Doctors
802 Offices and Clinics of Dentists
803 Offices and Clinics of Osteopathic Physicians
804 Offices of Other Health Practitioners
805 Nursing and Personal Care Facilities
806 Hospitals
807 Medical and Dental Laboratories
808 Home Health Care Services
809 Misc. Health and Allied Services, Nec

81 LEGAL SERVICES

811 Legal Services

82 EDUCATIONAL SERVICES

821 Elementary and Secondary Schools
822 Colleges and Universities
823 Libraries
824 Vocational Schools
829 Schools and Educational Services, Nec

83 SOCIAL SERVICES

832 Individual and Family Services
833 Job Training & Related Services
835 Child Day Care Services
836 Residential Care
839 Social Services, Nec

84 MUSEUMS, BOTANICAL, ZOOLOGICAL GARDENS

841 Museums and Art Galleries
842 Botanical and Zoological Gardens

86 MEMBERSHIP ORGANIZATIONS

861 Business Associations
862 Professional Organizations
863 Labor Organizations
864 Civic and Social Associations
866 Religious Organizations
869 Membership Organizations, Nec

87 Engineering & Management Services

871 Engineering, Architectural Services
872 Accounting, Auditing & Bookkeeping
873 Research and Testing Services
874 Management & Public Relations

89 SERVICES, NEC

899 Services, Nec

Appendix L - Business Sector Impact Analysis - detailed findings by sector and SIC code

The table below captures the raw data obtained from the business sector impact analysis. The table lists

- 2 digit SIC codes identified during analysis*;
- the 2 digit code description;
- 2,3, and 4 digit codes identified during the analysis;
- the 2,3, and 4 digit codes description; and
- the frequency (or count) of individual 2,3, or 4 digit codes identified during the analysis.

*2 digit SIC codes are highlighted in the analysis (for graphical presentation) even if the only code identified within that sector group is a four digit code e.g. for Agricultural services, SIC 07 is highlighted as the two digit code for graphical presentation whilst the 4 digit code identified in the analysis was SIC 0711 – soil preparation services.

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Frequency SIC code identified
07	Agricultural Services	0711	Soil preparation services	1
10	Metal Mining	10	Metal Mining	8
12	Coal Mining	122	Bituminous coal & lignite mining	2
13	Oil & Gas Extraction	1311	Crude petroleum and natural gas	4
		1381	Drilling oil and gas wells	1
20	Food and kindred products	20	Food and kindred products	6
		201	Meat Products	2
		203	Canned & preserved fruits & vegetables	2
		208	Beverages	5
		2023	Dry, condensed, evaporated dairy products	1
		2041	Flour and other grain mill products	1
		2045	Prepared flour mixes and doughs	1
		2048	Prepared feeds, nec	1
		2051	Bread, cake, and related products	1
		2084	Wines, brandy, and brandy spirits	2
22	Textile Mill Products	22	Textile Mill Products	28
		221	Broadwoven fabric mills, cotton	4
		223	Broadwoven fabric mills, wool	4
23	Apparel and other textile products	23	Apparel and other textile products	24
24	Lumber and Wood Products	24	Lumber and Wood Products	28
25	Paper and allied products	26	Paper and allied products	17
27	Printing and publishing	27	Printing and publishing	3
28	Chemicals and allied products	28	Chemicals and allied products	19
		2813	Industrial gases	2
		2816	Inorganic pigments	15
		2819	Industrial inorganic chemicals	20
		2821	Plastics, materials and synthetic resins	53
		2822	Synthetic rubber	33
		2823	Cellulosic man-made fibers	6
		2824	Organic fibers, noncellulosic	4
		2833	Medicinals and botanicals	23
		2834	Pharmaceutical preparations	35
		2841	Soap and other detergents	31
		2842	Speciality cleaning, polishing and sanitation preparations	50
		2843	Surface active agents	20
		2844	Toilet preparations	23
		2851	Paints and allied products	38
		2861	Gum and wood chemicals	8
		2865	Cyclic crudes and intermediates	40
		2869	Industrial organic chemicals, nec	69
		2873	Nitrogenous fertilizers	9
		2874	Phosphatic fertilizers	8
		2875	Fertilisers, mixing products	6
		2879	Agricultural chemicals, nec	183
		2891	Adhesives and sealants	29
		2892	Explosives	17
		2893	Printing ink	13
		2895	Carbon black	1
		2899	Chemical preparations, nec	2

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Frequency SIC code identified
29	Petroleum & Coal Products	2911	Petroleum refining	17
		2951	Asphalt paving mixtures and blocks	2
		2952	Asphalt felts and coatings	3
		2992	Lubricating oils and greases	12
		2999	Petroleum and coal products, nec	5
31	Leather & Leather Products	3111	Leather tanning and finishing	18
32	Stone, Clay, Glass & Concrete Products	321	Flat glass	16
		322	Glass and glassware, pressed and blown	6
		323	Products of purchased glass	6
		324	Cement, hydraulic	5
		325	Structural clay products	8
		327	Concrete, gypsum and plaster products	4
		3291	Abrasive products	2
3292	Asbestos products	1		
33	Primary metal industries	33	Primary metal industries	13
		331	Blast furnace and basic steel products	18
		332	Iron & steel foundries	18
		333	Primary smelting, refining-nonferrous	11
		334	Secondary Nonferrous Metals	6
		335	Nonferrous rolling and drawing	4
336	Nonferrous foundries (castings)	3		
34	Fabricated Metal Products	3411	Metal cans	1
		3421	Cutlery	1
		3432	Plumbing fixture fittings and trim	2
		3479	Metal coating and allied services	1
		3482	Small arms ammunition	2
		3483	Ammunition, exc for small arms, nec	2
35	Industrial Machinery & Equipment	3575	Computer terminals	1
		3585	Air conditioning, heating and refrigeration equipment	9
36	Electrical and Electronic Equipment	3612	Transformers, except electronic	5
		3621	Motors and generators	1
		3632	Household refrigerators and freezers	8
		3641	Electric lamp bulbs and tubes	3
		3672	Printed circuit boards	2
		3674	Semiconductors and related devices	12
		3678	Electronic connectors	3
		3679	Electronic components, nec	2
		3691	Storage batteries	3
		3692	Primary batteries, dry and wet	10
3699	Electrical equipment and supplies, nec	1		
37	Transportation Equipment	372	Aircraft and parts	3
		373	Ship & boat building, repair	2
		376	Guided missiles, space craft	2
		3714	Motor vehicle parts and accessories	3
38	Instruments & Related Products	384	Surgical, medical & dental instruments	1
		3827	Optical instruments and lenses	2
		3843	Dental equipment and supplies	3
		3861	Photographic equipment and supplies	3
39	Miscellaneous Manufacturing Industries	3911	Jewellery, precious metal	3
		3915	Jewellers' materials & lapidary work	3
49	Electric, Gas & Sanitary Services	491	Electric services	1
		492	Gas production and distribution	2
		494	Water supply	67
50	Wholesale Trade - Durable Goods	5078	Refrigeration equipment wholesale	4
51	Wholesale Trade - Nondurable Goods	516	Wholesale trade - chemicals and allied products	310
		517	Wholesale trade - petroleum and petroleum products	8
		5198	Paint products wholesale	1
52	Building Materials, Hardware, Garden Supply & Mobile Homes	5261	Nurseries, lawn and garden supplies	168
72	Personal Services	7216	Dry cleaning plants, except rug	4
73	Business Services	7342	Disinfecting and pest control services	167
		7384	Photofinishing laboratories	3
80	Health Services	8021	Offices and clinics of dentists	4

Appendix M - SIC code identification frequency by 2-digit SIC code

SIC code - 2 digit	SIC code description	Identification frequency
07	Agricultural Services	1
10	Metal Mining	8
12	Coal Mining	2
13	Oil & Gas Extraction	5
20	Food & Kindred Products	22
22	Textile Mill Products	36
23	Apparel & Other Textile Products	24
24	Lumber & Wood Products	28
26	Paper & Allied Products	17
27	Printing & Publishing	3
28	Chemicals & Allied Products	758
29	Petroleum & Coal Products	39
31	Leather & Leather Products	18
32	Stone, Clay, Glass & Concrete Products	48
33	Primary Metal Industries	73
34	Fabricated Metal Products	9
35	Industrial Machinery & Equipment	10
36	Electrical & Electronic Equipment	50
37	Transportation Equipment	10
38	Instruments & Related Products	9
39	Miscellaneous Manufacturing Industries	6
49	Electric, Gas & Sanitary Services	70
50	Wholesale Trade - Durable Goods	4
51	Wholesale Trade - Nondurable Goods	319
52	Building Materials, Hardware, Garden Supply & Mobile Homes	168
72	Personal Services	4
73	Business Services	170
80	Health Services	4

Appendix N - Number of companies by 2,3 and 4 - digit SIC code

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Companies Identified
07	Agricultural Services	0711	Soil preparation services	12
10	Metal Mining	10	Metal Mining	4
12	Coal Mining	122	Bituminous coal & lignite mining	3
13	Oil & Gas Extraction	1311	Crude petroleum and natural gas	4
		1381	Drilling oil and gas wells	2
20	Food and kindred products	20	Food and kindred products	364
		201	Meat Products	78
		203	Canned & preserved fruits & vegetables	27
		208	Beverages	23
		2023	Dry, condensed, evaporated dairy products	5
		2041	Flour and other grain mill products	4
		2045	Prepared flour mixes and doughs	2
		2048	Prepared feeds, nec	44
		2051	Bread, cake, and related products	58
		2084	Wines, brandy, and brandy spirits	3
22	Textile Mill Products	22	Textile Mill Products	125
		221	Broadwoven fabric mills, cotton	16
		223	Broadwoven fabric mills, wool	4
23	Apparel and other textile products	23	Apparel and other textile products	162
24	Lumber and Wood Products	24	Lumber and Wood Products	343
25	Paper and allied products	26	Paper and allied products	60
27	Printing and publishing	27	Printing and publishing	391
28	Chemicals and allied products	28	Chemicals and allied products	94
		2813	Industrial gases	1
		2816	Inorganic pigments	1
		2819	Industrial inorganic chemicals	8
		2821	Plastics, materials and synthetic resins	5
		2822	Synthetic rubber	1
		2823	Cellulosic man-made fibers	1
		2824	Organic fibers, noncellulosic	3
		2833	Medicinals and botanicals	2
		2834	Pharmaceutical preparations	19
		2841	Soap and other detergents	9
		2842	Speciality cleaning, polishing and sanitation preparations	7
		2843	Surface active agents	3
		2844	Toilet preparations	4
		2851	Paints and allied products	5
		2861	Gum and wood chemicals	1
		2865	Cyclic crudes and intermediates	2
		2869	Industrial organic chemicals, nec	3
		2873	Nitrogenous fertilizers	3
		2874	Phosphatic fertilizers	3
		2875	Fertilisers, mixing products	5
		2879	Agricultural chemicals, nec	3
		2891	Adhesives and sealants	2
		2892	Explosives	2
		2893	Printing ink	1
		2895	Carbon black	0
		2899	Chemical preparations, nec	8
29	Petroleum & Coal Products	2911	Petroleum refining	2
		2951	Asphalt paving mixtures and blocks	7
		2952	Asphalt felts and coatings	6
		2992	Lubricating oils and greases	5
		2999	Petroleum and coal products, nec	1

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Companies Identified
31	Leather & Leather Products	3111	Leather tanning and finishing	6
32	Stone, Clay, Glass & Concrete Products	321	Flat glass	6
		322	Glass and glassware, pressed and blown	15
		323	Products of purchased glass	24
		324	Cement, hydraulic	0
		325	Structural clay products	24
		327	Concrete, gypsum and plaster products	113
		3291	Abrasive products	3
		3292	Asbestos products	0
33	Primary metal industries	33	Primary metal industries	55
		331	Blast furnace and basic steel products	27
		332	Iron & steel foundries	10
		333	Primary smelting, refining-nonferrous	1
		334	Secondary Nonferrous Metals	1
		335	Nonferrous rolling and drawing	3
		336	Nonferrous foundries (castings)	7
34	Fabricated Metal Products	3411	Metal cans	1
		3421	Cutlery	0
		3432	Plumbing fixture fittings and trim	4
		3479	Metal coating and allied services	21
		3482	Small arms ammunition	0
		3483	Ammunition, exc for small arms, nec	0
		35	Industrial Machinery & Equipment	3575
3583	Air conditioning, heating and refrigeration equipment			14
36	Electrical and Electronic Equipment	3612	Transformers, except electronic	5
		3621	Motors and generators	12
		3632	Household refrigerators and freezers	1
		3641	Electric lamp bulbs and tubes	1
		3672	Printed circuit boards	4
		3674	Semiconductors and related devices	8
		3678	Electronic connectors	1
		3679	Electronic components, nec	35
		3691	Storage batteries	0
		3692	Primary batteries, dry and wet	1
		3699	Electrical equipment and supplies, nec	21
37	Transportation Equipment	372	Aircraft and parts	9
		373	Ship & boat building, repair	14
		376	Guided missiles, space craft	1
		3714	Motor vehicle parts and accessories	30
38	Instruments & Related Products	384	Surgical, medical & dental instruments	20
		3827	Optical instruments and lenses	0
		3843	Dental equipment and supplies	2
		3861	Photographic equipment and supplies	2
39	Miscellaneous Manufacturing Industries	3911	Jewellery, precious metal	10
		3915	Jewellers' materials & lapidary work	1
49	Electric, Gas & Sanitary Services	491	Electric services	22
		492	Gas production and distribution	5
		494	Water supply	1
50	Wholesale Trade - Durable Goods	5078	Refrigeration equipment wholesale	18
51	Wholesale Trade - Nondurable Goods	516	Wholesale trade - chemicals and allied products	58
		517	Wholesale trade - petroleum and petroleum products	131
		5198	Paint products wholesale	36
52	Building Materials, Hardware, Garden Supply & Mobile Homes	5261	Nurseries, lawn and garden supplies	175
72	Personal Services	7216	Dry cleaning plants, except rug	82
73	Business Services	7342	Disinfecting and pest control services	10
		7384	Photofinishing laboratories	0
80	Health Services	8021	Offices and clinics of dentists	220

Appendix O - Company Postcode, Employee and Revenue Information Attainment by 2-digit SIC code

This analysis was completed at 2 digit SIC code level. All companies listed in either the 2 ,3 or 4 digit codes were amalgamated under the common 2 digit code e.g, companies in 28, 2712, 2813 etc were amalgamated under the code 28. Any duplication was removed so that gaps in information were captured just once by company.

2 Digit SIC Code	SIC code description	No of Companies/ Locations - less duplicates	% Postcode Obtained	% Employee Info Obtained	% Revenue Obtained
07	Agricultural Services	12	100.00%	83.33%	0.00%
10	Metal Mining	4	100.00%	75.00%	50.00%
12	Coal Mining	3	100.00%	0.00%	0.00%
13	Oil & Gas Extraction	6	100.00%	33.33%	33.33%
20	Food & Kindred Products	374	100.00%	87.50%	18.92%
22	Textile Mill Products	125	100.00%	88.14%	22.03%
23	Apparel & Other Textile Products	161	100.00%	91.98%	10.49%
24	Lumber & Wood Products	343	100.00%	95.00%	6.00%
26	Paper & Allied Products	60	100.00%	93.33%	21.67%
27	Printing & Publishing	390	100.00%	81.84%	7.16%
28	Chemicals & Allied Products	94	100.00%	77.47%	14.23%
29	Petroleum & Coal Products	21	100.00%	85.74%	23.81%
31	Leather & Leather Products	6	100.00%	50.00%	33.33%
32	Stone, Clay, Glass & Concrete Products	183	100.00%	88.04%	7.60%
33	Primary Metal Industries	55	100.00%	81.73%	7.69%
34	Fabricated Metal Products	26	100.00%	92.31%	3.85%
35	Industrial Machinery & Equipment	14	100.00%	78.57%	14.29%
36	Electrical & Electronic Equipment	88	100.00%	85.56%	20.00%
37	Transportation Equipment	54	100.00%	86.79%	22.64%
38	Instruments & Related Products	22	100.00%	79.17%	20.83%
39	Miscellaneous Manufacturing Industries	11	100.00%	81.82%	9.09%
49	Electric, Gas & Sanitary Services	28	100.00%	77.78%	51.85%
50	Wholesale Trade - Durable Goods	18	100.00%	94.44%	0.00%
51	Wholesale Trade - Nondurable Goods	223	100.00%	90.18%	6.70%
52	Building Materials, Hardware, Garden Supply & Mobile Homes	174	100.00%	95.43%	2.86%
72	Personal Services	80	100.00%	95.12%	1.22%
73	Business Services	10	100.00%	100.00%	10.00%
80	Health Services	217	100.00%	93.64%	0.00%

Appendix P - Company and Employee analysis by 2-digit SIC code

2 Digit SIC Code	SIC code description	No of Companies/ Locations	No of companies less duplicates (2-digit SIC)	No of companies by employee range						No of Companies less duplicates (Overall)	Total employees by 2 digit code
				>250	101-250	51-100	11-50	< or = 10	no info		
27	Printing & Publishing	391	390	2	10	8	70	229	71	390	5552
20	Food & Kindred Products	608	374	21	20	26	123	138	46	373	23600
24	Lumber & Wood Products	343	343	2	4	8	62	249	18	343	4383
51	Wholesale Trade - Nondurable Goods	224	223	2	1	2	24	172	22	222	2104
80	Health Services	220	217				16	187	14	217	1124
32	Stone, Clay, Glass & Concrete Products	184	183	5	6	13	50	87	22	180	5803
52	Building Materials, Hardware, Garden Supply & Mobile Homes	175	174				14	152	8	173	745
23	Apparel & Other Textile Products	162	161	2	14	11	32	89	13	160	5446
22	Textile Mill Products	145	125	7	13	11	25	52	17	125	8839
28	Chemicals & Allied Products	197	94	4	7	5	8	36	24	92	5098
36	Electrical & Electronic Equipment	89	88	5	10	5	20	35	13	88	5089
72	Personal Services	82	80			1	3	72	4	79	309
26	Paper & Allied Products	60	60		11	3	12	30	4	60	2545
33	Primary Metal Industries	104	55	1	1	4	11	26	12	55	2003
37	Transportation Equipment	54	54	5		5	9	27	8	54	8246
34	Fabricated Metal Products	26	26				4	20	2	26	197
49	Electric, Gas & Sanitary Services	28	27	1	2	3	2	4	15	26	2274
38	Instruments & Related Products	24	22		2		5	11	4	22	583
29	Petroleum & Coal Products	21	21		1	3	4	10	3	21	484
50	Wholesale Trade - Durable Goods	18	18			2	2	13	1	18	244
35	Industrial Machinery & Equipment	14	14	1	1	2	1	6	3	13	806
07	Agricultural Services	12	12				1	9	2	12	29
39	Miscellaneous Manufacturing Industries	11	11				1	8	2	11	38
73	Business Services	10	10				2	8		10	40
13	Oil & Gas Extraction	6	6					2	4	6	10
31	Leather & Leather Products	6	6			1	1	1	3	6	86
10	Metal Mining	4	4					3	1	4	8
12	Coal Mining	3	3						3	3	0
Total		3221	2801	58	103	113	502	1676	339	2789	85685

Appendix Q - Prioritisation by Sector – Model Outputs

2 Digit SIC Code	SIC code description	No of companies less duplicates (2-digit SIC)	Total employees by 2 digit code	Identification frequency	Priority
28	Chemicals & Allied Products	82	4547	758	1
51	Wholesale Trade - Nondurable Goods	223	2104	319	1
20	Food & Kindred Products	374	23600	22	2
22	Textile Mill Products	125	8839	36	2
24	Lumber & Wood Products	343	4383	28	2
32	Stone, Clay, Glass & Concrete Products	183	5803	48	2
33	Primary Metal Industries	55	2003	73	2
36	Electrical & Electronic Equipment	88	5089	50	2
52	Building Materials, Hardware, Garden Supply & Mobile Homes	174	745	168	2
23	Apparel & Other Textile Products	161	5446	24	3
26	Paper & Allied Products	60	2545	17	3
27	Printing & Publishing	390	5552	3	3
37	Transportation Equipment	54	8246	10	3
72	Personal Services	80	309	4	3
73	Business Services	10	40	170	3
80	Health Services	217	1124	4	3
07	Agricultural Services	12	29	1	4
10	Metal Mining	4	8	8	4
12	Coal Mining	3	0	2	4
13	Oil & Gas Extraction	6	10	5	4
29	Petroleum & Coal Products	21	484	39	4
31	Leather & Leather Products	6	86	18	4
34	Fabricated Metal Products	26	197	9	4
35	Industrial Machinery & Equipment	14	806	10	4
38	Instruments & Related Products	22	583	9	4
39	Miscellaneous Manufacturing Industries	11	38	6	4
49	Electric, Gas & Sanitary Services	27	2274	70	4
50	Wholesale Trade - Durable Goods	18	244	4	4

Appendix R - Company and employee analysis by 4-digit SIC code for Chemicals and Allied products

2 Digit SIC Code	SIC code description	No of Companies/ Locations	Employee ranges						Total Employees
			>250	101-250	51-100	11-50	< or = 10	no info	
2834	Pharmaceutical preparations	19	2	3	0	2	6	6	2591
2841	Soap and other detergents	9	0	0	0	3	4	2	70
2819	Industrial inorganic chemicals, nec	8	0	0	1	0	5	2	75
2899	Chemical preparations, nec	8	0	0	2	1	4	1	214
2842	Polishes and sanitation goods	7	0	0	0	3	4	0	69
2821	Plastics materials and resins	6	0	1	0	2	2	1	281
2851	Paints and allied products	5	0	0	1	0	1	3	84
2875	Fertilizers, mixing only	5	0	0	0	2	3	0	48
2844	Toilet preparations	4	0	1	0	2	1	0	195
2824	Organic fibers, noncellulosic	3	0	0	0	0	0	3	0
2843	Surface active agents	3	0	0	0	1	1	1	52
2869	Industrial organic chemicals, nec	3	0	0	1	0	1	1	57
2873	Nitrogenous fertilizers	3	0	1	0	0	1	1	210
2874	Phosphatic fertilizers	3	0	1	0	0	1	2	1
2879	Agricultural chemicals, nec	3	0	0	0	1	2	0	42
2833	Medicinals and botanicals	2	0	0	0	1	1	0	21
2865	Cyclic crudes and intermediates	2	0	0	1	0	1	0	69
2891	Adhesives and sealants	2	0	0	0	2	0	0	65
2892	Explosives	2	0	0	0	2	0	0	42
2813	Industrial gases	1	0	0	0	0	0	1	0
2816	Inorganic pigments	1	0	0	1	0	0	0	60
2822	Synthetic rubber	1	0	0	0	0	1	0	7
2823	Cellulosic man-made fibers	1	1	0	0	0	0	0	286
2861	Gum and wood chemicals	1	0	0	0	0	1	0	3
2893	Printing ink	1	0	0	0	0	1	0	5

Appendix S - Sectors selected for GIS mapping

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Companies Identified	SIC code count	GIS Map
07	Agricultural Services	0711	Soil preparation services	12	1	None
10	Metal Mining	10	Metal Mining	4	8	None
12	Coal Mining	122	Bituminous coal & lignite mining	3	2	None
13	Oil & Gas Extraction	1311	Crude petroleum and natural gas	4	4	None
		1381	Drilling oil and gas wells	2	1	None
20	Food and kindred products	20	Food and kindred products	364	6	Ward Distribution
		201	Meat Products	78	2	None
		203	Canned & preserved fruits & vegetables	27	2	None
		208	Beverages	23	5	Direct Plot
		2023	Dry, condensed, evaporated dairy products	5	1	None
		2041	Flour and other grain mill products	4	1	None
		2045	Prepared flour mixes and doughs	2	1	None
		2048	Prepared feeds, nec	44	1	None
		2051	Bread, cake, and related products	58	1	None
		2084	Wines, brandy, and brandy spirits	3	2	None
22	Textile Mill Products	22	Textile Mill Products	125	28	Ward Distribution
		221	Broadwoven fabric mills, cotton	16	4	None
		223	Broadwoven fabric mills, wool	4	4	None
23	Apparel and other textile products	23	Apparel and other textile products	162	24	Ward Distribution
24	Lumber and Wood Products	24	Lumber and Wood Products	343	28	Ward Distribution
25	Paper and allied products	26	Paper and allied products	60	17	Ward Distribution
27	Printing and publishing	27	Printing and publishing	391	3	Ward Distribution
28	Chemicals and allied products	28	Chemicals and allied products	82	19	Ward Distribution
		2813	Industrial gases	1	2	None
		2816	Inorganic pigments	1	15	None
		2819	Industrial inorganic chemicals	8	20	Direct Plot
		2821	Plastics, materials and synthetic resins	6	53	Direct Plot
		2822	Synthetic rubber	1	33	None
		2823	Cellulosic man-made fibers	1	6	None
		2824	Organic fibers, noncellulosic	3	4	None
		2833	Medicinals and botanicals	2	23	None
		2834	Pharmaceutical preparations	19	35	Direct Plot
		2841	Soap and other detergents	9	31	Direct Plot
		2842	Speciality cleaning, polishing and sanitation preparations	7	50	Direct Plot
		2843	Surface active agents	3	20	None
		2844	Toilet preparations	4	23	None
		2851	Paints and allied products	5	38	Direct Plot
		2861	Gum and wood chemicals	1	8	None
		2865	Cyclic crudes and intermediates	2	40	None
		2869	Industrial organic chemicals, nec	3	69	None
		2873	Nitrogenous fertilizers	3	9	None
		2874	Phosphatic fertilizers	3	8	None
		2875	Fertilisers, mixing products	5	6	None
		2879	Agricultural chemicals, nec	3	183	None
		2891	Adhesives and sealants	2	29	None
		2892	Explosives	2	17	None
		2893	Printing ink	1	13	None
		2895	Carbon black	0	1	None
		2899	Chemical preparations, nec	8	2	None
29	Petroleum & Coal Products	2911	Petroleum refining	2	17	Direct Plot
		2951	Asphalt paving mixtures and blocks	7	2	None
		2952	Asphalt felts and coatings	6	3	None
		2992	Lubricating oils and greases	5	12	Direct Plot
		2999	Petroleum and coal products, nec	1	5	None
31	Leather & Leather Products	3111	Leather tanning and finishing	6	18	Direct Plot
32	Stone, Clay, Glass & Concrete Products	321	Flat glass	6	16	Direct Plot
		322	Glass and glassware, pressed and blown	14	6	Direct Plot
		323	Products of purchased glass	24	6	Direct Plot
		324	Cement, hydraulic	0	5	None
		325	Structural clay products	24	8	Direct Plot
		327	Concrete, gypsum and plaster products	113	4	Ward Distribution
		3291	Abrasive products	3	2	None
		3292	Asbestos products	0	1	None

SIC code - 2 digit	2-digit Code description	SIC code - 2,3,4 digit	2,3,4-digit Code description	Companies Identified	SIC code count	GIS Map
33	Primary metal industries	33	Primary metal industries	55	13	Ward Distribution
		331	Blast furnace and basic steel products	27	18	Direct Plot
		332	Iron & steel foundries	10	18	None
		333	Primary smelting, refining-nonferrous	1	11	None
		334	Secondary Nonferrous Metals	1	6	None
		335	Nonferrous rolling and drawing	3	4	None
34	Fabricated Metal Products	336	Nonferrous foundries (castings)	7	3	None
		3411	Metal cans	1	1	None
		3421	Cutlery	0	1	None
		3432	Plumbing fixture fittings and trim	4	2	None
		3479	Metal coating and allied services	21	1	None
		3482	Small arms ammunition	0	2	None
35	Industrial Machinery & Equipment	3483	Ammunition, exc for small arms, nec	0	2	None
		3575	Computer terminals	0	1	None
36	Electrical and Electronic Equipment	3585	Air conditioning, heating and refrigeration equipment	14	9	Direct Plot
		3612	Transformers, except electronic	5	5	None
		3621	Motors and generators	12	1	None
		3632	Household refrigerators and freezers	1	8	None
		3641	Electric lamp bulbs and tubes	1	3	None
		3672	Printed circuit boards	4	2	None
		3674	Semiconductors and related devices	8	12	Direct Plot
		3678	Electronic connectors	1	3	None
		3679	Electronic components, nec	35	2	None
		3691	Storage batteries	0	3	None
37	Transportation Equipment	3692	Primary batteries, dry and wet	1	10	None
		3699	Electrical equipment and supplies, nec	21	1	None
		372	Aircraft and parts	9	3	None
		373	Ship & boat building, repair	14	2	None
		376	Guided missiles, space craft	1	2	None
38	Instruments & Related Products	3714	Motor vehicle parts and accessories	30	3	None
		384	Surgical, medical & dental instruments	20	1	None
		3827	Optical instruments and lenses	0	2	None
		3843	Dental equipment and supplies	2	3	None
39	Miscellaneous Manufacturing Industries	3861	Photographic equipment and supplies	2	3	None
		3911	Jewellery, precious metal	10	3	None
49	Electric, Gas & Sanitary Services	3915	Jewellers' materials & lapidary work	1	3	None
		491	Electric services	22	1	None
		492	Gas production and distribution	5	2	None
50	Wholesale Trade - Durable Goods	494	Water supply	1	67	None
		5078	Refrigeration equipment wholesale	18	4	None
51	Wholesale Trade - Nondurable Goods	516	Wholesale trade - chemicals and allied products	58	310	Ward Distribution
		517	Wholesale trade - petroleum and petroleum products	130	8	Ward Distribution
		5198	Paint products wholesale	36	1	None
52	Building Materials, Hardware, Garden Supply & Mobile Homes	5261	Nurseries, lawn and garden supplies	175	168	Ward Distribution
72	Personal Services	7216	Dry cleaning plants, except rug	82	4	None
73	Business Services	7342	Disinfecting and pest control services	10	167	Direct Plot
		7384	Photofinishing laboratories	0	3	None
80	Health Services	8021	Offices and clinics of dentists	220	4	None

Appendix T - Example of database report - Companies by Postcode – BT10.

Companies by Postcode

Name	Address 1	Address 2	Address 3	Address 4	Address 5	Post Code
Equipment For Equality	91 Sloily Pk 384	Medical Instruments and Supplies		BELFAST	BELFA ST	BT10 0AP
Chris Loughridge	116 Upr Lisburn Rd 8021	Finaghy Dentists		BELFAST	BELFA ST	BT10 0BD
E M O'Donnell	8 Finaghy Road South 8021			Belfast	BELFA ST	BT10 0DR
Finaghy Dental Practice	12 Finaghy Rd South 8021	Finaghy Dentists		BELFAST	BELFA ST	BT10 0DR
Stewart Intruder Alarms Ltd.	2b Finaghy Rd South 3699 3699			BELFAST	BELFA ST	BT10 0DR
		Electrical equipment & supplies, nec				
		Electrical equipment & supplies, nec				

Appendix U - Trade organisations identified for future activity co-ordination

We have identified the following trade associations and industry groups on a priority basis which is related to the prioritisation process completed as part of the sector analysis in Northern Ireland. Also included where available are the addresses and contact details of these organisations.

Priority	Organisation	Address and contact details
1	Northern Ireland Polymer Association	c/o Queens University Belfast Ashby Institute 125 Stranmillis Road Belfast BT9 5AH Tel: 028 90974706
	Chemical Industries Association (NI members)	Kings Buildings Smith Square London SW1P 3JJ Tel: 020 78343399
	Freight Transport Association Ltd	PO Box 18 Holywood BT18 0JX Tel: 028 90421422
	Northern Ireland Agricultural Producers	15 Molesworth Street Cookstown BT80 8NX Tel: 028 86765700 Chairman: Alex Scullon
	Pharmaceutical Society	73 University Street Belfast BT7 1HL Tel: 028 90326927 Fax: 028 90 439919
2	Northern Ireland Food and Drink Association	Quay Gate House 15 Scrabo Street Belfast BT5 4BD 028 90452424 www.nifda.co.uk Director: Michael Bell
	Northern Ireland Textile and Apparel Association	Riverside Factory Victoria Street Lurgan BT67 9DU 028 92689999 www.nita.co.uk Non operational at present
	Northern Ireland Timber Trade Association	Non Operational at present
	Dairy Council for Northern Ireland	Shaftesbury House Edgewater Business Park Edgewater Road Belfast BT3 9JQ Telephone: 028 90770113 Fax: 028 90781224

	Quarry Products Association	Unit 10 Nutts Corner Business Park Dundrod Road Crumlin BT29 4SR Telephone: 028 90824078 Fax: 028 90825103
	Ulster Chemists Association	73 University Street Belfast BT7 1HL Telephone: 028 90320787
3	Federation of Small Businesses FSB	Cathedral Chambers 143 Royal Avenue Belfast BT1 1FH Telephone: 028 90326035 Fax: 028 90326113 www.fsb.org.uk
	Northern Ireland Aerospace Consortium	Non operational at present
	Engineering Employers Federation	2 Greenwood Avenue Belfast BT4 3JL Tel: 028 90595050 www.eef.org.uk
	Ulster Launderers Association	c/o Lilliput Unit 33 City Business Park The Cutts Dunmurry Belfast BT17 9HU Tel: 028 90618555
4	Construction Employers Federation	143 Malone Road Belfast BT9 6SU Tel: 028 90877143 www.cefni.co.uk
	Environmental Service Association	154 Buckingham Palace Road London SW1W 9TR Tel: 020 78248882
	Invest NI	Bedford Square Bedford Street Belfast BT2 7BH Telephone: 028 90239090 Fax: 028 90490490 www.investni.com

Appendix V - Further Investigations – A proposed approach

It is recommended that the following type of approach be considered for gathering the actual chemical production or use data for individual companies within sectors:

Table V.1

Sector Priority	Number of employees within company	Data Capture method
1	>100	Visit
	10-100	Visit
	<10	Telephone
2	>100	Visit
	10-100	Visit/Telephone
	<10	Telephone/Post
3	>100	Visit
	10-100	Telephone
	<10	Post only
4	>100	Visit
	10-100	Post only
	<10	Post only

As highlighted in section 4.6, examples of priority 1 and 2 sectors have been listed below:

- Priority 1 – Chemicals and Allied Products (28) and Wholesale of Chemicals/Allied products/Petrochemicals (51).
- Priority 2 – Stone, Clay and Glass products (32), Primary Metal Industries (33) and Electronic and other electrical equipment (36), Nurseries, Lawn and Garden Supplies (52), Food and Kindred Products (20), Textile Mill Products (22), Lumber and Wood Products (24)

This basic approach aims to ensure that quality data is obtained, particularly for the majority of companies within the sectors identified in the priority 1 or 2 bands and also larger companies within the priority 3 and 4 bands. Site visits are more likely to yield accurate information compared to, for example, postal requests.

We do not recommend that every company should be targeted immediately. Consideration should be given to a step by step approach that addresses, for example, sector specific dynamics, specific sector targeting or the targeting of large companies first across all sectors.

