



Pharmaceutical Ireland

Responsible Care Report 2012

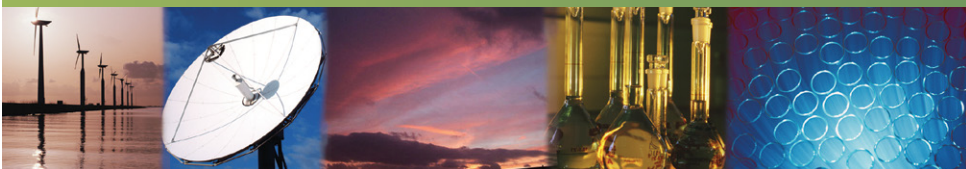
PHARMACEUTICAL IRELAND
Focused on a Healthy Future



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY



A business sector within IBEC | the Irish Business and Employers Confederation



Chairman's Foreward PharmaChemical Ireland

Once again it is a pleasure to review and comment on our collective performance in the area of Responsible Care. The performance achieved by our industry in this area is in part due to the significant focus the EHS working group brings to it and in part to the individual member companies who take Responsible Care to heart in their operations. Congratulations and thanks to all of you who have contributed to the results contained in this report.

2012 was another year of uncertainty in global markets. The number of people working directly in the industry continues to decline (albeit more slowly than we reported last year – there was only a 1.3% reduction between 2010 and 2011). Indeed we have recorded a 10.7% increase in the numbers of hours worked over the period in question (2009-2011). However, the good news is that production volume increased by 25% over the same three year period. As the employment number is considered to be a lagging economic indicator, it is hoped that the increase in production will feed through to increased employment in the coming years.

This is a people based industry. Many member companies operate in the human healthcare area - that is why it is essential that this commitment to human health starts on site. A 12% reduction in the "Lost Time Injury Rate", for the third year in succession, is a most impressive result which clearly demonstrates the importance placed by all of our members on providing a safe place to work. Nothing we do is worth any of our colleagues being injured so all companies are encouraged to keep the focus on further reducing this indicator in the coming years.

Clean water is becoming an increasingly scarce resource worldwide. Over the last few years the industry in Ireland has become conscious of the importance of this resource and actively encourages member companies to minimise its use in their day to day operations. We can report a decrease of 12% in water consumption by our member companies over the three year period to from 2009 to 2011. This is an excellent achievement during a period of significantly increased output in production volumes.

The coming years will continue to bring many challenges. Pharmachemical Ireland will continue to use Responsible Care as a core differentiating activity. We do this because it makes sound business sense and because it is simply the right thing to do. Ireland rightly takes its place in the middle of the global pharmaceutical business; now we have an opportunity to show others how to drive great businesses in a responsible way. We will continue to encourage focus in this area and active participation in the EHS working group.

It is a privilege to represent the Pharma Chemical Industry and to be associated with the excellent EHS performance. While we work in an ever changing world, we continue to work hard to developing a sustainable business. To this extent we look forward to supporting Responsible Care in everything we do.

Gerry Collins

Janssen Pharmaceutical Limited
Chairman, PharmaChemical Ireland





Chairman's Foreward Environmental, Health & Safety working group

Overall performance indicators for environment and safety continued to trend downwards in 2012 with significant decreases in a number of indicators, with particularly noteworthy reductions in waste disposal, water consumption and lost time injury rates. This continues a downward trend evident over almost a 10 year period in which employee numbers and production output increased, despite a recent drop off in growth due to the global economic downturn.

The figures reported to the end of 2012 look at trends over a three year period for member companies as a whole and they show significant progress in a number of areas. For example, we are pleased to report decreases of 49% in phosphate and 10% in nitrogen discharge to waters. Hazardous waste is reduced by 14% and non-hazardous waste by 32%. In addition, water consumption decreased by 12% over the reporting period.

There was a continued improvement in Lost Time Injury rates with a very significant overall decrease of 12% over the three year reporting period. This rate is a testament to the continuing in-company efforts to prioritise safety and this figure reads even better when one considers that it has occurred at a time when production levels have increased by 25%.

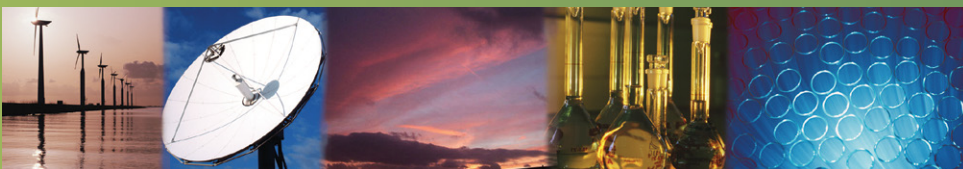
Within our member companies, Responsible Care is acknowledged as the fundamental non-corporate Environmental, Health and Safety initiative contributing positively to our employees and the communities in which we operate. We will continue to encourage all our members to reinforce their efforts to achieve the very best in their EHS commitments.

I would like to take this opportunity to thank all our member companies for their continued support and commitment to the Responsible Care principles and in particular for the generosity shown by many of our companies in sharing their best practices for the benefit of the sector as a whole.

Conor O'Brien

Recordati Ireland Limited
Chairman EHS working group





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Introduction

PharmaChemical Ireland has produced its 2012 annual Responsible Care report outlining the performance of the sector over the previous three years (2009- 2011).

This report follows the Responsible Care ethos and highlights the member companies' commitment and initiatives that were taken to demonstrate continuous improvement of operational performance.

A selection of the various Responsible Care activities is covered in this report including initiatives in communications, the environment and safety. Furthermore we report on the winners of the 2012 Responsible Care Awards.

The progress made by the companies' in reducing their emissions over many years has continued into this year. We are particularly pleased to report the following improvements:

Environment

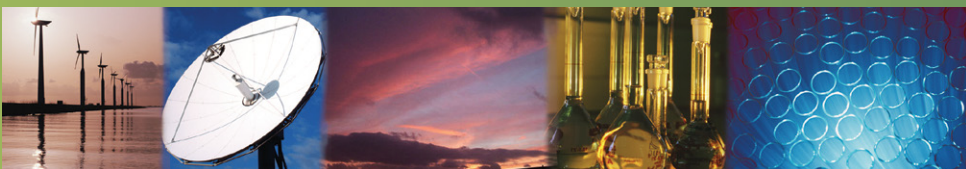
Hazardous waste reduced by 14% and non-hazardous waste by 32%. Water consumption decreased by 12% over the reporting period. In addition we are pleased to report that discharges of phosphate and nitrogen to water has decreased by 49% and 10% respectively. This is particularly impressive when one considers that all of these reductions were achieved against a backdrop of a 25 % increase in production.

Safety

There was a significant decrease of 12% in the lost time injury rate over the three year reporting period, continuing the trend of decreases seen in previous years.

The members of PCI evaluate themselves against a series of management codes to assess their commitment to EHS best practice. The health & safety, environment, energy and the product stewardship codes place a requirement on companies to identify gaps in their performance and address these areas. The results demonstrate that companies are improving on the requirements of the codes year on year.

The aim of the industry is to produce products that enhance the quality of life, prevent and treat diseases and alleviate suffering. We recognize that the health of the environment and public wellbeing are part and parcel of achieving this goal. We believe that it is in the interest of all stakeholders in our industry to have a vibrant pharmachem sector operating in Ireland to world class standards. That is why Responsible Care is a foundation principle of the activities of PharmaChemical Ireland.



What is Responsible Care?

Responsible Care is our commitment to sustainability: the global chemical industry's unique initiative to improve its health, safety and environmental performance.

Responsible Care is the global Chemical industry's environmental, health and safety (EHS) initiative to drive continuous improvement in performance of the pharmaceutical and chemical sector in all aspects, which directly and indirectly impact on the environment, employees or the general public. Responsible Care companies actively strive to maintain leadership in safety and environment performance.

The Responsible Care ethic helps chemical companies to operate safely, profitably and with due care for future generations.

In Ireland each member of PharmaChemical Ireland is expected to voluntarily adopt the following commitments and principles;

- A formal commitment on behalf of each company to a set of Guiding Principles signed, in the majority of cases, by the Chief Executive Officer
- A series of codes, guidance notes and checklists to assist companies to implement the commitment
- The progressive development of indicators against which improvements in performance can be measured
- Ongoing process of communication on health, safety and environment matters with interested parties inside and outside the industry
- Provision of forums in which companies can share views and exchange experiences on implementation of the commitment
- Adoption of a title and a logo which clearly identify national programmes as being consistent with and part of the concept of Responsible Care
- Consideration of how best to encourage all member companies to commit to and participate in Responsible Care
- Systematic procedures to verify the implementation of the measurable (or practical) elements of Responsible Care by the member companies.

Pharmaceutical Ireland manages Responsible Care at a national level; the European Chemical Industry Council (Cefic) manages Responsible Care at an EU level; and the International Council of Chemical Associations manages Responsible Care at a global level.





Responsible Care Activities in 2012

Each year members of PharmaChemical Ireland seek ways to improve their environmental, health and safety performance. Data submitted in the Responsible Care report is analysed and areas where improvement is needed are identified and programmes put in place to address member needs.

The following are a brief outline of some of the main achievements of Responsible Care in Ireland.

Communications

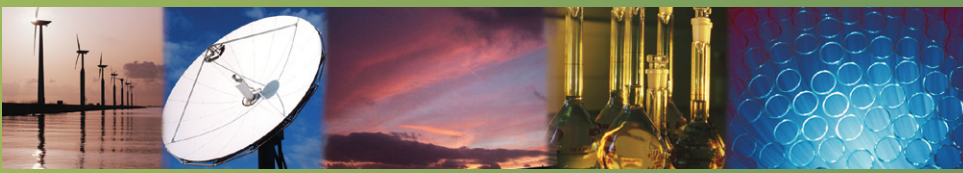
- **Sharing Best Practice – Quarterly meetings**
Members of the Responsible Care environment, health & safety group met four times in 2012. The meetings allow members to network and share experiences in all aspects of environment, health & safety matters. All four of the meetings were held on sites and we are very grateful to Gilead Life Sciences, Limited, Pfizer Newbridge, and MSD Ballydine for hosting meetings. We are also indebted to Indaver Ireland Limited for hosting our spring meeting at their waste to energy facility in Duleek. In addition we are also very grateful to Eli Lilly for hosting our process safety sub-group meeting.
- **EHS updates**
This year we continued the EHS updates that were circulated throughout the year when a number of issues arose that warranted widespread communication. A total of 23 updates were released this year. It should be noted that these are in addition to the numerous updates on specific issues such as REACH, ELRA and Seveso.

Environment

- **Environmental Protection Agency (EPA) Technical Forum**
PharmaChemical Ireland has established an ongoing technical forum with the Irish EPA which meets on a biannual basis. In addition, PCI meet with the EPA on a number of specific technical issues throughout the year. We met with the EPA 7 times in 2012. In addition, personnel from the EPA presented at our September EHS working group meeting.

Health And Safety

- **Health & Safety Authority (HSA)**
The HSA has liaised with PCI on inspection priorities for process industry sites. In addition PCI is represented on the Technical and Scientific Advisory Committee (TSAC) of the HSA. In total we met with the HSA 9 times in 2012.
- **Process Safety Sub-group**
The PSSG met once in 2012 and we are very grateful to Eli Lilly who hosted the meeting. In addition PCI continues to circulate process safety alerts. These alerts, posted on the PCI website, allow the sharing of information that will prevent similar incidents in other member companies.



PharmaChemical Ireland Responsible Care Awards

The 2012 winners were Pfizer Little Island, Genzyme Ireland and Alkermes Pharma Ireland Limited. The winners were presented with their awards at the PharmaChemical Ireland AGM on 12th October in Adare Manor, Adare, Co. Limerick.

Pfizer Little Island 'YOUR Safety Counts'

"Your Safety Counts" (YSC) is the brainchild of the Health & Safety team and Safety Reps on-site. Between late 2010 and early 2011 the Safety team set about formalising their strategy onsite and looking at innovative and engaging ways of communicating the progress made in Health & Safety onsite.

YSC is anchored on four key principles:

1. Their 9 commitments to health & safety, which highlights the importance of personal responsibility both at work and in the home
2. The Behavioural Based Safety Programme which is an observation-based process to encourage people to think about safety when performing a task, and apply any learning's.
3. Operational Excellence which ensured a holistic and structured approach to the selection of priority projects for safety onsite.
4. And finally, an effective communications and awareness programme that utilises tactical, viral and guerrilla marketing to support the various programmes onsite. In addition to work-related topics a firm focus is placed on Health, Safety and Wellbeing in the home.



Shane Horgan receiving his award from Gerry Collins, Chairman Pharmachemical Ireland and Matt Moran, Director Pharmachemical.

YSC, and in particular the BBS programme, have directly contributed to the reduction in the Total Incident Rate or TIR for the site. A corporate target was put in place to reduce TIR by 40% from 2006-2010. In reality, Pfizer Little Island surpassed the corporate target set within that timeframe. The sites TIR is currently 0.0.

Other Results achieved thus far include:

- 65% of the site directly involved in the programme
- 160 people participating in the sites proactive behavioural training and observation program
- 357 BBS observations completed to date
- 156 trained in BBS (others in-training)
- 57 certified in BBS
- 1071 safety conversations or engagements to date
- 3½ time as many good behaviours observed that at-risk behaviours
- All areas and levels of the organisation engaged in BBS



PharmaChemical Ireland Responsible Care Awards

Genzyme

'Health & Wellbeing Excellence at Work'

Genzyme developed a Health and Wellbeing Program in 2011 to encourage their workforce to become more active. This has proved a great success with over 20% of the workforce joining up to partake in these activities.

The objective of the program is to enhance the physical and emotional wellbeing of employees by providing subsidised physical activities onsite that are easily accessible and made available to all. Also there are various information sessions and Street Carnival day scheduled throughout the year to provide the workforce with the opportunities to engage with external professionals to enhance their health & wellbeing.

Exercise classes and activities were held five days a week at various times before and after normal working hours in order to facilitate everyone onsite. These activities included;

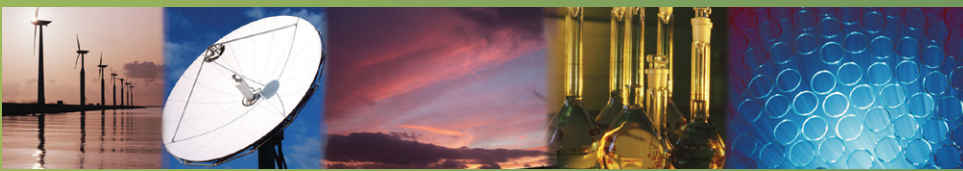
- Spinning
- Circuit training
- Zumba
- Yoga
- Running
- Biggest Loser Competition (Weight Loss)
- Pilates
- Health & Wellbeing Street Carnivals
- Healthy Food Demonstrations
- Shift Work Lifestyle Toolbox Talks
- Health & Wellbeing Communications and Poster-boards



John Norris receiving his award from Gerry Collins, Chairman Pharmacemical Ireland and Matt Moran, Director Pharmacemical.

Some of the key outcomes of Genzyme's Health & Wellbeing Program include the following...

- A healthier workforce proven by before-and-after results of BMI, Blood Pressure and cholesterol checks
- An overall improvement in Team Member morale across the site as indicated through various monkey surveys results and reflected in the site Great Place to Work surveys
- Reduced absenteeism rates
- Improved selection and management of healthier foods options available in the site cafeteria
- More effective accident management and return to work through the presence of the
- Occupational Health Nurse
-



PharmaChemical Ireland Responsible Care Awards

Alkermes

‘The Effective Deployment of Environmental Health Safety (EHSS) Risk Assessments during the life cycle of New Product Introduction’

Alkermes examined how Environmental health safety and security (EHSS) risk assessments were effectively deployed during the life cycle of new product introduction (NPI). They also demonstrated how the new NPI RA tools are being deployed at Alkermes to help influence strategic business decisions ensure standardisation, continuous improvement and maximise risk control during project life cycle.



Shane Horgan receiving his award from Gerry Collins, Chairman Pharmacchemical Ireland and Matt Moran, Director Pharmacchemical.

Without a structured and integrated approach towards the NPI lifecycle, there is the possibility of omission of hazards at the correct project phases.

The challenges identified were as follows:

- Robust gate-keeping is essential to ensure risk controls are effective before moving to next project phase
- Conversely, ad hoc management of RA could lead to an error or omission
- Ineffective understanding and/or inadequate communication of the requirements for RA leading to increased cost and effects on timelines and resources
- Corporate memory is essential to all processes including NPI RAs
- RAs need to prompt effective consultation with and involvement of key stakeholders (design engineers and end users e.g. operators and maintenance personnel)• Integration of risk controls with standard operating procedures, batch records and other routines is essential to distil and filter multiple, complex RAs and risk controls to standard ways of working, without the need to recourse to separate RA documents
- RAs must always be “live and lived” and be updated through iterative and effective management of change.

By conducting a detailed process mapping exercise, the EHSS team developed a systematic method to integrating RA into NPI projects, offering the following benefits:

- A consistent approach that places RA firmly at the core of each project decision phase (Figure 2, NPI Life Cycle)
- Facilitates continual improvement in accordance with the Plan, Do, Check & Act process (Figure 3)
- Encourages structured consultation, collaboration and integration with other departments for NPI More effective resource planning
- Compliance assured through transparent and controlled steps
- Hazards eliminated and controlled on a real time basis
- Risk controls verified at each NPI phase Internal stakeholders consulted/ informed on an iterative basis
- Improves project EHSS resource planning and associate costs and milestones.



Performance Indicators of the Responsible Care Programme for 2012

The figures reported look at trends over a three-year period for the member companies as a whole. This year we have again achieved a very high level of participation with 86 % of companies submitting data.

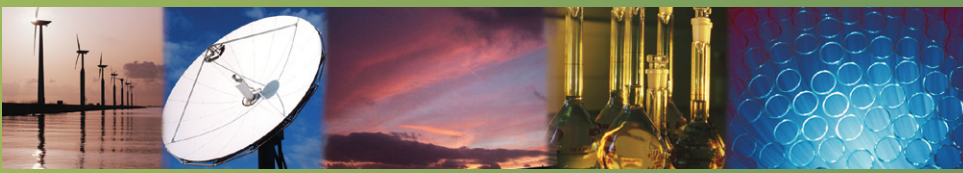
The trend in employment number continued downwards with a 6.2% reduction over the 3 year period. The rate of decrease has slowed somewhat compared to the 10% reduction reported last year. However, the good news is that production volumes continue to forge ahead with a 25% increase over the 3 year period compared to a 10% increase reported last year. As the employment number is considered to be a lagging economic indicator, it is hoped that the continued increase in production will feed through to increased employment in the coming years.

We are pleased to report decreases of 49 % in Phosphate discharge to waters, and 10% reduction in nitrogen discharge to waters. Hazardous waste reduced by 14% and non-hazardous waste by 32%. Water consumption decreased by 12 % over the reporting period. All of these reductions were achieved against a backdrop of a 25% increase in production. The energy consumed by the sector remained essentially flat which is considered a very good performance when considered against the significant increase in production output. Most other parameters showed decreases with the exception of VOC emissions which increased at a rate of 25% more than the increased level of production, with the bulk of the increase related to a small number of sites. This parameter will be closely monitored by the industry in the coming years in an effort to reverse this trend.

There was a significant decrease of 12% in the lost time injury rate over the three year reporting period, continuing the trend of decreases seen in previous years.

Within our member companies, Responsible Care is acknowledged as the fundamental non-corporate Environmental, Health and Safety initiative contributing positively to our employees and the communities in which we operate.

We will continue to encourage all our members to reinforce their efforts to achieve the very best in their EHS commitments.

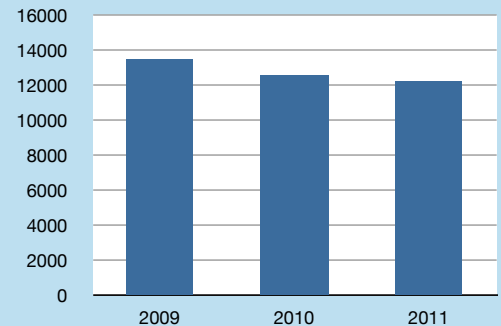


Economic Factors

Employees: ▼ - 6.2 %

During the three-year period, the numbers employed in the sector decreased by ca. 6.2%, down from a 10 % reduction reported in 2011. The reduction from 2010 to 2011 showed a 1.3 % reduction. This may indicate a levelling out in employment in the sector and it is hoped that as output is showing strong signs of increasing, the numbers employed in the industry will increase in the coming years.

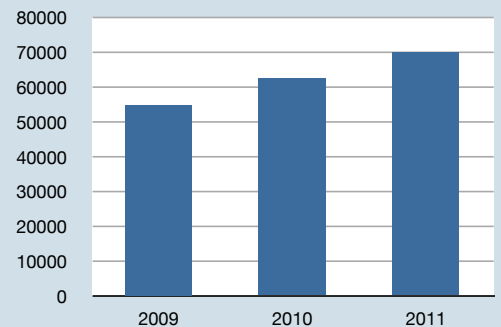
Number of employees in member countries



Production ▲ + 25 %

The output from the reporting firms increased by 25 % over the three year period from 2009 to 2011 with the rate of increase over two years at 11 %. This reflects a continued very strong performance in terms of productivity in the sector which we hope will continue in the coming years.

Production (production output, annual)





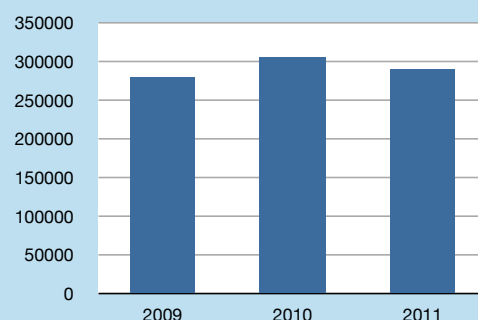
Air Emissions

Carbon Dioxide +1.8%

The trend in CO₂ emissions showed a slight increase of ca. 1.8 % over the three year period. This is a modest increase compared to the increase in the level of production over the same period. The trend from 2010 to 2011 has shown a decrease of 4.2% even though the production output in the same period increased by 11 %. The member companies continue to maintain a strong focus on all aspects of energy management and will carefully monitor the trend in energy parameters in the coming years.

We look forward to improvement in this area as more of our member companies put structured energy management systems in place and move towards the adoption of the ISO 50001 Standard Energy Management Systems in the coming years.

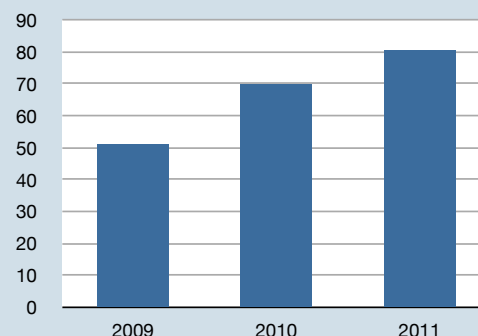
CO₂ emissions tonnes



Volatile Organic Compounds +57%

This parameter has shown an increase of 57 % over the three year period. The increase from 2010 to 2011 was lower at 16 %. Detailed investigation of this trend shows that 16 % of the respondents account for 80 % of the VOC emissions. The industry is concerned at this trend and will continue to focus the efforts of the Safety and Environmental professionals to address the increase in this parameter in the coming years. Nonetheless, the limits for VOC for each of these companies were in full compliance with their IPPC license.

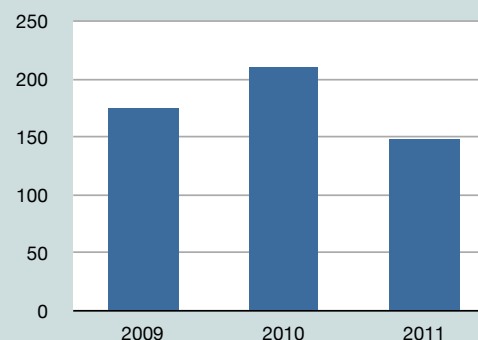
Volatile Organic Compounds/VOC (tonnes)



Sulphur Dioxide -17%

Sulphur Dioxide showed a decrease of 17 % over the three-year period, reversing an increase of 16 % reported last year. The conversion of one of the larger sites from Natural gas has resulted in a decrease of 30 % in the period from 2010 to 2011 as predicted in last year's report.

Sulphur dioxides / SO_x (tonnes)



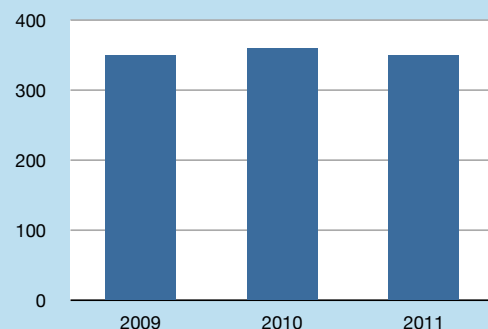


Water Discharges

Chemical Oxygen Demand -1%

This parameter has shown a small decrease of 1 % over 3 years with a 3.5 % decrease over the last two year period. These decreases, while modest in absolute terms, are very good when compared to the increases in production levels over the same period.

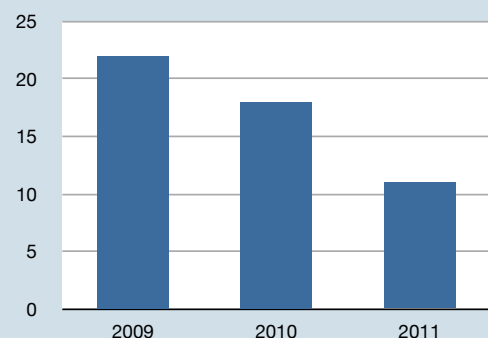
Chemical Oxygen Demand, to waters
(O₂ tonnes)



Phosphate - 49%

The phosphorous emissions from members' sites decreased by ca. 49 % over the three-year period. This follows on from a decrease of 16 % reported in 2011. This demonstrates the continuous improvement ethos of our member companies in the important area of waste water management in particular in the area of waste water treatment plant operations.

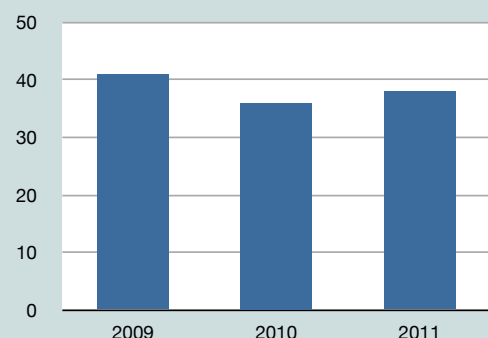
Aquatic Release of Phosphorous Compounds
(tonnes of P)



Nitrogen -10%

This year is the seventh consecutive year of reductions in aquatic release of nitrogen. A 10 % reduction in this parameter has been achieved over the three-year period which follows a 16.5 % reduction reported last year. The two year trend suggests that this parameter may now be stabilising making further reductions more difficult to achieve. However, this does demonstrate the effectiveness of member companies' wastewater treatment plants in reducing the impact of discharges of nitrogen to waters and hence reducing the potential for nitrification.

Aquatic Release of Nitrogen Compounds
(tonnes of N)

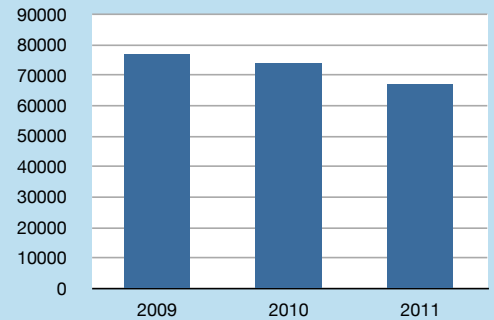




Waste Disposal

Hazardous Waste ▼ -14 %

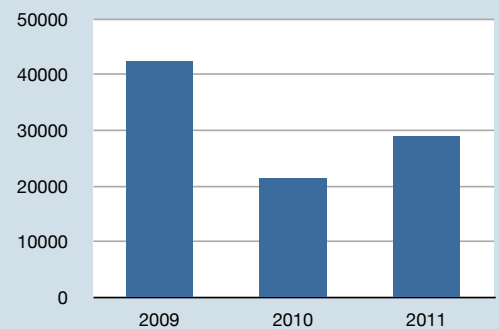
The proper disposal of hazardous waste is an important priority of all member companies and is critical to the success of the Responsible Care initiative. The reduction of 14% achieved follows on from a 12 % decrease reported last year. Our member companies are determined to minimise the generation of hazardous waste in all aspects of operations and thereby continue a high standard of environmental protection.



Non- Hazardous Waste ▼ - 32 %

The amount of non- hazardous waste decreased by 32 % over the 3 year period following on from a 39 % decrease reported in 2011. This parameter can be impacted by the amount of construction waste generated as a result of capital investment activity and can be somewhat variable year on year as is evidenced by the increase in the period from 2010 to 2011. The commitment to Responsible Care means continually striving to improve the levels of reuse and recycling. This will help to conserve scarce resources for future generations. We will continue to play our part in this national effort.

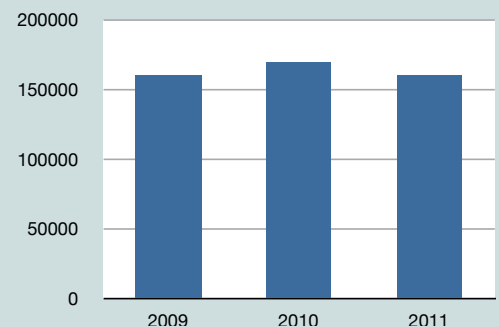
Non-hazardous Waste for Disposal (tonnes)



Energy Consumption ▼ - 0.2 %

The energy consumed by the member companies decreased slightly over the 3 year period with a more significant 3.2 % reduction in the 2010 to 2011 period. This is a very significant achievement when considered against the significant increase in the production levels. This illustrates the progress member companies continue to make in the area of energy management in all aspects of their operations.

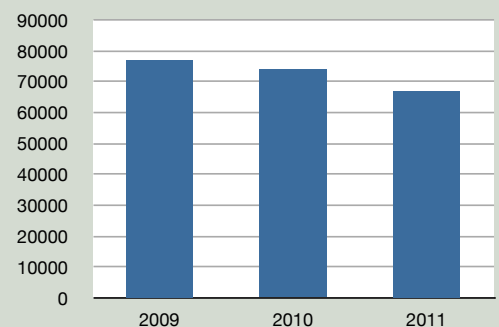
Energy Consumption (tonnes of Oil equivalent)

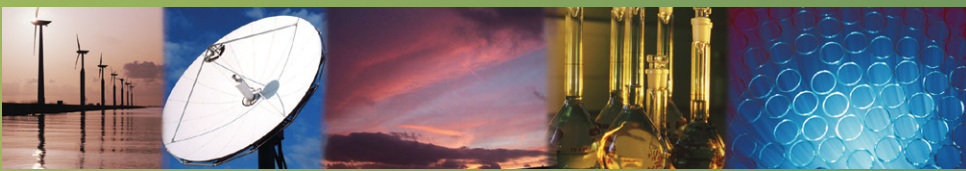


Water Consumption ▼ - 12 %

Clean water is rapidly becoming a more scarce resource worldwide as each year passes. We are conscious of the importance of this resource and actively encourage our member companies to minimise its use in their day to day operations. We can report a decrease of 12 % in water consumed by our member companies over the three year period to 2011. This is an excellent achievement in a period of increased production activity. This shows the importance we attach to conserving our scarce water resources and making the best use of water in our facilities

Non-hazardous Waste for Disposal (tonnes)





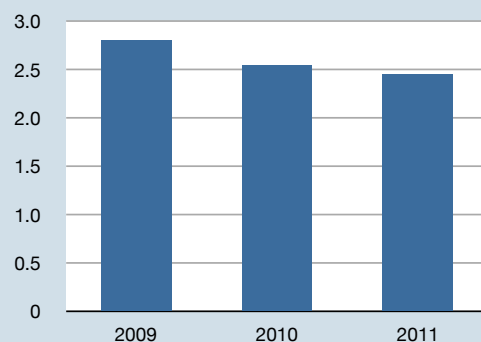
Safety

The safety of our employees is of paramount importance to our member companies.

Lost Time Injury Rate ▼ – 12 %

We are pleased to report a reduction of 12 % in the lost time injury rate following on from a 24 % reduction reported last year. This parameter has shown a consistent reduction over the last seven years. With almost 28 million hours worked in the sector in 2011, the low level of lost time injuries is testament to the continued overall effectiveness of the health and safety management systems in the sector.

Lost Time Injuries Frequency Rate
LTI per million hours worked



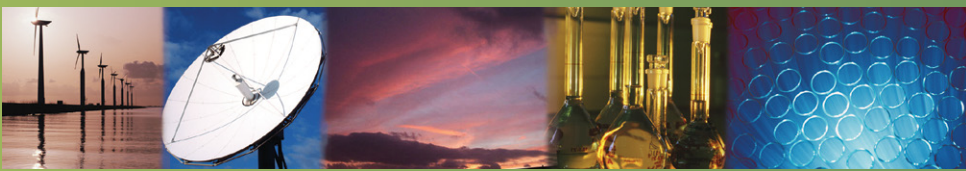


Codes of Practice

Companies are required to assess their performance against Responsible Care management codes of good practice in environment management, process safety, and energy management and newly introduced last year Product Stewardship management. While this procedure is self-assessment it does require the Company Director or Chief Executive Officer to verify any report at stage 5 or stage 6. The numeric scale used for the various stages has the following meanings:

1. No action
2. Evaluation against the code requirement completed
3. Developing an action plan
4. Implementing the action plan
5. Code requirement is in place
6. Annual review of the code requirement

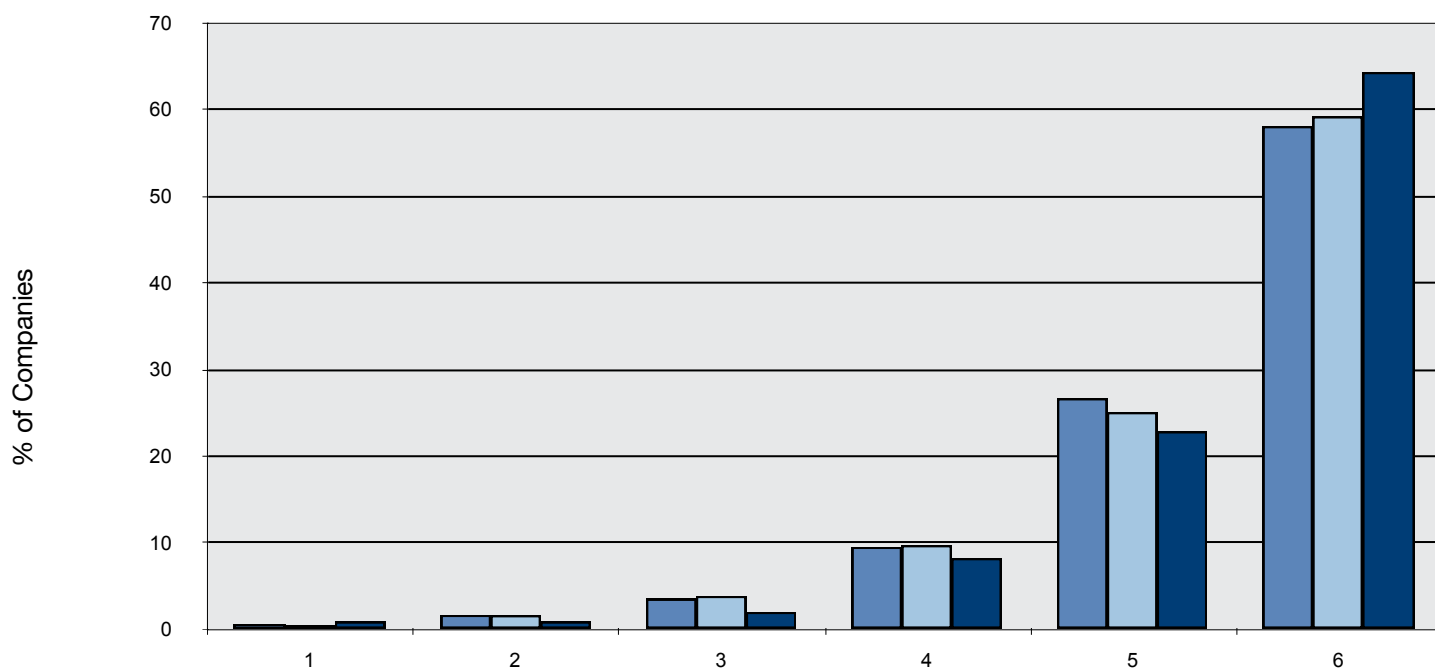
This year the report will compare the overall performance of the codes to the last two years of results in order to see more clearly the progress companies are making. A detailed breakdown of how companies are rated in each section of the code will be available as an appendix on the PharmaChemical Ireland website (www.pharmachemicalireland.com). The participation in this aspect of the Responsible Care initiative continues at a high level with over 80% of the companies participating in the Safety, Environment and Energy Codes with 64% contributing to the newer Product Stewardship Code and 80% providing data to the new Security Code which was launched two years ago.



Environment Code

The progress in implementation of the Environment Code across member companies continues steadily with over 87% of participants achieving Level 5 or greater and 95% of respondents being at Level 4 or above. The increase in achievement at level 6 shows a progressive improvement in implementation each year demonstrating the culture of continuous improvement in environmental performance in accordance with the principles of Responsible Care.

Environment Summary

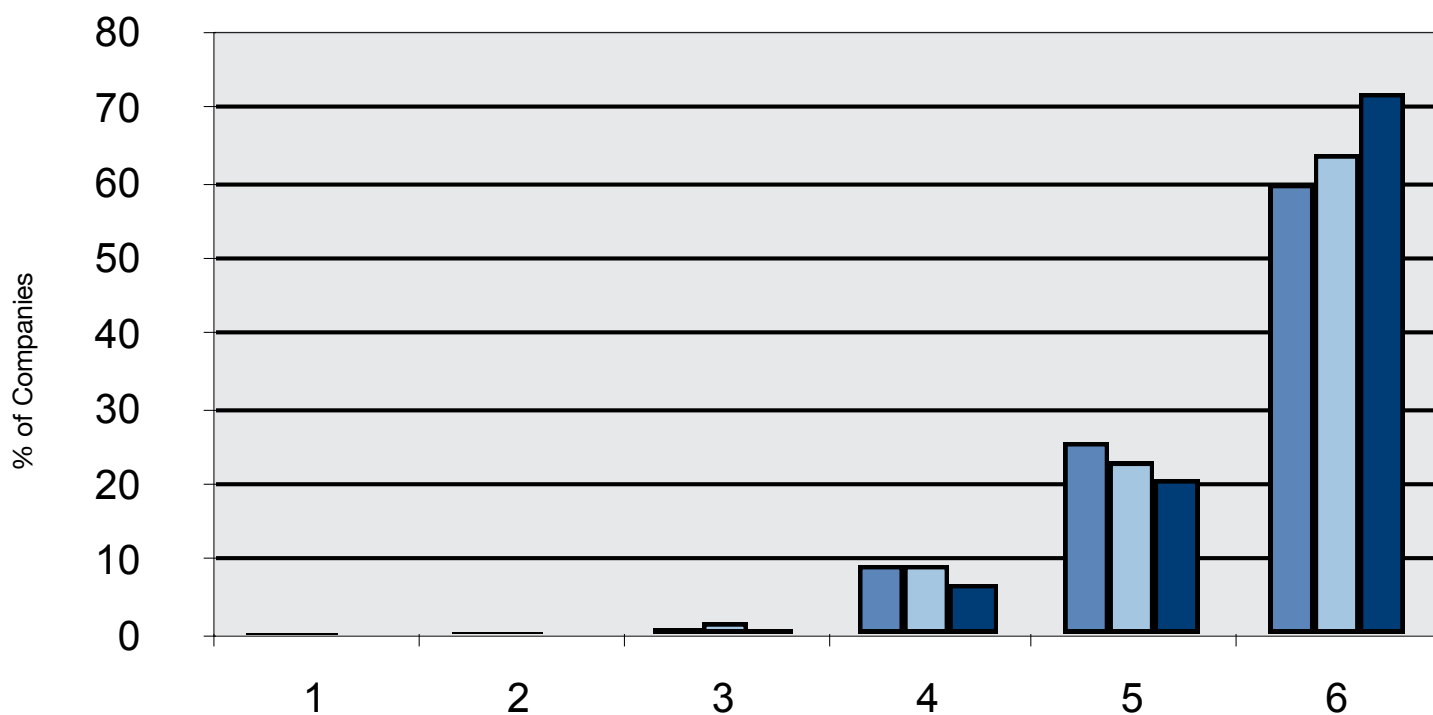


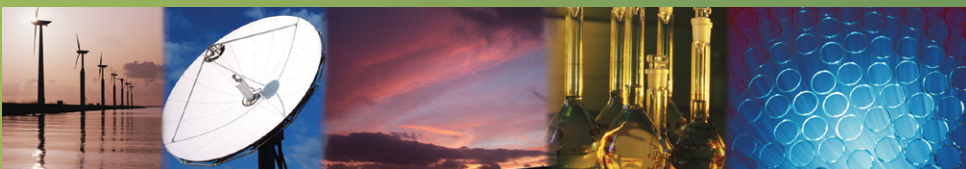


Health and Safety Code

The Health and Safety Code continues to show steady progression over time with in excess of 92 % of member companies achieving Level 5 or greater and 99 % rated at Level 4 or above. The strong focus on safety continues to be reflected in the steady reduction in the overall accident rate in the sector with a further 12 % reduction achieved in the last three year period following on from a 24% improvement over the previous period. The health and safety of our employees is of paramount importance to our member companies as evidenced by the efforts made to continuously improve the Safety performance of our facilities.

H&S Summary

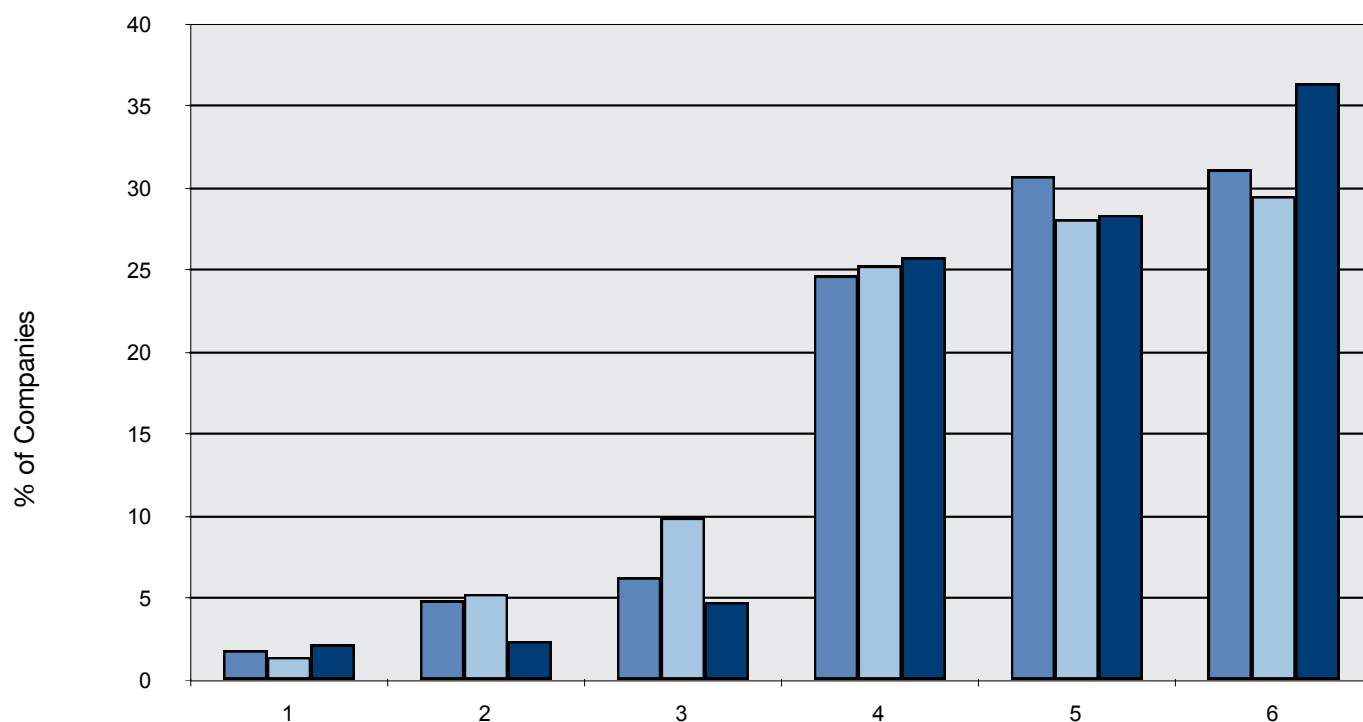




Energy Code

The returns for the Energy Code this year show that 65 % of companies are performing excellently at Levels 5 or 6 with 90 % of companies operating at level 4 or higher. The energy code is now reaching maturity with results similar to the more mature Safety and Environment Codes. We remain committed to reducing our energy consumption to the lowest practicable level thereby conserving these scarce resources for future generations.

Energy Summary



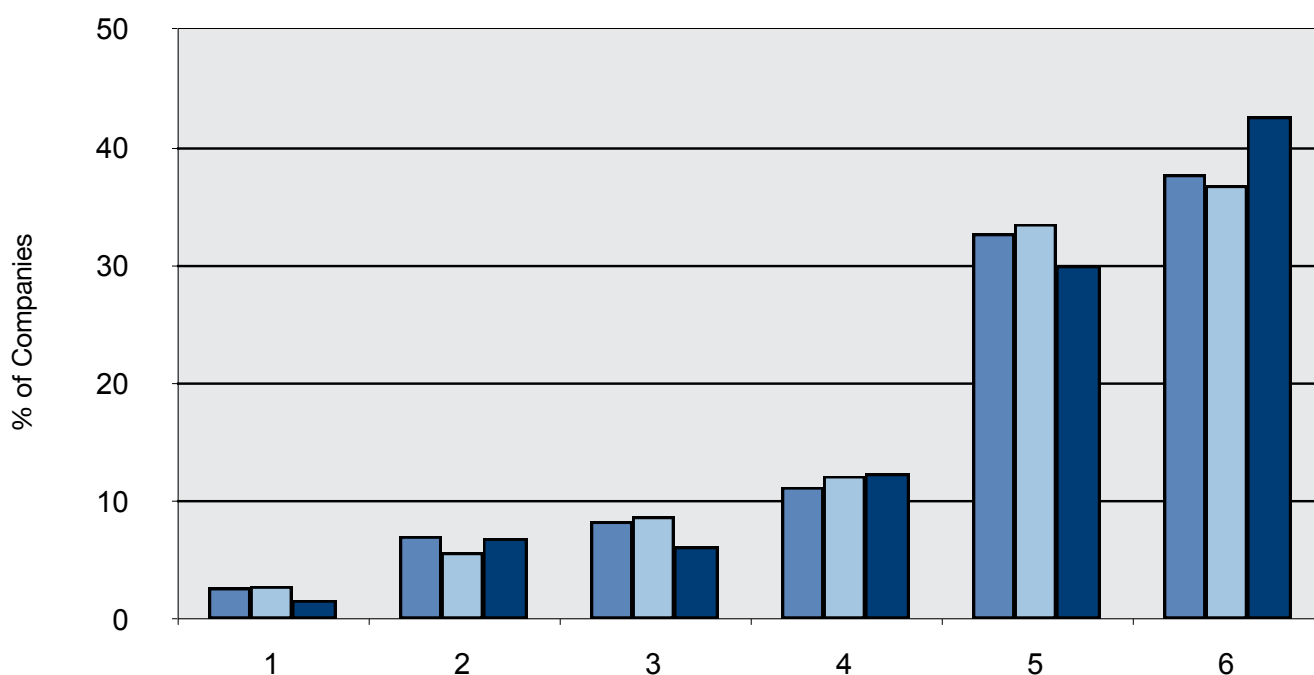


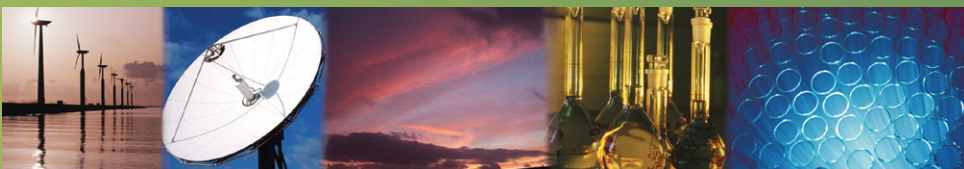
Product Stewardship Code

Under Responsible Care, the member companies of PharmaChemical Ireland are committed to improving the responsible management of our products throughout their lifecycles – from the input of raw materials to ultimate product end-use and disposal. The goal of product stewardship is to ensure that parties up and down the product supply chain have active management systems to ensure the safe, environmentally sound, and socially responsible handling of the product. The following code is seen as a holistic approach for companies to manage their Product Stewardship requirements and bring together all aspects of the supply chain.

As this is a relatively new code introduced for the first time in 2005, we have seen a steady improvement in the returns over the last seven years. We are pleased to report that over 72 % of the member companies are rated at Level 5 or Level 6 with over 85 % rated above Level 4. In line with the experience of the Energy Code, we expect to see a move to even higher levels as the code further matures over the next few years.

Product Summary



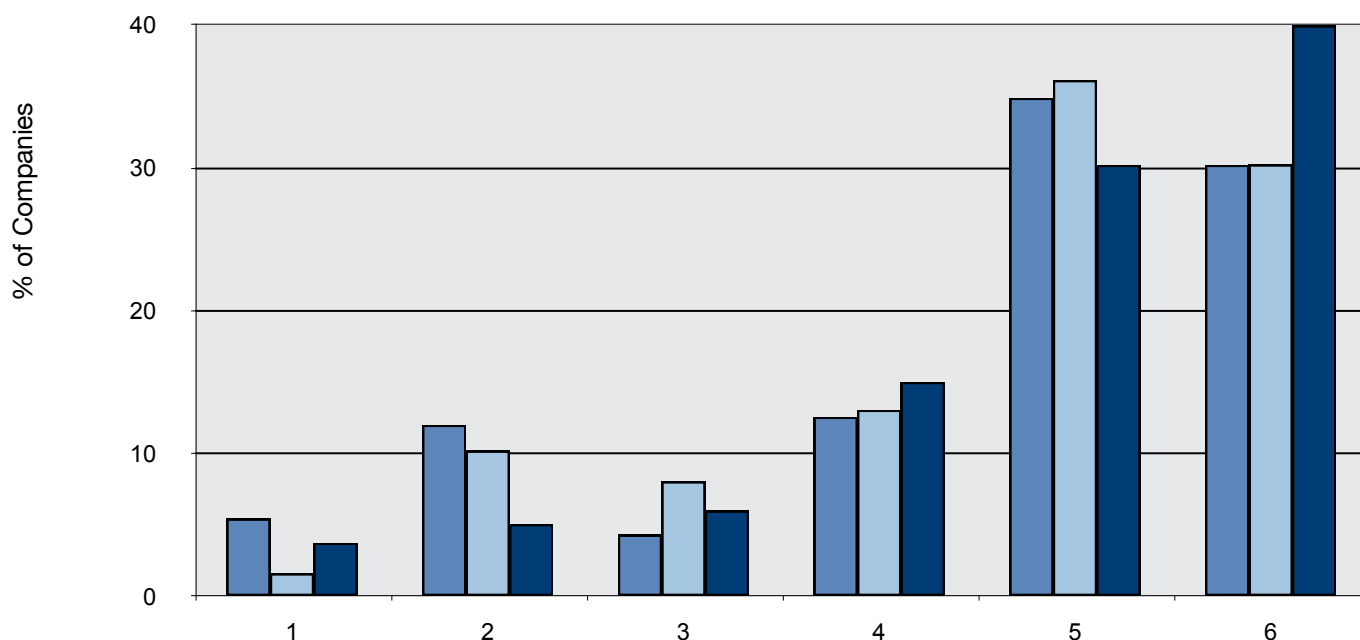


Security Code

Under Responsible Care, the member companies of PharmaChemical Ireland are committed to ensuring that their facilities, raw materials and products are maintained in a secure environment at all times. The goal of security code pilot is to ensure that member companies have structured security systems and procedures in place to manage this important aspect of their operations.

A pilot of this code was completed in 2010 and the code was adopted formally in 2011. We are pleased to report that over 69 % of companies are operating at Level 5 or 6, up from 66 % last year and 85 % operating at Level 4 or above. In line with the experience following the introduction of other codes, we expect to see a move to higher levels as the code further matures.

Security Summary





Data Collection

Mr Liam Tolton of Second Sight Technical independently collected, analysed and reviewed the data used in the generation of this report and prepared the initial draft report.

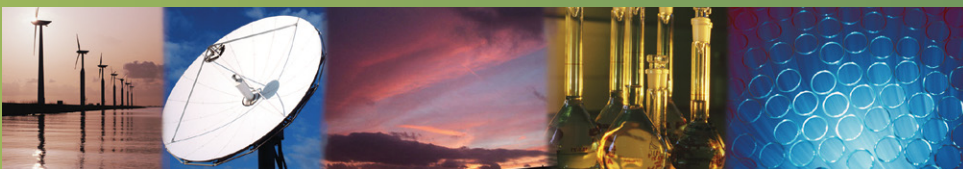
Liam Tolton B.E. B.A. M.Sc. (Eng). C.Eng. M.IEI. DGSA
Director
Second Sight Technical
Email: info@secondsighttechnical.com



Second Sight Technical

Second Sight Technical is an engineering consultancy headed up by Mr. Liam Tolton.

Mr. Tolton holds primary degrees in Engineering and Economics with a Masters Degree in Process Safety and Loss Prevention. He has worked in oil refining and bulk pharmaceutical manufacturing as a project engineer, Engineering Section Head and Department Manager with responsibility for engineering, utilities, environment and safety. He is a certified Dangerous Goods Safety Advisor and a six sigma black belt.



List of companies involved

PharmaChemical Ireland gratefully acknowledges the assistance of the following companies for their assistance in compiling this report:

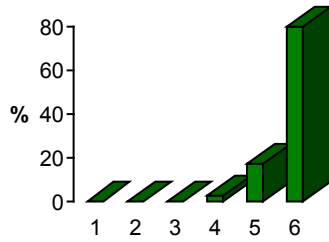
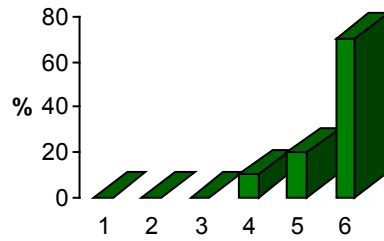
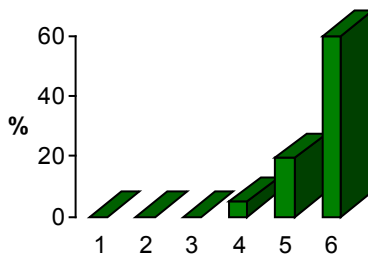
Abbott Cork	Leo Pharma
Alkermes Pharma Ireland Limited	Lonza
Allergan Pharmaceuticals Ireland	MSD Ballydine
Arran Chemicals	MSD Swords
Astellas Ireland (Dublin)	MSD Rathdrum
Astellas Ireland (Kerry)	Novartis Ringaskiddy Limited
BASF Ireland Limited	Pfizer Newbridge
Bristol Myers Squibb Cruisera	Pfizer Grangecastle
Cara Partners & Wallingstown Co Ltd	Pfizer Little Island
Covidien Pharmaceuticals Dublin	Pfizer Ringaskiddy
Clarochem Ireland	Recordati Ireland Limited
Eli Lilly S A - Irish Branch	Roche Ireland Limited
FMC International	Rottapharm Ireland
GE Healthcare Bio Sciences	Sigma Aldrich Ireland Limited
Genzyme Ireland	Servier Ireland Industries Limited
Gilead Sciences Limited	Stiefel Laboratories (Ireland) Limited
Glaxo Smith Kline Cork	Swords Laboratories
Helsinn Birex Pharmaceuticals Limited	Takeda Ireland Bray
Henkel Ireland Limited	Takeda Ireland Grangecastle
Hovione Limited	Temmler Ireland Limited
Ipsen Manufacturing Ireland Limited	Teva Pharmaceuticals Ireland Limited
Janssen Pharmaceuticals Limited	UCB Manufacturing Ireland
Janssen Biologics Ireland Limited	

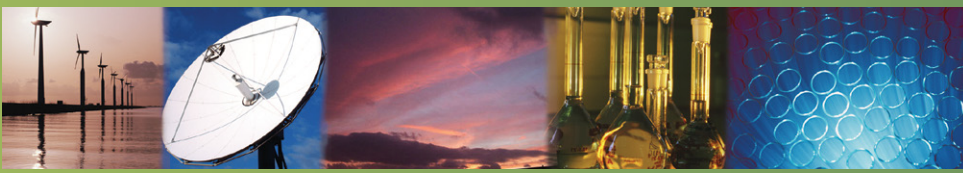


Appendix One

The following appendix contains the detail of the following codes of practice, Environment, Health & Safety, Energy & Product Stewardship.

Environment Code

Section	Guideline	% Companies at each Stage														
<div>1</div> <div>Senior Management Commitment</div> <div>Senior management commitment to reduction of emission releases and waste generation. Commitment to the use of cleaner technology</div>	<ul style="list-style-type: none">Policy in place endorsed by top management including commitment to pollution prevention and continuous improvementPolicy is available to all employees and to the publicResources have been dedicated to the implementation of the policy	 <table><caption>Data for Section 1: Senior Management Commitment</caption><thead><tr><th>Stage</th><th>% Companies</th></tr></thead><tbody><tr><td>1</td><td>10</td></tr><tr><td>2</td><td>10</td></tr><tr><td>3</td><td>10</td></tr><tr><td>4</td><td>10</td></tr><tr><td>5</td><td>25</td></tr><tr><td>6</td><td>80</td></tr></tbody></table>	Stage	% Companies	1	10	2	10	3	10	4	10	5	25	6	80
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5	25															
6	80															
<div>2</div> <div>Identification of Significant Impacts</div> <div>Evaluation of the potential impacts of operation on employees, public and environment</div>	<ul style="list-style-type: none">Procedure in place for identifying and evaluating the potential environmental impact of activities and releasesBased on the assessment a list of priority actions is in place with an implementation plan also available	 <table><caption>Data for Section 2: Identification of Significant Impacts</caption><thead><tr><th>Stage</th><th>% Companies</th></tr></thead><tbody><tr><td>1</td><td>10</td></tr><tr><td>2</td><td>10</td></tr><tr><td>3</td><td>10</td></tr><tr><td>4</td><td>10</td></tr><tr><td>5</td><td>25</td></tr><tr><td>6</td><td>75</td></tr></tbody></table>	Stage	% Companies	1	10	2	10	3	10	4	10	5	25	6	75
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5	25															
6	75															
<div>3</div> <div>Compliance with Legislation</div> <div>Awareness and compliance with Environmental Legislation</div>	<ul style="list-style-type: none">Information mechanism in place to ensure current legal requirements identifiedLegal requirements communicated to all concerned partiesProcedure to ensure compliance with all legal requirements in place	 <table><caption>Data for Section 3: Compliance with Legislation</caption><thead><tr><th>Stage</th><th>% Companies</th></tr></thead><tbody><tr><td>1</td><td>10</td></tr><tr><td>2</td><td>10</td></tr><tr><td>3</td><td>10</td></tr><tr><td>4</td><td>10</td></tr><tr><td>5</td><td>25</td></tr><tr><td>6</td><td>60</td></tr></tbody></table>	Stage	% Companies	1	10	2	10	3	10	4	10	5	25	6	60
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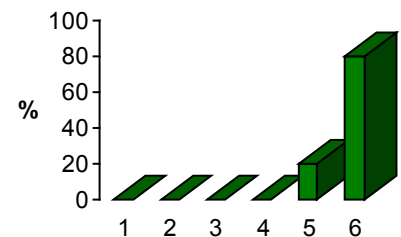
Environment Code

4

Environmental Reporting

Reporting of environmental indicators to ensure appropriate action

- Mechanism in place for tracking, recording and reporting environmental indicators

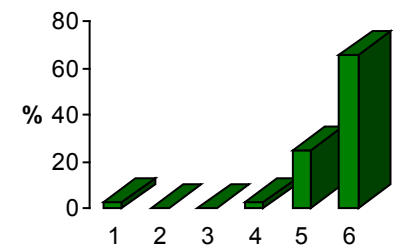


5

Environmental Emissions Management

Control and reduction of emissions with potential environmental impact

- Identification of emission sources
- Monitoring programme of emissions
- Procedure to identify impact of emissions
- Abatement programme

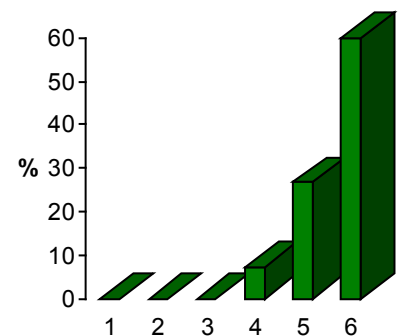


6

Waste Management

Waste management programme and practices

- Inventory of wastes established
- Waste reduction plans state preference for complying with the hierarchy of:
 - Avoidance/Reduction/Recycle/Treatment & Disposal
- Control of waste documentation in place and available
- Periodic reviews conducted for on and off site waste management practices, operations & equipment
- Periodic environmental assessments conducted of all external waste handling facilities
- Reviews include a check to evaluate the potential for use of alternative methods to further eliminate/ reduce environmental releases and the waste generation





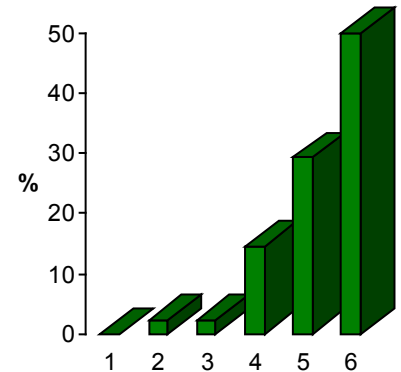
Environment Code

7

Communication

Education and dialogue with employees and public about company activities which may have environmental impacts

- Channels of communication established both internally and externally on environmental matters
- Documented procedure in place to ensure communication procedure is effective.
- Process in place for communicating to employees the environmental impact of activities
- Forum in place for open communication with the public on the environmental impact associated with the releases to air, water, land and the waste produced
- Periodic performance update made available to all employees and public in a manner that provides them with a forum for open discussion

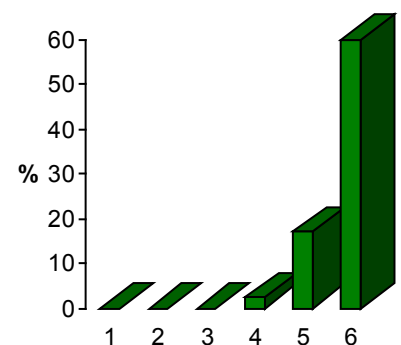


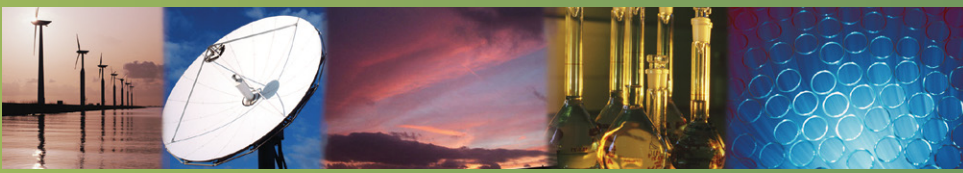
8

Resources for Environmental Management

Provision of adequate resources to ensure good environmental management

- Procedure to evaluate resource requirements associated with programme implementation
- Adequate funds, facilities and human resources available to meet environmental policy requirements and fulfil environmental objects and targets





Environment Code

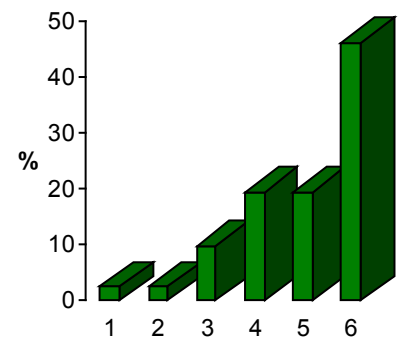
9

Management of supply and distribution.

Requirement for high environmental standards from suppliers, contractors and vendors.

Control of distribution methodology to ensure minimum impact on environment

- Procedure in place covering a pre selection review of all new contractors/ toll manufacturers, including an assessment of their environmental management practices against a predetermined set of criteria
- Compliance criteria used for selection

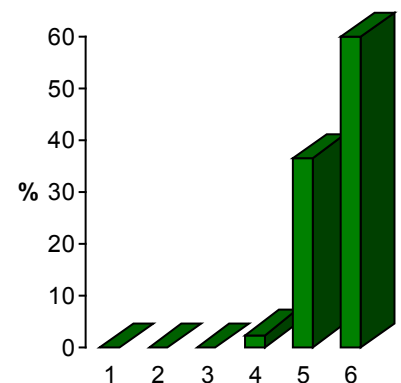


10

Environment Training

Training of personnel in good environmental practice and efficiency

- Training requirements regarding environmental management identified
- Training programme in place on environmental management
- Awareness training provided on possible implications of employee action on company's environmental performance

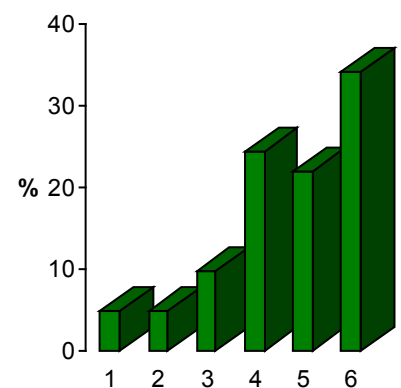


11

External Promotion of Environmental Best Practice

Ongoing programme for promotion and support of waste and release reduction by others

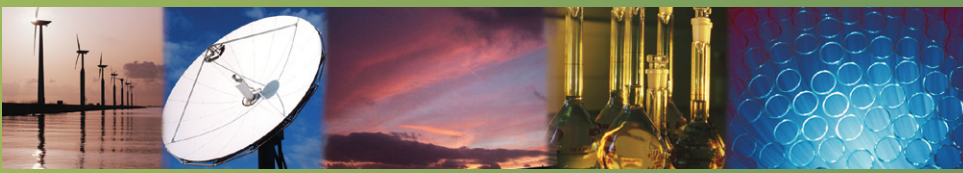
- Support through industry federations and groups for of waste and release reduction measures and technologies
- Source suppliers using measures to implement cleaner production and reduce/ eliminate environmental releases and waste generation





Safety Code

Section	Guideline	% Companies at each Stage
1	Occupational Health and Safety Policy	
	Top management commitment to safety management and risk minimisation	
2	Hazard and Risk Assessment	
	Identification of risks, hazards and priorities	
3	Legislation	
	Legislative and Regulatory compliance	



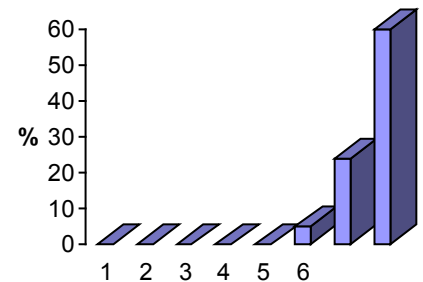
Safety Code

4

Change Control

Change controls for safety sensitive operations

- Processes and operations with inherent risks identified
- Procedure for reassessment of alterations to safety sensitive operations in place
- Procedure for pre-approval of changes for safety sensitive issues in place

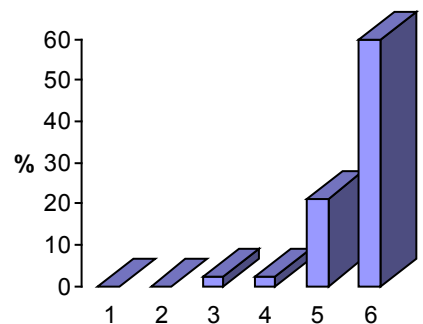


5

Objectives and targets

Safety objectives to be established and maintained to ensure continuous improvement

- Specific and measurable objectives established
- Objectives must take into account legislative, regulatory requirements, risk assessment findings, operational and business constraints and contributions from interested parties
- Objectives must be reviewed periodically

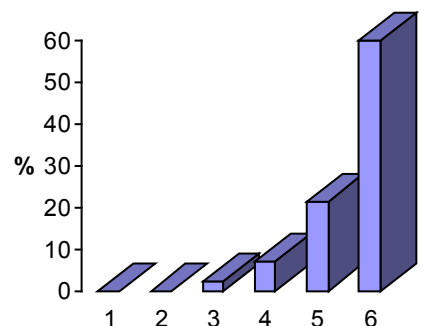


6

Management plan

Documentation and communication of OHS management plan

- Annual Management Plan setting out objectives, targets and previous performance
- Summary of the plan available to employees and interested parties

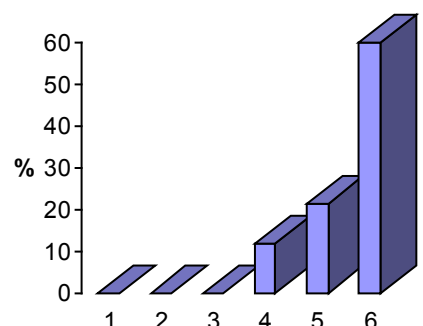


7

Resources

Provision of resources and personnel

- Senior manager assigned responsibility for establishing, maintaining and implementing the OHS management plan
- Adequate resources assigned, including personnel, to ensure the plan is properly implemented





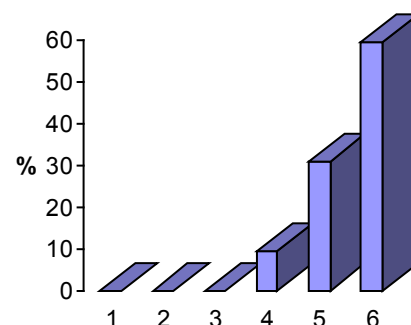
Safety Code

8

Training and safety awareness

OHS Training plan in place which is based on an assessment of training requirements

- Training needs assessment carried out for all OHS significant functions, the findings from the risk assessment should be taken into account
- Personnel should receive training and information on policy, objectives and targets
- Consultation with employees on OHS significant issues should be established

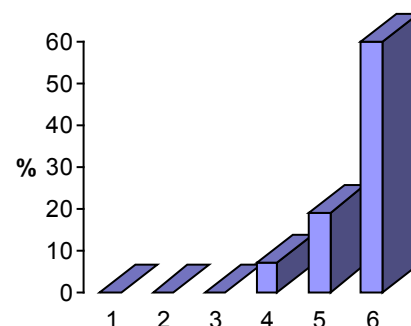


9

Emergency preparedness

Emergency response procedures appropriate to the facility, to be established, training given and routinely tested

- Establish and maintain emergency response procedures, facilities and personnel appropriate to the operation.
- Carry out periodic testing of the emergency procedures
- Communication and co-operation established between the Company and external emergency services

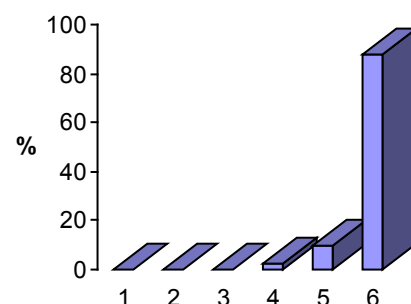


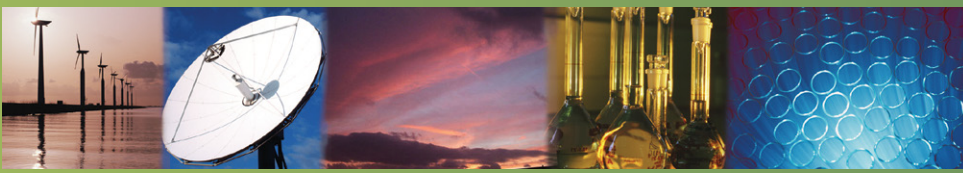
10

Accident and Dangerous incidents

Procedures for the notification, investigation and corrective actions for all accidents and incidents and adequate facilities and training for such potential events

- First aid facilities and properly trained personnel appropriate to the operations
- Procedure for notification of all accidents and dangerous incidents
- Procedure for the investigation of all accidents and dangerous incidents and mechanism for identifying appropriate corrective actions and implementation of same





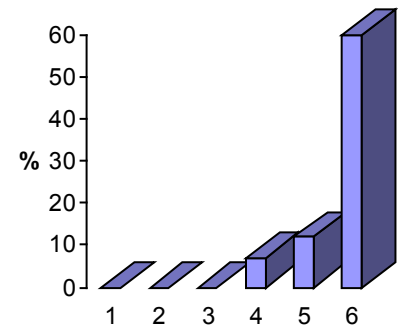
Safety Code

11

Health Protection

Provision of employee health screening, monitoring of operations and health promotion within the Company

- Pre-employment health checks for all new employees
- Health screening program for all employees which takes into account the work functions of the individual
- Active support for health promotion initiatives within the Company

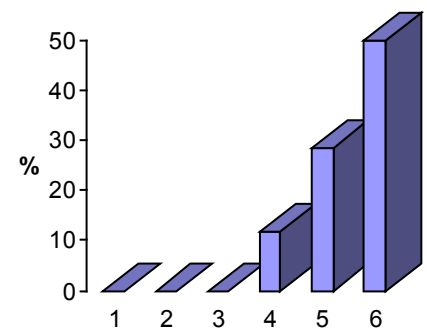


12

Auditing and verification

Active internal audit program for OHS and suitable corrective action documentation and tracking system.

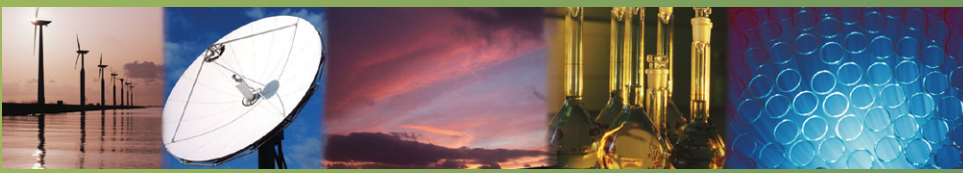
- Procedure for ensuring that identified corrective actions are properly carried out
- Company shall have an audit program in place which checks effectiveness of OHS management system, response to accident and dangerous incidents and compliance with legislation
- Follow up procedure for audit findings to be in place





Energy Code

Section	Guideline	% Companies at each Stage															
1	<p>Energy Policy</p> <p>Top management committed to energy efficiency and reductions in greenhouse gas emissions</p>	<ul style="list-style-type: none">Policy in place and signed by General ManagementReviewed at least annuallyIncluded key objectives from the management planRequires Company to comply with legislationPublicly availableCommits adequate resources	<table><caption>% Companies at each Stage for Energy Policy</caption><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>5</td></tr><tr><td>4</td><td>10</td></tr><tr><td>5</td><td>35</td></tr><tr><td>6</td><td>50</td></tr></tbody></table>	Stage	%	1	5	2	5	3	5	4	10	5	35	6	50
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6	50																
2	<p>Identification of energies used</p> <p>Establish detailed inventory and methods of measurement for all energies used on site and all energies available.</p>	<ul style="list-style-type: none">List all energy types used on siteIdentify all potential energies available locallyEstablish an inventory of all significant energy usersEstablish logical sub-groups for monitoringProvision for monitoring of each sub group for all energy types	<table><caption>% Companies at each Stage for Identification of energies used</caption><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>5</td></tr><tr><td>4</td><td>25</td></tr><tr><td>5</td><td>30</td></tr><tr><td>6</td><td>45</td></tr></tbody></table>	Stage	%	1	5	2	5	3	5	4	25	5	30	6	45
Stage	%																
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3	<p>Legislation and guidelines</p> <p>Identification, awareness and compliance with all relevant legislation and licences. Review of all applicable 'best practice' guidelines and compliance with them where relevant to the site.</p>	<ul style="list-style-type: none">Audit programme in place which checks compliance with energy policy and effectiveness of energy management planFollow up procedure for audit findingsAdequately trained auditor to be available for the audits	<table><caption>% Companies at each Stage for Legislation and guidelines</caption><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>5</td></tr><tr><td>4</td><td>25</td></tr><tr><td>5</td><td>30</td></tr><tr><td>6</td><td>45</td></tr></tbody></table>	Stage	%	1	5	2	5	3	5	4	25	5	30	6	45
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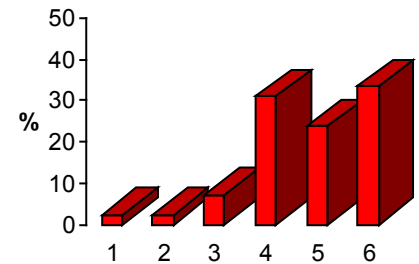
Energy Code

4

Energy Monitoring

To ensure there is adequate monitoring of all energy usage and Carbon Dioxide emissions to comply with legislative requirements and support the energy management plan.

- Establish logical sub-groups for monitoring purposes
- Provision of monitoring for all sub groups and for relevant energy types
- Maintain calibration procedures for key metering
- Suitable data recording and reporting in place to support management objectives

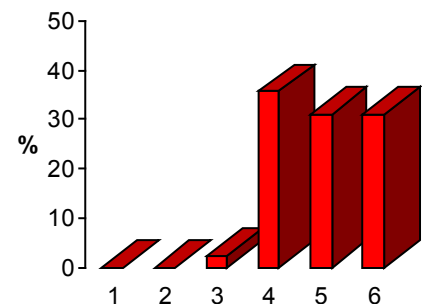


5

Optimum operating methods

To identify practical and energy efficient procedures and equipment for all the production processes and ancillary activities.

- Identify key production and ancillary activities with significant energy consumption
- Identify realistic energy efficient methodologies for each of the key activities
- Establish potential energy requirements for the new methodology.





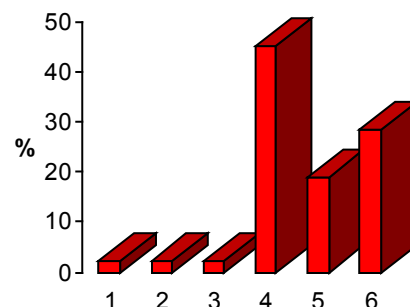
Energy Code

6

Energy Gap analysis

To identify the gap between existing practice and legislation requirements and/or applicable best practice taking into account technical, financial and procedural requirements necessary to close the identified gap.

- Equipment and procedural alterations necessary to close the identified gaps are identified
- Technical requirements specified
- Budget estimated
- Cost benefit analysis carried out

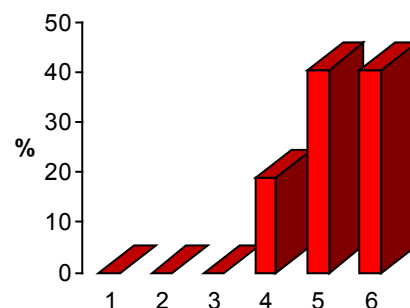


7

Objectives and Targets

To establish clear and measurable energy reduction objectives and targets that are prioritised based on the gap analysis and cost efficiency.

- Specific and measurable objectives and targets established
- Objectives prioritised based on legislative requirements, gap analysis and cost.
- Objectives and targets must be reviewed at least annually.

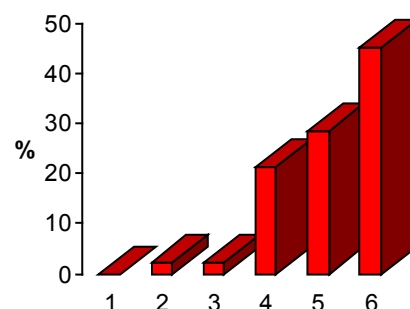


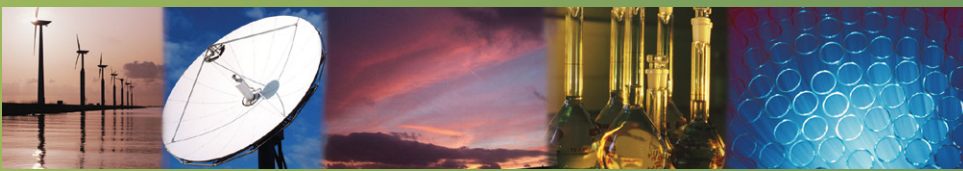
8

Management Plan

To formally document the Management Plan, including objectives and Targets and to report on progress of previous plan. To provide an effective reporting mechanism for interested stakeholders.

- Annual management plan in place setting out objectives and /targets, past progress
- Key actions assigned to individuals
- Plan approved by relevant Senior Manager or General Manager
- Summary of plan made available to all employees and other relevant personnel.
- Inclusion of the energy reduction plan into an existing annual Environmental report is acceptable.





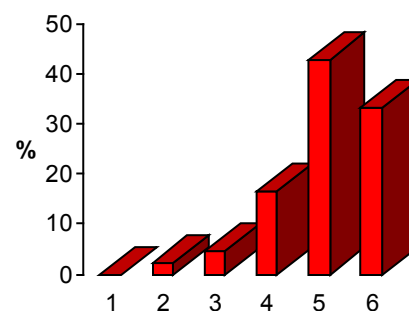
Energy Code

9

Resources

Provision of adequate resources and personnel to allow the Energy Policy and the supporting energy management plan to be reasonably and practically implemented.

- Senior Manager assigned the responsibility for monitoring and implementing the energy management plan.
- Adequate resources assigned to ensure identified improvements can be reasonably implemented
- Suitably trained personnel available for enacting the energy management plan

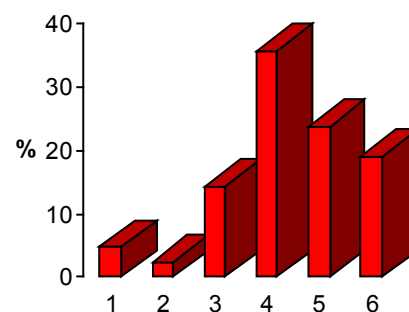


10

Training and Awareness

To ensure all personnel within the Company are aware of the requirements of the energy management policy, including the objectives of the energy management plan and have received suitable training to allow them proactively support the identified energy reductions.

- Training plan based on the gap analysis and priority list, in place for all employees and contractors.
- Information on policy, energy management plan and objectives to be given to all interested parties
- Mechanism to encourage feed-back in place
- Programme supporting energy efficiency both inside and outside the Company in place

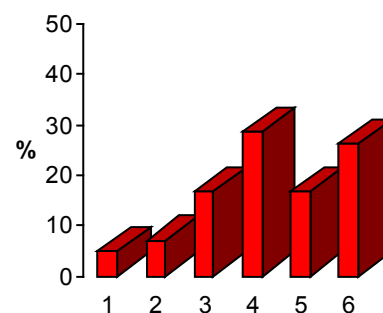


11

Auditing and Verification

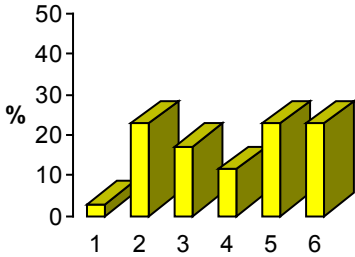
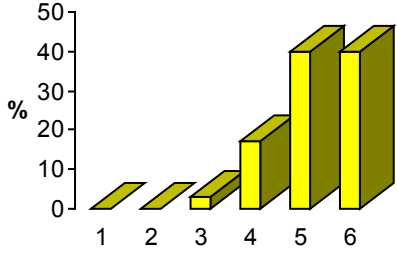
To have an active internal energy audit system in place which monitors compliance with the energy policy and effectiveness of the energy management plan and its implementation

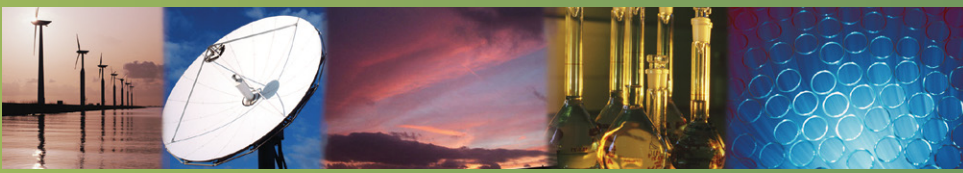
- Audit programme in place which checks compliance with energy policy and effectiveness of energy management plan
- Follow up procedure for audit findings
- Adequately trained auditor to be available for the audits





Product Stewardship Code

Section	Guideline	% Companies at each Stage														
1	Senior management Commitment	 <table><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>25</td></tr><tr><td>3</td><td>20</td></tr><tr><td>4</td><td>15</td></tr><tr><td>5</td><td>25</td></tr><tr><td>6</td><td>25</td></tr></tbody></table>	Stage	%	1	5	2	25	3	20	4	15	5	25	6	25
	Stage		%													
1	5															
2	25															
3	20															
4	15															
5	25															
6	25															
	Long-term commitment of senior management to product stewardship															
	<ul style="list-style-type: none">• Policy in place and signed by senior management• Ensure that employees understand the product stewardship concept• Ensure that adequate resources are available to establish, review and maintain product stewardship practices on site															
2	Raw Materials Acquisition	 <table><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>5</td></tr><tr><td>3</td><td>5</td></tr><tr><td>4</td><td>20</td></tr><tr><td>5</td><td>40</td></tr><tr><td>6</td><td>45</td></tr></tbody></table>	Stage	%	1	5	2	5	3	5	4	20	5	40	6	45
	Stage		%													
1	5															
2	5															
3	5															
4	20															
5	40															
6	45															
	Purchasing Policy in Place to ensure raw materials are obtained from reputable sources															
	<ul style="list-style-type: none">• Inventory of all raw materials and relevant suppliers that are used in the products• Where required SDS requested, received and checked for compliance with legislative requirements and current CPL rules• Communicate up the supply chain information on product use• Actively seek input and advice from suppliers on their product and risk management experiences															



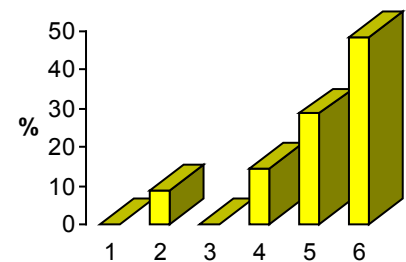
Product Stewardship Code

3

Supply & Transport to site of raw materials

Procedure in place for carrier election

- List of approved transporters who can transport goods on site – check history, emergency plans, membership of approved responsible care programmes etc
- Transporters have appropriate licenses for the goods they are bringing on site.
- DGSA appointed by both consignor and consignee where necessary
- Goods checked and labelled to ensure they are correct and have the necessary paperwork.

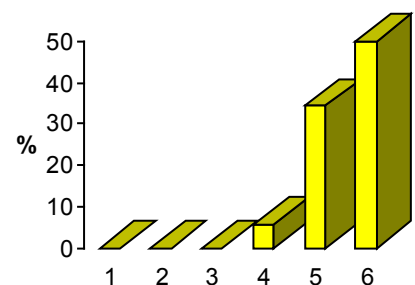


4

Handling & Storage

Appropriate storage facilities in place

- Appropriate segregation policies for the materials being stored on site
- Ensure these facilities are secure
- Appropriate spillage containment provided





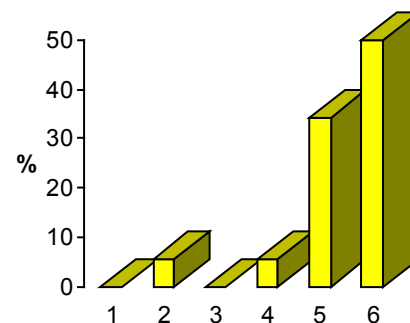
Product Stewardship Code

5

Management of Materials

Tracking of materials used in the production process

- Reconciliation procedure in place to account for hazardous materials brought on site
- Procedure in place to investigate discrepancies in raw material consumption
- Individual responsibilities for materials management clarified at each stage of the process.

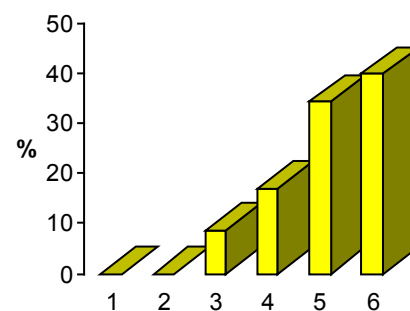


6

Distribution

Packing of product produced

- Utilise environmentally friendly packaging and materials, including reusable, bulk and non-hazardous materials
- Ensure packaging is appropriate to the material being distributed
- Ensure that correct labelling in on packaging that is being transported off site
- Assess transporters history in relation to safety, environmental performance, fitness and regulatory compliance e.g. Contractor Evaluation Form



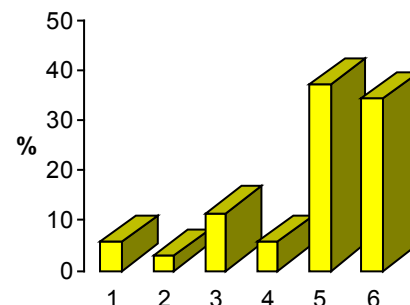
Distribution to Downstream User

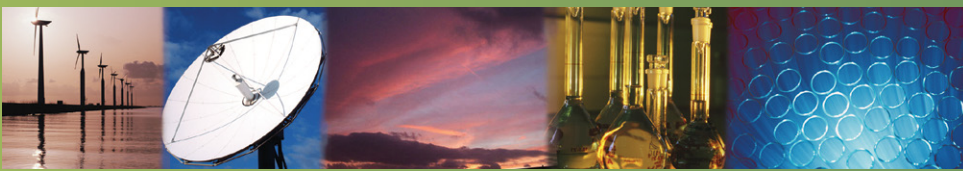
7

Off site Incident Control

Plan in place to deal with chemical incidents off site

- Emergency Contact number present on product documentation
- Provide information to the emergency services on the hazards associated with the product and how it should be dealt with
- System in place to respond/assist in off site chemical incidents





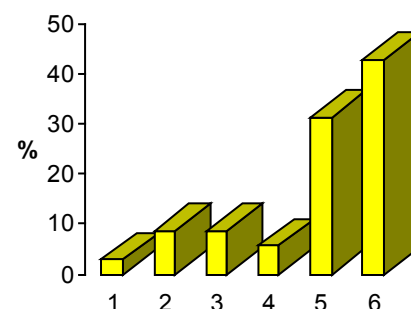
Product Stewardship Code

8

Downstream User

Downstream Users activities – consumption, storage and preparation

- Information on safe use and disposal of the product should be supplied either in SDS or by other method appropriate to the downstream users
- Request list of all uses on product from downstream users
- Verify that risk management measures employed by downstream users
- Verify that risk management measures employed by downstream user are compatible with yours

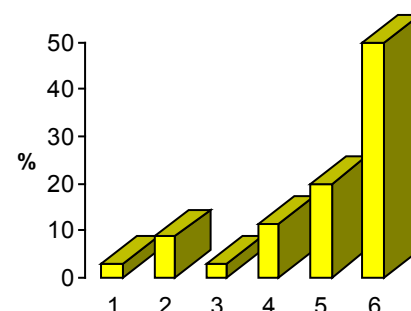


9

Security

Considerations of the various security threats to products

- Analysis of threats to product, on site and off
- Implementation of security measures

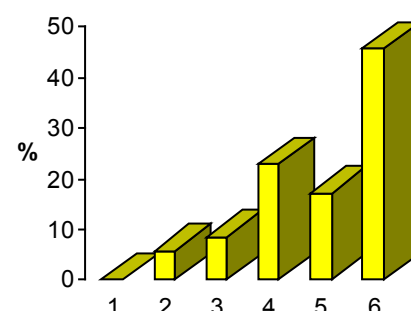


10

Public Concerns and Issues

Consideration of the relevant concerns of individuals or groups not in direct flow of product use

- Seek feedback from relevant stakeholder groups including government bodies, neighbours and environmental group
- Encourage different parts of the company to interact with outside interests to discuss EHS information, regulatory change etc
- Be actively involved in industry associations as a way to both give and receive the benefit of experience.





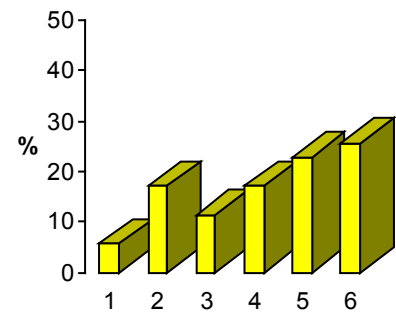
Product Stewardship Code

11

Employee Education

Employees should be trained and knowledgeable on product stewardship

- Incorporate product stewardship education into existing employee training programmes
- Provide additional training to employees who have product stewardship responsibilities e.g. logistics

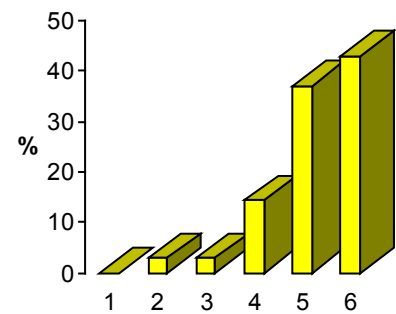


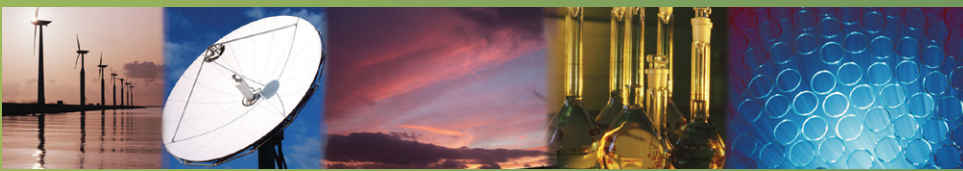
12

End of Life Cycle Control

Environmentally sound disposal is required

- Reusing, recycling or disposal procedure for excess or unused material and packaging in place based on risk assessment.





Security

Section	Guideline	% Companies at each Stage															
1	Senior management Commitment	<ul style="list-style-type: none">• Endorsement by top management	<table><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>8</td></tr><tr><td>3</td><td>10</td></tr><tr><td>4</td><td>15</td></tr><tr><td>5</td><td>35</td></tr><tr><td>6</td><td>50</td></tr></tbody></table>	Stage	%	1	5	2	8	3	10	4	15	5	35	6	50
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6	50																
	Senior leadership commitment to continuous improvement in Security Management through published policies, provision of sufficient and qualified resources and established accountability.	<ul style="list-style-type: none">• Periodically reviewed (at least every 2 years)• Include current main Security objectives• Compliance with legislation• Commitment to continuous improvement• Communicated to all relevant personnel• Commit adequate resources and personnel															
2	Analysis of Threats, Vulnerabilities and Consequences.	<ul style="list-style-type: none">• Security Risk/Hazard Assessment procedure in-place	<table><thead><tr><th>Stage</th><th>%</th></tr></thead><tbody><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>10</td></tr><tr><td>3</td><td>15</td></tr><tr><td>4</td><td>25</td></tr><tr><td>5</td><td>20</td></tr><tr><td>6</td><td>40</td></tr></tbody></table>	Stage	%	1	5	2	10	3	15	4	25	5	20	6	40
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6	40																
	Prioritization and periodic analysis of potential security threats, vulnerabilities and consequences using accepted methodologies.	<ul style="list-style-type: none">• Security Risk assessment(s) carried out for all significant facilities, activities including contractor and visitor activities, product sales , distribution and cyber security• Security Risk assessment procedure for all new processes and operations in place• Security Risk and Hazards to be classified to allow prioritisation• Assess ability to upgrade security as required.															



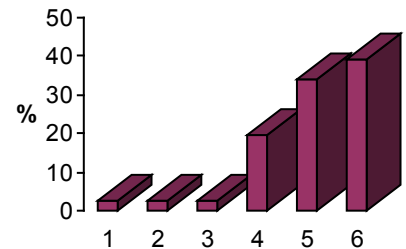
Security

3

Implementation of Security Measures

Development and implementation of security measures commensurate with risks, and taking into account inherently safer approaches to process design, engineering and administrative controls, and prevention and mitigation measures.

- Identify and Assess potential Security Risks
- Implement adequate physical security arrangements
- Implement appropriate data security arrangements
- Implement transport security arrangements

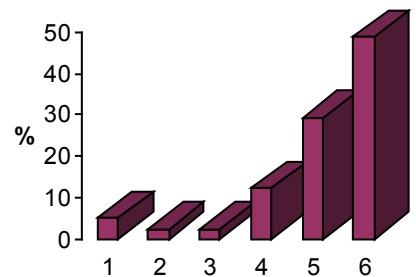


4

Information and Cyber

Recognition that protecting information and information systems is a critical component of a sound security management system.

- Implement appropriate security of cyber assets including Information networks and IT systems.
- Security arrangements to include e-commerce, business management, telecommunications and process controls.
- Implement intrusion detection and access controls for voice and data networks, verification of information security practices applied by digitally-connected business partners, access to digital process control systems.

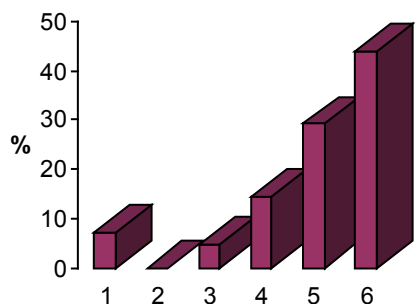


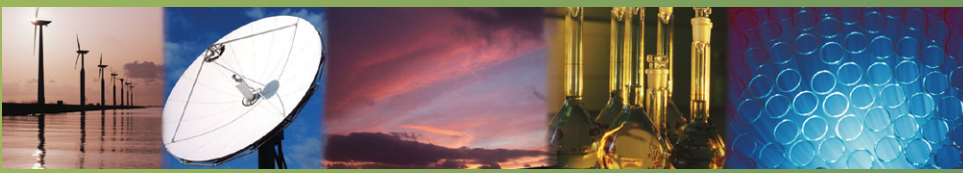
5

Documentation

Documentation of security management programs, processes and procedures.

- The key aspects of the Security Programme will be documented.
- All critical security processes will be documented
- All key security procedures will be documented.





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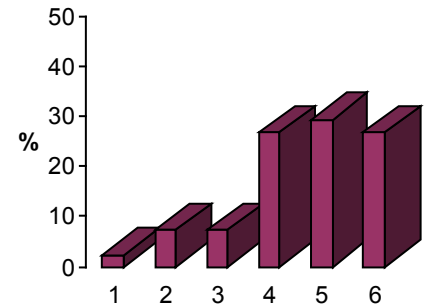
Security

6

Training, Drills and Guidance

Training, drills and guidance for employees, contractors, service providers, value chain partners and others, as appropriate, to enhance awareness and capability.

- Keep pace with changes by enhancing security awareness and capabilities through training, drills and guidance.
- Contractors will be included when appropriate in security awareness programmes.
- Product distributors, emergency response agencies and other stakeholders to be included as appropriate.

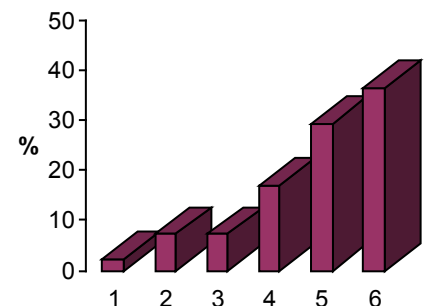


7

Communications, Dialogue and Information Exchange.

Communications, dialogue and information exchange on appropriate security issues with stakeholders such as employees, contractors, communities, customers, suppliers, service providers and government officials and agencies balanced with safeguards for sensitive information.

- Maintaining open and effective lines of communication includes steps such as sharing effective security practices with others throughout industry
- Maintain interaction with law enforcement officials.
- Understand the requirement to protect employees and communities where they operate, while safeguarding information that would pose a threat in the wrong hands.

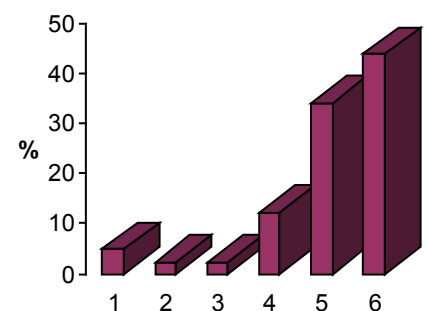


8

Response to Security Threats.

Evaluation, response, reporting and communication of security threats as appropriate.

- Promptly will evaluate all threats and respond as appropriate.
- Report real and credible threats to company and law enforcement personnel as appropriate.
- Assess ability to upgrade security as required.





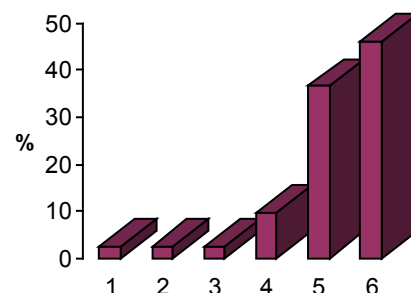
Security

9

Response to Security Incidents.

Evaluation, response, reporting and communication of security incidents as appropriate.

- Promptly respond and involve government agencies as appropriate.
- Incorporate key learnings from all security incident investigations and share those learnings with others in industry and government agencies as appropriate.
- Implement corrective actions.
- Establish and maintain emergency response procedures, facilities and personnel appropriate to the operation.
- Carry out periodic testing of the emergency procedures (at least annually)

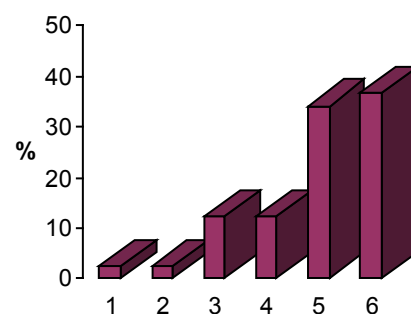


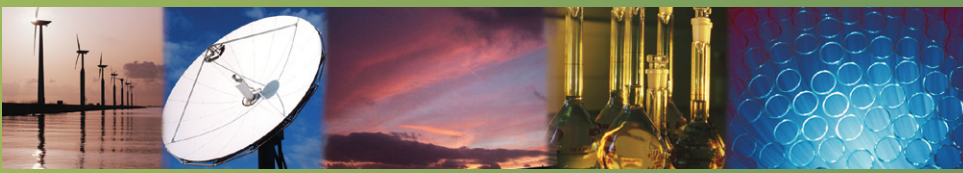
10

Audits

Audits to assess security programs and processes and implementation of corrective actions.

- Assess security programs and processes to affirm those programs and processes are in place and working and take corrective action as necessary.
- Assess the programs and processes of other companies with whom the company conducts business such as chemical suppliers, logistics service providers or customers as appropriate





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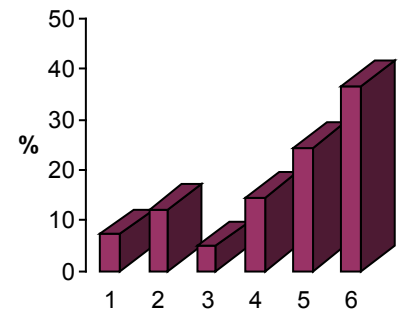
Security

11

Verification

Verification that, at facilities with potential off-site impacts, the physical site security measures are implemented.

- Invite credible third parties – such as fire fighters, law enforcement officials, and insurance auditors – to confirm that the companies have implemented the enhanced physical security measures that they have committed to implement.
- Consult with these same parties as enhanced physical security measures are being considered and implemented.

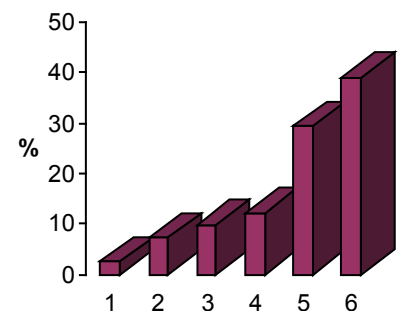


12

Management of Change

Evaluation and management of security issues associated with changes involving people, property, products, processes, information or information systems.

- Evaluate and address related security issues in relation to all planned changes.
- Changes may include new personnel assignments, installation of new process equipment or computer software or hardware.

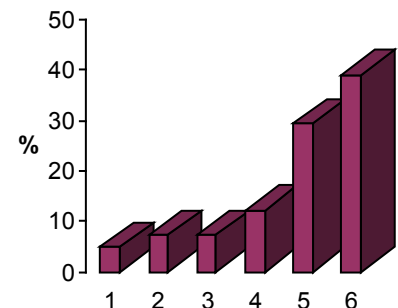


13

Continuous Improvement

Continuous performance improvement processes entailing planning, establishment of goals and objectives, monitoring of progress and performance, analysis of trends and development and implementation of corrective actions.

- Seek continuous improvement in all security processes.
- Review security programs and measures reflecting new knowledge and technology.
- Track, measure and improve security arrangements to keep people, property, products, processes, information and information systems more secure.



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A business sector within IBEC the Irish Business and Employers Confederation

Confederation House 84/86 Lower Baggot Street Dublin 2

TELEPHONE +353 (0)1 605 1616 FAX +353 (0)1 638 1616

E-MAIL michael.gillen@ibec.ie www.pharmaceuticalireland.ie