



ENVIRONMENTAL  
TECHNOLOGY  
BEST PRACTICE  
PROGRAMME

# PROFITING FROM PRACTICAL WASTE MINIMISATION:

## Running a workshop to maintain the momentum



**GOOD PRACTICE:** Proven technology and techniques for profitable environmental improvement

# PROFITING FROM PRACTICAL WASTE MINIMISATION:

## Running a workshop to maintain the momentum

This Good Practice Guide was produced by the  
Environmental Technology Best Practice Programme

Prepared with assistance from:

Symonds Group Ltd



# SUMMARY

This Good Practice Guide is designed for organisations and individuals wishing to organise a workshop to demonstrate practical tools for waste minimisation. The workshop should enable delegates to go back to their organisations and take positive action to reduce waste and thus save money.

This Guide builds on the knowledge gained from Good Practice Guide (GG106) *Cutting Costs by Reducing Waste: Running a workshop to stimulate action* and is particularly suitable for delegates who have attended this workshop or who have used Good Practice Guide (GG38C) *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses*. However, this Guide can also be used as an introduction to waste minimisation.

Inside this Guide you will find handouts, checklists and a workshop agenda to photocopy and give to delegates. These are bound into the Guide as Appendices. The overhead templates used during the workshop are provided as Microsoft® PowerPoint 97 for Windows® files on a disk in a pocket in the back cover of the Guide.

Although this Guide aims to tell you all you need to know to run a workshop, further advice and support is available from the Environmental Technology Best Practice Programme - phone the Environment and Energy Helpline on freephone 0800 585794.

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## 1.1 PURPOSE OF THIS GUIDE

This Good Practice Guide is the second in a series published by the Environmental Technology Best Practice Programme for people who wish to run a waste minimisation workshop.

The first workshop in the series is based on Good Practice Guide (GG38C) *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses*.<sup>1</sup> This first workshop aims to convince delegates of the cost benefits of implementing a structured approach to waste minimisation and explains what they need to do to achieve quick savings.

The second workshop, which is outlined in this Guide, *Profiting from Practical Waste Minimisation*, is particularly suitable for people who have attended the first workshop or who have used GG38C. However, it can also be used to introduce delegates to waste minimisation.

There is also a Guide on how to run the first workshop. This Guide is called (GG106) *Cutting Costs by Reducing Waste: Running a workshop to stimulate action*.<sup>1</sup> It will also prove helpful in organising the administration of this second workshop.

## 1.2 WHO SHOULD USE THIS GUIDE?

This Guide has been designed for use by business support organisations. Likely users include:

- Business Links;
- Local Enterprise Companies (LECs) and Local Enterprise Trusts (LETs);
- local authorities;
- regulatory bodies, eg the Environment Agency and the Scottish Environment Protection Agency;
- waste minimisation and environmental business clubs;
- consultants.

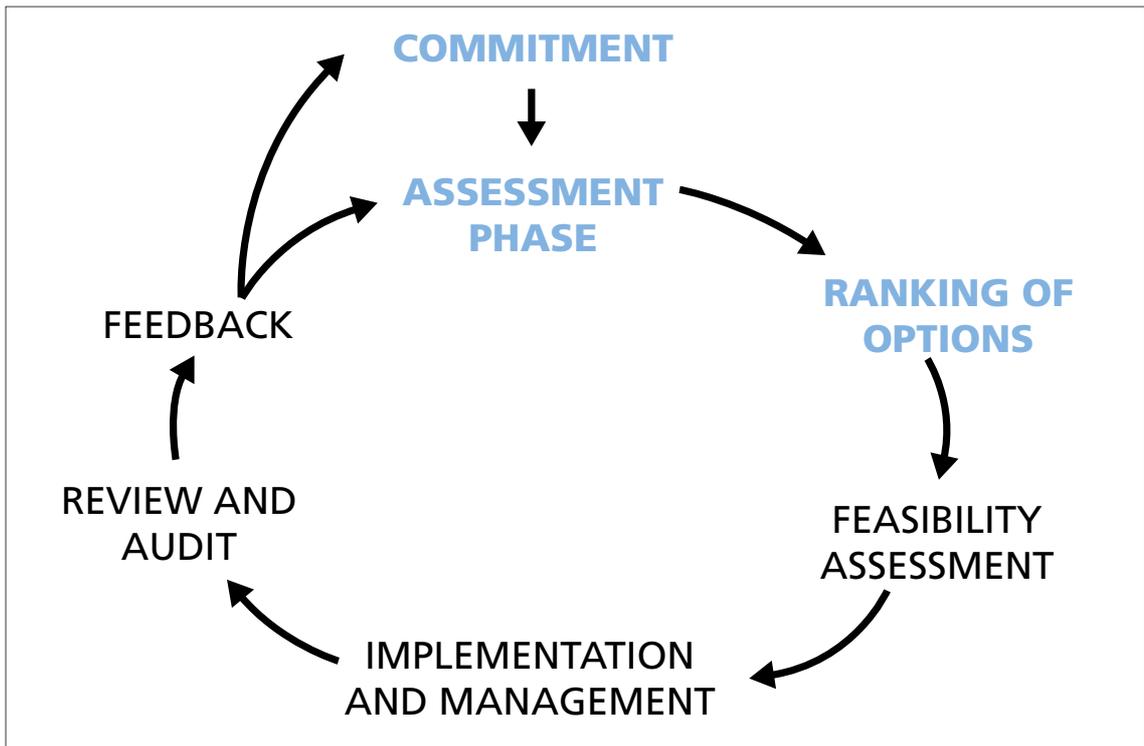
Material in this Guide and GG106 is also useful for people running a waste minimisation club. The stages involved in setting up and running a successful waste minimisation club are described in Good Practice Guide (GG122) *Waste Minimisation Clubs: Setting them up for success*.<sup>1</sup>

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<sup>1</sup> Available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## 1.3 WORKSHOP OBJECTIVES

Successful waste minimisation programmes follow the systematic approach shown in Fig 1. This Guide and workshop are concerned with the steps highlighted in Fig 1, ie commitment, assessment phase and ranking of options.



*Fig 1 Systematic approach to waste minimisation*

The objectives of the workshop are to:

- explain the basic principles of a systematic waste minimisation programme;
- show how a systematic approach can be used to reduce waste and cut costs;
- develop an action plan for use in delegates' companies.

The workshop consists of a series of presentations, interspersed with exercises for delegates to have hands-on experience of the techniques discussed. Delegates should return to their companies with a set of ideas and practical tools to investigate, measure and reduce waste and thus increase efficiency.

**If you need further advice on running the workshop or on any aspect of waste minimisation, please contact the Environment and Energy Helpline on freephone 0800 585794.**

## 2.1 WORKSHOP STRUCTURE

The workshop is planned to last for half a day. A copy of the agenda - with timings for a morning workshop - is given in Appendix 2.

The 74 overhead templates used during the workshop are provided as 11 Microsoft® PowerPoint 97 for Windows® files on a disk in a pocket in the back cover of the Guide. If you do not have access to this software, please contact the Environment and Energy Helpline on freephone 0800 585794 for help.

The Workshop Plan (see Section 3) gives a list of the overheads and the name of the PowerPoint file needed for each presentation. Appendix 1 contains a reduced version of each overhead template to help you prepare for the workshop.

The Workshop Plan contains more detailed information on the material covered in each overhead. This information can be used either as background information or to create speakers' notes.

Appendix 3 contains handouts for you to photocopy for delegates to use during the two syndicate group exercises. The handouts explain what delegates are expected to achieve during the exercises and provide background information, checklists and tips to help get them started. Tips for running the syndicate group exercises are included in Section 3.

Additional checklists, examples and templates to photocopy and give to delegates are provided in Appendices 5 - 10. Although the use of this material during workshops is optional, it will help delegates to implement a systematic approach to waste minimisation when they return to their companies. Do not give out Appendix 10 until after the second syndicate group exercise has been completed by delegates.

## 2.2 SYNDICATE GROUPS

During the workshop, delegates will be asked to work in syndicate groups of 10 - 15 people. During the syndicate exercises, each group will complete the tasks described in the handouts in Appendix 3. At the end of the syndicate exercises, the results or key points will be reported by a volunteer from each group. It is advisable to establish early in the exercises who will be making the report.

The workshop consists of a series of presentations and two syndicate group exercises (see Table 1).

Presentation title	PowerPoint file	Presenter's notes
Introduction and welcome	GG174-A.PPT	Section 3.1
The benefits of a systematic approach to waste minimisation	GG174-B.PPT	Section 3.2
<b>Session 1: Overcoming barriers and getting started</b>		
Getting senior management commitment	GG174-C.PPT	Section 3.3
Winning support with Teams and Champions	GG174-D.PPT	Section 3.4
Syndicate group exercise 1: Making a start in your company	GG174-E.PPT	Section 3.5
<b>Session 2: Tools for the job</b>		
Identifying and quantifying waste	GG174-F.PPT GG174-G.PPT	Section 3.6
Focusing on priority areas for action	GG174-H.PPT	Section 3.7
Syndicate group exercise 2: Preparing an action plan for your company	GG174-I.PPT	Section 3.8
Where do we go from here?	GG174-J.PPT	Section 3.9
Closing remarks	GG174-K.PPT	Section 3.10

Table 1 Workshop structure

## 3.1 INTRODUCTION AND WELCOME



GG174-A.PPT

Overhead number	Title
1	Introduction and welcome
2	Building on progress
3	Workshop aims

### Overhead 1 Introduction and welcome

- Welcome delegates.
- Introduce yourself and any speakers.

This workshop is the second in the series devised by the Environmental Technology Best Practice Programme to help delegates develop a successful waste minimisation programme in their companies. Although the workshop is intended to be used in association with *Cutting Costs by Reducing Waste: Running a workshop to stimulate action*<sup>2</sup>, it does not matter if delegates have not already attended the first workshop.

#### **Remind delegates of potential savings**

The key benefit of waste minimisation is that it will save companies money - typically 1% or more of business turnover - either as extra profit or reduced operating costs. For example, water and effluent costs could be reduced by 20% or more by implementing no-cost and low-cost measures. Similarly, energy bills could be reduced by around 15%.

Delegates may already have attended the workshop *Cutting Costs by Reducing Waste* and thus be aware of the financial and environmental benefits of waste minimisation and how these can be

achieved. For those not yet convinced of the benefits of waste minimisation, use examples from some of the many Good Practice Case Studies published by the Environmental Technology Best Practice Programme.

Example quotations you may wish to use include:

"...the initiatives have produced significant cost savings with minimal capital and operating costs."

Good Practice Case Study (GC16) *Sites Set on Cost Savings* (Host: Merck Ltd) (See Overhead 9)

"The new system has enabled us to improve our market competitiveness significantly by reducing sand costs and minimising workplace emissions."

Good Practice Case Study (GC35) *New Sand Binder System Reduces Foundry's Costs and Emissions* (Host: James Maude & Co Ltd) (See Overhead 11)

"We actually surprised ourselves by the benefits that came out of the review."

Good Practice Case Study (GC20) *Environmental Review Helps Raise Profits* (Host: Mold Hygiene Chemicals Company Ltd) (See Overhead 12)

"...we have peace of mind from knowing that we can demonstrate compliance with all relevant environmental regulations."

Good Practice Case Study (GC49) *Environmental Management System Improves Performance* (Host: Wolstenholme International Ltd) (See Overhead 13)

"The unexpected side benefit of environmental awareness, not least for the accountants, has been that what is good environmentally is also good for the bottom line."

Good Practice Case Study (GC63) *Latex Recycling Achieves Substantial Savings for Little Cost* (Host: Ulster Carpet Mills Ltd) (See Overhead 14)

Contact the Environment and Energy Helpline on freephone 0800 585794 to obtain copies of these publications and a list of other waste minimisation Case Studies.

### **Workshop agenda**

Make sure that all delegates have a copy of the workshop agenda (see Appendix 2). The workshop consists of two sessions, each with two short talks followed by interactive syndicate group exercises. Before the first session, delegates are reminded of the key issues and the main benefits of waste minimisation.

The **first session** focuses on overcoming barriers and getting started within delegates' companies. During the syndicate group exercise in this session, help will be given to enable delegates to identify options for reducing waste - particularly those options with immediate cost savings. Delegates who have already produced process or site flowsheets and collected waste and energy data will be able to use their own information. However, it is not a problem if delegates have not completed this task as they will be provided with ideas from other companies. The second part of this syndicate group exercise concentrates on designing and writing a **Statement of Commitment** for the delegates' waste minimisation programme. Ideas and examples from other companies will be given so that delegates can start drafting a Statement for approval by their senior management or board.

The **second session** describes basic tools for delegates to use in their companies to collect and analyse data. During this session, delegates will be given advice on identifying sources of information, collecting data in a systematic manner and organising their data to enable easy identification of priority areas for waste reduction. During the syndicate group exercise in this session, delegates will be helped to write an **action plan** to implement when they return to their companies.



Remind delegates that an informal approach and open discussion are necessary to achieve maximum benefit from the workshop. Encourage everyone to participate - sharing ideas and experiences - because companies benefit most from talking to one another.

## Overhead 2 Building on progress

This workshop builds on the knowledge gained by attending the workshop, *Cutting Costs by Reducing Waste*, which was based on Good Practice Guide (GG38C) *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses*. In this workshop, delegates should be encouraged to use process or site flowsheets that they may have completed and refer to any waste and energy data that they have already collected. However, it is important to stress that any delegates who have not attended the first workshop will still find this workshop useful.

## Overhead 3 Workshop aims

Many delegates may, themselves, be convinced of the benefits of waste minimisation, but have found it difficult to implement a systematic approach to waste minimisation in their own companies. The aim of this workshop is to provide practical advice to:

- help delegates implement a waste minimisation programme in their companies;
- provide simple tools for delegates to use to develop their companies' systematic approach to waste minimisation.

Emphasise that successful waste minimisation programmes always include top level commitment. A key aim of this workshop is to help delegates convince senior managers of the financial and other benefits of waste minimisation and overcome any barriers that they may have. One of the best ways to do this is to identify obvious opportunities for reducing waste and making immediate savings through no-cost and low-cost measures. The workshop provides advice on how to identify immediate savings and gives examples of quick savings made by actual companies - many of these examples could apply to delegates' operations too.

Once delegates have gained senior management commitment, they will need practical tools to gather data about the amount of waste their company is producing and how much this costs each year. Delegates will be given example data assessment sheets to use to record this information in a systematic manner and select the areas with the greatest potential savings.

To sustain the momentum of any waste minimisation programme, it is essential to involve staff at all levels of the company. The workshop provides delegates with tips on how to raise staff awareness and motivation and ensure that waste minimisation is an ongoing process with ongoing financial benefits.

## 3.2 THE BENEFITS OF A SYSTEMATIC APPROACH TO WASTE MINIMISATION

Overhead number	Title
4	What is waste minimisation?
5	Systematic approach to waste minimisation
6	How is waste minimisation achieved?
7	Waste assessment rules
8	Benefits of waste minimisation
9	Financial benefits
10	Process improvement benefits
11	Competitive benefits
12	Public relations benefits
13	Compliance benefits
14	Environmental benefits
15	What are the benefits for your company?



GG174-B.PPT

## Overhead 4 What is waste minimisation?

Remind delegates what is meant by waste minimisation. It is systematic reduction of waste at source using a method that will identify, cost and reduce waste in an organised manner and which is accountable, robust and repeatable.

Waste minimisation is not just concerned with material going into a skip. Waste minimisation involves an examination of wasted raw materials, energy, emissions and effort. Raw materials, energy and labour cost 5 - 20 times the direct cost of waste disposal. Skips filled with rejects and off-cuts may cost £10 000/year to dispose of to landfill, but what is the real cost of the wasted material? Possibly a further £50 000 - £60 000/year when labour, overheads, wasted raw materials, energy, insurance and other items are included.

## Overhead 5 Systematic approach to waste minimisation

Explain that all successful waste minimisation programmes begin with senior management commitment. The next step is the assessment phase, when the amount and cost of wastes are determined. This step, which usually involves planning and organising colleagues to assist in collecting data, is extremely important. It establishes a base-line position against which the company can measure and demonstrate savings and improvements. Options for reducing waste can then be identified and ranked according to priority. These three steps form the core of the workshop.

To complete the systematic approach, companies need to decide which improvement options are feasible in terms of timescale, capital cost and payback period. Most companies start by implementing no-cost and low-cost measures and then decide the maximum payback period for options involving capital investment.

Reporting on successes is important, both for senior management and for maintaining momentum for waste minimisation at all levels of staff. Targets for improvements should be set and mechanisms for recording performance established to review progress and provide feedback. For example, how much money has been saved? What was the base-line position? Did consumption fall or was production lower? It is also important to publicise successes, both within the company and externally.

## Overhead 6 How is waste minimisation achieved?

There is no standard formula for reducing waste - each site and each process is different. You can improve overall efficiency by prevention at source, eg reducing spills and leaks or by better use of raw materials. Redesigning processes and products, closing internal material loops and examining supplier and customer links may provide opportunities for improvement.

Remind delegates that waste minimisation does not mean solving the problem of waste generation by treating the waste prior to discharge to air, land or water, ie end-of-pipe. This is generally the most expensive option for dealing with waste.

For the best long-term results, urge delegates to look for solutions, starting with prevention at source.

## Overhead 7 Waste assessment rules

Waste minimisation gives a company more control over its operating costs. When assessing waste remember:

- waste can always be reduced;
- what comes in must go out;
- every waste has a source;
- every effect has a cause;
- understanding waste leads to control, efficiency and quality.

It will also be cheaper and easier to comply with regulations and customer requirements.



## Overhead 8 Benefits of waste minimisation

The benefits of waste minimisation are numerous.

The financial benefits of waste minimisation include savings from reduced waste disposal costs, improved raw material use, reduced water and energy consumption and increased labour efficiency.

Reducing the amount of waste not only saves the cost of managing the waste, but reduces the production costs. Improved process performance is linked to the reduced cost per unit of production, improved efficiency and product control.

Minimising waste is essential to maintaining business competitiveness. Customer demands, increasing public awareness of environmental issues and compliance with regulatory requirements are all important considerations for companies that wish to improve their image in the marketplace.

Customers increasingly require suppliers to be able to demonstrate compliance with environmental legislation and to reduce their environmental impact. A systematic approach to waste minimisation can help companies to understand exactly where they stand in relation to the environment and identify any potential risks and liabilities.

Use some or all of the Industry Examples shown in Overheads 9 - 14 to illustrate the benefits of developing a systematic approach to waste minimisation.

### Overhead 9 Financial benefits

Most importantly, waste minimisation saves companies money. The first example is a quote from chemicals manufacturer, Merck Ltd. The Company saved over £23 000/year by:

- reducing the amount of waste generated on-site;
- using consumable materials more than once;
- segregating wastes rather than disposing of all waste to landfill as general waste.

The amount of general waste sent to landfill fell by 78%. Most ideas for savings came from staff suggestions. Merck's senior management is convinced that waste minimisation, re-use and recycling can produce significant financial and environmental benefits.

More details are given in Good Practice Case Study (GC16) *Sites Set on Cost Savings*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

### Overhead 10 Process improvement benefits

Many companies have been able to identify opportunities for process efficiencies by undertaking a review of the wastes produced by their operations. In this example, electroplating company Amphenol Ltd saved over £102 000/year by:

- installing a new ion exchange water treatment system;
- reducing the cost of water treatment and waste disposal;
- improving the efficiency of its operations.

More details are given in Good Practice Case Study (GC24) *Effluent Costs Eliminated by Water Treatment*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## Overhead 11 Competitive benefits

James Maude & Co Ltd, an iron foundry in Nottinghamshire, achieved savings of £210 000/year by minimising solid waste and sulphur dioxide emissions. Changing to a new chemical binder system allowed the Company to increase the amount of reclaimed sand re-used in moulding processes. This significantly reduced the amount and cost of disposing of waste sand and the need to buy new sand. By reducing its operating costs, James Maude has improved its competitiveness in the marketplace.

More details are given in Good Practice Case Study (GC35) *New Sand Binder System Reduces Foundry's Costs and Emissions*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## Overhead 12 Public relations benefits

This quote from Mold Hygiene Chemicals Company Ltd, a manufacturer of cleansing and other industrial hygiene products, is one which could apply to many companies - genuine surprise at the benefits of carrying out an in-house review of the waste produced by its operations. This small company with about 45 employees found that:

- effluent charges were higher than expected;
- saleable product was being lost in the effluent;
- waste pre-treatment was both unnecessary and an additional cost.

By sequencing production operations, the Company saved about £15 000/year and reduced the amount discharged as trade effluent. Following the review, the Company developed an environmental policy which it uses as a marketing tool to demonstrate that it has adopted measures to minimise the environmental impact of its business.

More details are given in Good Practice Case Study (GC20) *Environmental Review Helps Raise Profits*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## Overhead 13 Compliance benefits

Many companies are concerned to demonstrate that they understand how their business affects the environment and that they are complying with the ever-changing requirements of environmental legislation. Conducting a review of wastes and other environmental effects requires companies to document this understanding. It can also be a way of demonstrating compliance. The environmental review carried out by metallic pigment and ink manufacturer, Wolstenholme International Ltd, identified a number of opportunities to reduce raw material and energy consumption, leading to savings of over £96 000/year. At the same time, Wolstenholme identified the measures needed to comply with 32 items of relevant environmental regulations.

More details are given in Good Practice Case Study (GC49) *Environmental Management System Improves Performance*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## Overhead 14 Environmental benefits

Ulster Carpet Mills Ltd demonstrated that what is good environmentally is also good for the bottom line. As a result of a suggestion by an employee, the Company developed a system for recycling the latex mix used to coat the back of carpets to retain the tuft. This initiative, which was inexpensive and had a payback period of 12 weeks, saved over £13 000/year by reducing latex use by 5% and reducing the amount of aqueous waste disposed of to landfill by 45%.

More details are given in Good Practice Case Study (GC63) *Latex Recycling Achieves Substantial Savings for Little Cost*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.



## Overhead 15 What are the benefits for your company?

The industry examples from the Good Practice Case Studies have shown that:

- financial and other benefits are easily achievable;
- successful programmes begin with senior management commitment;
- focusing on initiatives with immediate savings allows a fast start and future commitment.

**The key action for delegates is to identify the major benefits of a systematic waste minimisation programme for their company to help them obtain senior management commitment.**

## SESSION 1: OVERCOMING BARRIERS AND GETTING STARTED

This Session consists of two presentations and a syndicate group exercise.

### Workshop Tip

You could begin the Session by asking delegates about the barriers they think they will meet within their own companies. Use a flip chart to record ideas or simply ask for comments. Compare delegates' ideas with those identified in Overhead 18.

## 3.3 GETTING SENIOR MANAGEMENT COMMITMENT



Overhead number	Title
16	Getting senior management commitment
17	Systematic approach to waste minimisation
18	What are the barriers?
19	Winning support
20	Making the case
21	Segregate and recycle waste
22	Communicate with suppliers
23	Communicate with customers
24	Tackle compressed air leaks
25	Demonstrating commitment
26	Statement of Commitment
27	Publicity
28	Obtain and demonstrate commitment

## Overhead 16 Getting senior management commitment

Senior management commitment is essential for the success of any waste minimisation programme.

The aim is to convince senior managers of the financial and other benefits of waste minimisation and overcome any barriers that they may have. A good way to do this is to:

- identify obvious opportunities to reduce waste;
- make immediate savings through no-cost and low-cost measures.

Advice is given on how to identify immediate savings. Examples of quick savings made by actual companies are provided - many of which could apply to the delegates' operations.

## Overhead 17 Systematic approach to waste minimisation

Emphasise that successful systematic waste minimisation programmes begin with senior management commitment. This is essential to ensure that all staff within the company work together in a positive manner to achieve maximum benefits from the programme.

Senior management also has an important role in all of the other steps in the waste minimisation programme. For example, in the assessment phase, quantifying and costing wastes involves planning and organising colleagues to assist in data collection. Responsibility and authority needs to be given by senior management in order to obtain full co-operation and support from the other members of staff.

Companies have to decide which waste minimisation opportunities are a priority and which are feasible in terms of timescale, investment and payback period. Senior management input is also crucial for deciding priorities, setting targets for reductions and recording performance.

Finally, to maintain momentum for the programme at all levels within the company, senior management endorsement is an essential component of reporting and feedback.

## Overhead 18 What are the barriers?

It is a common misconception that waste minimisation programmes cost money. Typically, waste minimisation will save the company money - up to 1% of business turnover - either as extra profit or as reduced operating costs. By implementing no-cost and low-cost measures, companies could also reduce their water and effluent costs by 20% or more and their energy bills by around 15%.

Lack of time and resources are two barriers which are particularly common in smaller companies and the most frequent cause of companies failing to complete their programme. There is no standard formula for overcoming these barriers - each company is different. Delegates can seek additional no-cost or low-cost help, eg:

- employing a student;
- joining a waste minimisation club;
- making use of the advice available from the Environmental Technology Best Practice Programme, eg contacting the Environment and Energy Helpline on freephone 0800 585794 to ask for free publications on waste minimisation or the possibility of a free counselling visit for smaller companies.

Avoid over-committing resources by concentrating on just one or two target areas rather than trying to tackle all potential sources of waste at once. Also, avoid starting a waste minimisation programme at the same time as planned changes to processes, organisation or staff working patterns. People will not be available to help and results will be less meaningful.

## Overhead 19 Winning support

To win support and overcome any barriers that companies may have, delegates should be encouraged to emphasise the potential for cost savings from developing a systematic approach to waste minimisation. This should include providing real evidence to senior managers that cost savings can be easily achieved. Delegates should target a few areas where immediate savings could be made, eg raw materials use, solid waste generation, water and energy consumption, and **present their findings to senior management.**



## Overhead 20 Making the case

Present the benefits of waste minimisation in a positive manner. Use examples from the many Case Studies of companies that have achieved cost savings and other benefits from implementing a systematic waste minimisation programme. Refer delegates to the Environmental Technology Best Practice Programme publication on how to make the case (GG125) *Waste Minimisation Pays: Five business reasons for reducing waste*.

Example quotations from other Environmental Technology Best Practice Programme publications you may wish to use include:

"...the initiatives have produced significant cost savings with minimal capital and operating costs."

Good Practice Case Study (GC16) *Sites Set on Cost Savings* (Host: Merck Ltd) (See Overhead 9)

"We actually surprised ourselves by the benefits that came out of the review."

Good Practice Case Study (GC20) *Environmental Review Helps Raise Profits* (Host: Mold Hygiene Chemicals Company Ltd) (See Overhead 12)

"Monitoring has demonstrated that a significant reduction in water consumption has been achieved without affecting the Company's ability to meet its discharge consent limits."

Good Practice Case Study (GC22) *Simple Measures Restrict Water Costs* (Host: N T Frost)

"We are saving money on every aspect of our water treatment and waste disposal."

Good Practice Case Study (GC24) *Effluent Costs Eliminated by Water Treatment* (Host: Amphenol Ltd) (See Overhead 10)

"Without this systematic approach, there is no way we would have achieved what we have..."

Good Practice Case Study (GC31) *Stepping Ahead with Solvent Management* (Host: Clarks International)

"The new system has enabled us to improve our market competitiveness significantly by reducing sand costs and minimising workplace emissions."

Good Practice Case Study (GC35) *New Sand Binder System Reduces Foundry's Costs and Emissions* (Host: James Maude & Co Ltd) (See Overhead 11)

"...the momentum will be maintained by constant monitoring of all utility usages and costs."

Good Practice Case Study (GC41) *Family Brewery Makes Big Water Savings* (Host: J W Lees & Co (Brewers) Ltd)

"...we have peace of mind from knowing that we can demonstrate compliance with all relevant environmental regulations."

Good Practice Case Study (GC49) *Environmental Management System Improves Performance* (Host: Wolstenholme International Ltd) (See Overhead 13)

"The unexpected side benefit of environmental awareness, not least for the accountants, has been that what is good environmentally is also good for the bottom line."

Good Practice Case Study (GC63) *Latex Recycling Achieves Substantial Savings for Little Cost* (Host: Ulster Carpet Mills Ltd) (See Overhead 14)

"From a business point of view, it has been a major success."

Good Practice Case Study (GC110) *Water and Cost Savings from Improved Process Control* (Host: Welbeck Fabric Dyers)

Contact the Environment and Energy Helpline on freephone 0800 585794 to obtain copies of these publications and a list of other waste minimisation Case Studies.



For smaller companies with 250 employees or fewer, the Environmental Technology Best Practice Programme can offer a free counselling visit. During a site visit of up to four hours, a specialist will identify potential waste minimisation options to help a company get started. This free assistance provides excellent ideas which are specific to the company.

The process map which delegates may have developed at the first workshop, *Cutting Costs by Reducing Waste*, should highlight a few obvious areas to target for savings. If delegates have not completed their company's process map, use Good Practice Guide (GG38C) *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses*<sup>3</sup> to help them get started. For example, waste is often associated with poor housekeeping such as leaks, spillages and excess use of raw materials and utilities. Simple measures to eliminate taps being left running, doors left open, compressed air leaks and unnecessary lighting can produce surprising cost savings - from a few hundred pounds to several thousand pounds - and usually cost nothing to implement.

To illustrate the significant cost savings that can be achieved in this way, choose a selection of overheads from the following four examples (Overheads 21 - 24).

### **Overhead 21 Segregate and recycle waste**

An Ayrshire textile company saved £2 000/year by recycling cardboard rather than disposing of it to landfill. Encourage delegates to consider all wastes from the process as a cost or a potential source of income. Review your general wastes regularly for alternatives to final disposal.

### **Overhead 22 Communicate with suppliers**

An automotive manufacturing company reduced its landfill costs by £1 200/year by returning waste chemical drums to the supplier. Encourage delegates to discuss with suppliers the potential for returning or minimising packaging.

### **Overhead 23 Communicate with customers**

A manufacturer saved about £10 000/year by re-using cardboard boxes and thus halving the amount of new packaging bought each year. Encourage delegates to discuss with customers the potential for re-using or minimising packaging.

### **Overhead 24 Tackle compressed air leaks**

There are numerous examples of how companies have made immediate savings from housekeeping improvements to reduce waste. Many of these will apply to delegates' companies.

An Eastleigh printing company saved £700/year by reducing the leaks from its compressor system. Simple checks can reduce leaks by up to 20%.

### **Overhead 25 Demonstrating commitment**

Having convinced senior managers of the benefits of waste minimisation, the next step is to demonstrate their commitment to all other levels of staff in the company. This will help to maintain momentum for the waste minimisation programme in the long term. The most effective method is to prepare a written Statement of Commitment which is available for all staff to read. The Statement should be displayed in prominent locations to demonstrate visible leadership for the programme.

The Statement of Commitment should encourage other staff to become involved in the programme. Publicising the achievements that have been made by providing feedback on successful initiatives will also boost involvement.



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<sup>3</sup> Available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## Overhead 26 Statement of Commitment

Delegates should stick to the following basic rules when writing their company's Statement of Commitment:

- Keep it short and simple. If it's longer than one side of A4 paper, it's probably too long.
- Make sure that the intentions are realistic and achievable.
- The Statement is meant for everyone to see, so make sure that the key points are easy to read and understand.
- Have the Statement dated and signed by the managing director or a designated senior manager.
- Although waste minimisation is a continuous programme, the company sets the timetable.

Stress that the Statement is for **internal** promotion and communication. It is not legally binding and should not cost the company money to implement.

Remind delegates that help in drafting a Statement of Commitment will be given in the syndicate group exercise. Two example Statements are given in Appendix 4.

## Overhead 27 Publicity

It is important to publicise the Statement of Commitment. If it is not publicised, no-one will know it exists or become involved in the waste minimisation programme. There are many examples from companies where employee suggestions and ideas have contributed positively to developing waste reduction initiatives and achieving cost savings, so it is important for staff at all levels to become involved.

Effective methods of communication vary in companies - each is different. Delegates should choose the most appropriate means to suit their company's needs.

One effective way of incorporating the waste minimisation programme into everyday business operations is through a small presentation or agenda item during team briefings and management meetings. This ensures that the programme is seen as an integral part of company operations and not as a separate initiative.

Simple written communication via notice-boards and posters can also be an excellent way of raising initial awareness about the programme and to report progress.

In larger companies, newsletter articles and company literature are often used to inform both staff and customers about the initiative and company commitment. The same route can also be used to provide feedback about successes.

Whichever means of communication delegates choose, remind them to ask staff for ideas and for feedback.

### Workshop Tip

You could include a short discussion of how delegates would raise awareness in their own companies. Encourage the delegates to brainstorm ideas. Compare their ideas with those in Overhead 27.

## Overhead 28 Obtain and demonstrate commitment

Emphasise that cost savings win senior management commitment and get support. Publicising the programme brings further commitment and involves others.

**The key action is to get an endorsed Statement of Commitment.**



## 3.4 WINNING SUPPORT WITH TEAMS AND CHAMPIONS

Overhead number	Title
29	Winning support with teams and Champions
30	Why have teams and Champions?
31	The Champion's role
32	Champion profile
33	Value of teams
34	Why is awareness important?
35	Why is motivation important?
36	Incentive schemes
37	Develop awareness and motivation



### Overhead 29 Winning support with teams and Champions

Waste minimisation requires significant co-ordination of activities. To reduce waste in one area of a company, action may often be required in other areas. Most companies find it helpful to appoint teams and a Champion when developing their waste minimisation programme.

Among the many examples of companies that have benefited from the support provided by teams and Champions are the nine industry examples in Good Practice Guide (GG27) *Saving Money Through Waste Minimisation: Teams and Champions*. Use these examples and the information provided in GG27 to help get delegates started. Copies of GG27 are available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

### Overhead 30 Why have teams and Champions?

Most companies find it helpful to appoint a team leader or Champion to co-ordinate and facilitate their waste minimisation programme.

To be effective in promoting and implementing waste minimisation initiatives, the Champion must have the support and commitment of senior management. Although the Champion is essential as the key focal point for communication, it is often the project team or teams which actually achieve results.

Appoint a Champion and set up teams at an early stage in the waste minimisation initiative. This helps to increase staff awareness at all levels and motivate individuals to take action and participate. Teams and Champions also provide a mechanism for giving feedback about results and help ensure the continual success of the company's programme.

### Overhead 31 The Champion's role

The key role of the Champion is to co-ordinate and facilitate the waste minimisation programme. Champions are **not** required to complete all of the tasks themselves, but to create conditions for success by providing a focal point for communications, resources, action, programmes and training.

Successful waste minimisation is due to the efforts of staff from throughout the company working in teams. The Champion should be able to identify potential team members and persuade them to join.

In the early stages of the programme, the Champion will need to take the lead in collecting data on costs and quantities of raw materials, wastes and energy, and then identifying waste minimisation opportunities. Raising the awareness and motivation of all staff is another important task for the Champion.



## Overhead 32 Champion profile

Deciding who to appoint as Champion depends on the company size, nature and culture. Large companies usually appoint someone who has held a range of positions and who is familiar with the staff, processes, and technical, quality and environmental issues. This person could be the production manager, site engineer or quality manager. In smaller companies, the Champion is often the managing director or production manager.

It is important to choose the right person to be the Champion. But provided key characteristics are met, the area or level of the company from which the Champion comes is not critical. The key characteristics of the Champion should be:

- enthusiasm for the role and willingness to learn;
- credibility at all levels of the company;
- organisational skills, eg to arrange meetings and training;
- the ability to communicate with staff and senior management;
- the ability to motivate staff, overcome barriers, resolve problems, provide feedback and to push ahead.

## Overhead 33 Value of teams

A company will only integrate waste minimisation into its culture if it involves staff from all areas of the company. Recruiting staff for project teams can be an effective way of achieving involvement. Remember, **involvement creates ownership**.

Ideally, teams should be cross-functional - people with different roles and experiences will bring different skills and ideas. This will also make it easier to implement improvements. With a cross-functional approach, departments can work together to overcome any barriers to change and implement solutions that are acceptable to everyone. Staff in different departments are often unaware of other people's needs. Working together increases staff awareness and understanding, and can lead to the identification of further cost saving opportunities.

## Overhead 34 Why is awareness important?

Raising awareness stimulates staff participation and encourages people to become involved. Poor staff awareness is a common barrier that prevents progress and needs to be overcome by teams and Champions.

To raise awareness, staff need to be:

- given the facts about waste;
- told how the programme applies to them as individuals;
- informed about the benefits to them and the company.

Delegates will need to identify the best way of convincing their staff to participate and share ideas for targets and improvements.

## Overhead 35 Why is motivation important?

Another common barrier is poor staff motivation. This can exist even when people are aware of the facts about waste and the benefits of waste reduction. A key role for the Champion is to motivate staff and ensure that people appreciate the reasons for changing the way they work.

Savings are often made through staff suggestion schemes and well-motivated staff are keen to generate ideas for waste reduction. Interest and momentum are sustained by well-motivated staff, particularly when enthusiasm is maintained by feedback on successes and achievements. One of the Champion's key tasks is to provide incentives for staff to generate motivation.

## Overhead 36 Incentive schemes

Incentive schemes can be extremely effective in improving and driving the motivation of all staff. The type of incentive depends on the company size and culture, and is generally money, a small prize or personal recognition.

Financial rewards, which are usually based on performance against agreed targets, can be either company-wide or for a department, team or individual. This type of reward is more common in larger companies, but can be a disincentive if targets are not met. Financial rewards are, therefore, often best avoided.

A popular alternative is to donate a small reward to a charity nominated by an employee or group of employees. Another form of reward is an annual or monthly prize awarded to a team or individual with the best suggestion. Simple thanks and recognition in the company newsletter or acknowledgement in a team briefing can also be effective for most employees.

The most important factor is to make sure that achievements are published and individuals are recognised for their efforts. This will ensure that the momentum for the waste minimisation programme is sustained in the long term.



## Overhead 37 Develop awareness and motivation

Companies need to appoint a company Champion to co-ordinate and facilitate the programme. The project team, when set up, can gather information and assist in implementing the programme. Raising awareness will maintain interest and encourage others to generate ideas.

**The key action is to feed back the savings and achievements to help with the programme momentum.**

## 3.5 SYNDICATE GROUP EXERCISE 1: MAKING A START IN YOUR COMPANY

Overhead number	Title
38	Syndicate group exercise 1



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### Overhead 38 Syndicate group exercise 1

This overhead outlines the syndicate group tasks.

The delegates' handout for this syndicate group exercise is given in Appendix 3. Ask delegates to nominate one or two members of the syndicate group to present their findings to the rest of the delegates.

#### 3.5.1 Task 1: Identifying options for reducing waste

The aim is to help delegates:

- identify potential options for minimising waste;
- estimate the cost savings and other benefits for their companies.

Evidence that real savings can be made will help to gain senior management commitment and convince their companies to begin a systematic programme of waste reduction.

Ask delegates to use the Initial Waste Minimisation Options spreadsheet (see Appendix 3) to identify obvious areas of waste reduction for their own company - no matter how small the potential savings may be. Small savings from lots of different areas can add up to a substantial amount of money.

Encourage delegates to share ideas and discuss how cost saving opportunities in one company may apply to others - even though their activities and processes may be very different. If time is limited, ask delegates to complete the spreadsheet when they return to their own companies.

Other tools to help delegates identify options for reducing waste include:

- Company process maps (if completed).
- The Opportunity Checklist given in Appendix 3. This checklist is from Good Practice Guide (GG38C) *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses*.
- Ideas from *Finding Hidden Profit: 200 Tips for Reducing Waste* (ET30).
- Examples from other companies, eg those described in this Guide and in Environmental Technology Best Practice Programme Good Practice Case Studies.
- WMIT (Waste Minimisation Interactive Tools) (IT96) - a Windows®-based software package produced by the Environmental Technology Best Practice Programme to help companies save money by reducing waste.

GG38C, ET30, WMIT and other publications are available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

### 3.5.2 Task 2: Drafting a Statement of Commitment

The second task is to help delegates write a Statement of Commitment for their waste minimisation programme. Two example Statements are given in Appendix 4.

The Statement can be presented to senior managers in draft for their approval. The main barriers to writing a Statement are:

- not knowing how to write one;
- what to include;
- how far to go.

By drafting a Statement of Commitment in the workshop, delegates will be able to return to their companies confident of the principles and benefits of having a Statement.

Remember that a Statement of Commitment is unique to each company and should reflect its culture and needs.

#### Tips for Task 2

The Statement of Commitment could include the following subjects:

- waste minimisation is beneficial to the environment, saves money and leads to the reduction of adverse environmental impact;
- company-specific reasons for implementing a waste minimisation programme;
- a commitment to review progress (with a date/timetable);
- the person or group (MD or Board) making the commitment (with an appropriate signature);
- the name of the person to contact for information about the programme;
- waste minimisation can be integrated with existing quality and environmental management systems;
- commitment to participation in a local waste minimisation club;
- the support available, eg from the Environment and Energy Helpline, the Environment Agency, the Scottish Environment Protection Agency or the Department of the Environment (Northern Ireland).

## SESSION 2: TOOLS FOR THE JOB

This Session consists of two presentations and a syndicate group exercise.

### 3.6 IDENTIFYING AND QUANTIFYING WASTE

Overhead number	Title
39	Identifying and quantifying waste
40	Systematic approach to waste minimisation
41	Identifying the true cost of waste
42	Gathering and organising information
43	Initial assessment
44	Where do we find information?
45	Other sources of information
46	Process mapping at a site level
47	Process mapping at a detailed level
48	Inventories



#### Overhead 39 Identifying and quantifying waste

In this presentation, delegates are encouraged to:

- identify and quantify wastes produced, raw materials used and energy used in their companies;
- estimate how much these are costing the company each year.

The aim is to provide delegates with practical tools to use to collect data in a systematic manner when they return to their companies.

#### Overhead 40 Systematic approach to waste minimisation

During the assessment phase, information on the quantities and costs of waste are collected and recorded in an organised fashion. Collecting base-line information is an extremely important phase of the systematic waste minimisation programme because:

- base-line information provides a benchmark against which to measure future improvements and cost savings;
- the information is essential for identifying priority areas to tackle and to set achievable waste reduction targets.

#### Overhead 41 Identifying the true cost of waste

Remind delegates that waste is not just the cost of discarded materials. It includes the costs of wasted raw materials, rework, lost production time, waste treatment, wasted labour, loss of materials to atmosphere and to drain, and the excessive use of energy and water.

#### Overhead 42 Gathering and organising information

The first task is to find information within the company about how much waste is produced and how much this costs. Typical sources of information include purchasing records, invoices and waste transfer notes. Stress the need to involve people from other areas or departments, where appropriate. Staff responsible for purchasing, accounts, site facilities or waste management can be particularly knowledgeable and able to access relevant data.

The aim of the initial assessment is to determine - or at least estimate - the cost of waste to the company. To do this, delegates will need to examine their company's process inputs and outputs. For the inputs, start with the main raw materials, labour and utilities and for the outputs, identify the main wastes.

Information on quantities and costs is needed. Delegates should not be put off if they do not have all of the information. They should use the best estimate and make a note to take some simple measurements later.

Remind delegates that each step in a process adds value and incurs labour, material and utility (gas, water, electricity, etc) costs. Delegates should also collect information which will help to calculate the true cost of waste, eg staff costs, overheads, insurance and maintenance.

### **Overhead 43 Initial assessment**

To ensure that an initial assessment is made as complete as possible, information should be collected in a systematic manner. The document checklist in Appendix 5 is intended to help delegates identify sources of information and to record their location.

Use of the appropriate framework or tools will help delegates to organise their company's data:

- Process maps are an excellent visual tool for initial identification of key processes, inputs and outputs.
- Making inventories of the company's main raw materials, processes and wastes will help delegates:
  - analyse the collected data;
  - identify opportunities to reduce waste;
  - set realistic targets for waste reduction;
  - provide a good paper record or electronic database of all the collected information.

Examples of these tools and how to use them are described later in the Session.

### **Overhead 44 Where do we find information?**

Many of the delegates will have already completed or started to complete process maps for their company. This is a key technique to identify the main inputs and outputs associated with the individual processes that make up a company's operations. Delegates should use the process map to identify the key information needed, eg energy use, water use and disposal costs for spent acids.

Delegates can then start looking for detailed information about quantities and costs in company records and reports. Remind them to check bills, invoices and purchase ledgers for information on the use and cost of utilities, raw materials and waste disposal. Purchasing managers, site managers and accountants can be invaluable sources of information; they should be encouraged to participate in the programme during the assessment phase.

### **Overhead 45 Other sources of information**

Permits and authorisations for operations and processes are also a useful source of information. For many companies, water supply costs and trade effluent disposal charges are a significant proportion of their operating costs. Since disposal costs are usually related to the volume and strength of the effluent, reviewing consent conditions for effluent discharge may help to highlight opportunities to eliminate or reduce certain costly parameters. Similarly, reviewing the conditions imposed by water abstraction licences and authorisations to operate processes under Integrated Pollution Control (IPC) and Local Air Pollution Control (LAPC) can be enlightening.



Further useful sources of information include:

- documents, waste transfer notes and consignment notes issued under the Duty of Care regime;
- special waste records and consignment notes;
- records required for compliance with the Producer Responsibility Obligations (Packaging Waste) Regulations 1997.

Typical information includes details about the quantities and costs for recycling and disposal of different solid wastes and special wastes.

### Overhead 46 Process mapping at a site level

Process maps are an excellent visual tool to help identify major inputs and outputs for a site or process. The example shows a site process map for an actual knitwear company with simple operations. The main raw material is yarn and the product is a knitted garment. The main inputs are energy, machine oils, labels, packaging and labour. The main outputs are waste yarn, trimmings, heat, steam, packaging and rejects.

### Overhead 47 Process mapping at a detailed level

The same technique can be used to identify the inputs and outputs for each individual process. This more detailed process map is from the same knitwear company.

Remind delegates to include the activities or processes associated with:

- the storage and receipt of raw materials;
- the main production processes;
- the storage and dispatch of finished products.

### Overhead 48 Inventories

Inventories are a useful tool for recording information about the quantities and costs of inputs, products, wastes and emissions in a systematic manner. Inventories are also an excellent way of developing a database of base-line information and a benchmark against which to measure future improvements and cost savings.

Inventories will also help delegates to identify waste minimisation opportunities and set realistic targets for waste reduction.

Overhead number	Title
49	Wastes and emissions inventory
50	Process map: company example
51	Value added calculation
52	Data assessment



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(slides in portrait orientation)

### Overhead 49 Wastes and emissions inventory

This is an example of a wastes and emissions inventory. It can be used to list:

- wastes and/or emissions produced by either a site or a process;
- the possible use of the waste/emission (if any).

A copy of this inventory is given in Appendix 6, together with example inventories for processes, inputs, and products. These can be completed at a site or process level and kept in either a paper or electronic format. Delegates should be provided with copies of these four example inventories to take away with them.

## Overhead 50 Process map: company example

This example is from another actual company, a worsted yarn dyeing company with a manufacturing operation made up of 12 individual processes. Detailed inputs and outputs have been identified for all 12 processes and are shown for dyeing, the first identified process.

The overhead template is given in Appendix 7. Delegates should be given a copy to take away with them.

## Overhead 51 Value added calculation

Each step of the process adds value to the product and incurs a cost from the labour, materials and utilities used. Delegates should be able to calculate the value added costs of their company's wastes.

As well as making a detailed assessment of inputs and outputs, the worsted yarn dyeing company (see Overhead 50) has calculated the value added to its product by each process using information collected on the cost of labour, raw materials, water use, energy use and company overheads. Give delegates a copy of the overhead template (see Appendix 8) to take away with them.

For this company, the main raw material is wool costing £2.50/kg. By the end of the first process, the dyed wool has cost £3.33/kg to produce. The value added to the product from the process through the use of water, dyes, energy and labour is therefore £0.83/kg. The company calculated that the finished product costs £6.43/kg and the total value added to the product is £3.93/kg. The processes with the highest value added to product are dyeing, spinning and packaging. These processes have been targeted as priorities for waste reduction.

Remind delegates to check the relative value added to each process. This can help to identify which areas of the process to focus on to maximise the savings from waste reduction.

## Overhead 52 Data assessment

Data assessment includes quantifying:

- raw material use;
- water and energy consumption;
- waste generated.

Use the key waste minimisation tools of process maps and inventories to identify these items and help you to determine the true cost of waste. These records of inputs and outputs form a benchmark for the future. Data assessment is considered further in the next presentation.

**The key action is for delegates to establish how much waste is produced by their company and its true cost.**

## 3.7 FOCUSING ON PRIORITY AREAS FOR ACTION

Overhead number	Title
53	Priority areas for action
54	Systematic approach to waste minimisation
55	Rank options
56	Data assessment example
57	Data assessment table
58	Completing your data assessment
59	Measuring to Manage
60	Measuring and monitoring
61	Rules of thumb
62	Monitoring saves money
63	Benchmarking stimulates savings
64	Metering reduces waste
65	Wider benefits of ongoing monitoring
66	Prioritise your options



### Overhead 53 Priority areas for action

This presentation is intended to help delegates use the data collected in the assessment phase to identify priority areas for action. Information should be ranked so that the most profitable options for waste reduction are targeted.

At this stage companies usually find that there are gaps in their information or that data used for the initial assessment includes 'best' estimates. The benefits of measuring raw material use, utility use and waste production at a site, process and machine level are also described.

### Overhead 54 Systematic approach to waste minimisation

The next stage is to identify priority areas for waste reduction. Delegates should use the example data assessment table (see Appendix 9) to summarise the key data they collect about their company's inputs and outputs. Using this table will make it easy to identify priority actions and options that will provide the best cost savings through improved efficiency and waste reduction.

### Overhead 55 Rank options

The data assessment table is a practical tool that can be used to summarise information collected on the quantities and costs of raw materials, energy and water used and the wastes and emissions produced. The table can be completed either on a site basis or for individual processes.

Use a ranking system to highlight obvious areas for waste reduction and identify priority areas to tackle in terms of cost savings. Since the information is quantitative, the table can also be used as a basis for waste reduction targets.

### Overhead 56 Data assessment example

This is an example of the data assessment table prepared by the knitwear company which featured in Overheads 46 and 47. Annual quantities of all raw materials, energy and wastes are given for 1998. Using the same units for solid materials and energy consumption makes comparison easier.

The data are ranked in terms of both the quantities used or produced and the cost (the true cost for wastes). Compare the ranking for costs with that for quantities. The results may surprise some companies.

In this company example, packaging is the largest quantity of raw material used and the largest amount of waste produced. However, the cost of the yarn is much greater than packaging as a raw material and the true cost of waste yarn (calculated as skip hire, landfill tax, raw material and value added) is larger than the true cost of waste packaging. As the potential savings were greatest, the knitwear company decided to concentrate on minimising excessive use of yarn and reducing its waste.

### **Overhead 57 Data assessment table**

This shows the blank data assessment table (see Appendix 9) for delegates to take away with them and use in their own companies to summarise collected information.

### **Overhead 58 Completing your data assessment**

As companies complete the data assessment table, it may become apparent that there are gaps in the collected information. Best estimates are acceptable, but companies should also consider whether to start a monitoring programme to collect new data, additional data or more meaningful data. Companies should also decide whether the development of short- or long-term measuring systems is a priority for their company and identify the potential benefits.

### **Overhead 59 Measuring to Manage**

Remind delegates that 'if they don't measure it, they can't manage it.' This applies to everything - raw material use, energy use, water use, wastes and effluents.

### **Overhead 60 Measuring and monitoring**

Companies should use measuring and monitoring systems that are appropriate to their site and processes. Stress the need to keep them simple. Start by checking bills to look for obvious anomalies, overcharging or improved rates or tariffs.

Many companies have only one or two meters on their site to measure utility use. The information obtained from a single meter is often insufficient to determine the inputs and outputs for each process - particularly where there is more than one process. This information may be essential to identify the greatest sources of waste. Companies should consider installing additional meters at key locations around the site to collect appropriate initial data and monitor improvements in the longer term.

### **Overhead 61 Rules of thumb**

The rule of thumb for measuring and monitoring is to keep the system as simple as possible. Begin by making best estimates, eg quantities of solid wastes can be estimated from the number of skips, their average composition and uplift weights.

Quantities and costs of inputs and outputs should ideally be related to production levels. Any reductions through waste minimisation initiatives can then be attributed to improvements rather than a change in production levels. Many examples of how companies have applied this technique are available, eg:

- Good Practice Case Study (GC22) *Simple Measures Restrict Water Costs* (Host: N T Frost)
- Good Practice Case Study (GC31) *Stepping Ahead with Solvent Management* (Host: Clarks International)
- Good Practice Case Study (GC41) *Family Brewery Makes Big Water Savings* (Host: J W Lees & Co (Brewers) Ltd)

These and other examples are available free of charge through the Environment and Energy Helpline on freephone 0800 585794.



Water and energy can be significant inputs and outputs for many companies. If the information obtained from a single meter is insufficient to determine the inputs and outputs for each process - or even each machine - consider installing additional meters or using portable meters.

Where possible, compare your company's water and energy consumption with others in your sector. Free Environmental Performance Guides and Energy Consumption Guides for a number of industrial sectors are available through the Environment and Energy Helpline on freephone 0800 585794.

### Overhead 62 Monitoring saves money

Metering and monitoring need not be expensive - most systems more than pay for themselves. Remind delegates that meters can be hired and that they can be portable and inexpensive. This example demonstrates the significant savings that can be achieved by metering and monitoring water and energy use.

### Overhead 63 Benchmarking stimulates savings

This example from the knitwear sector highlights the difference in monetary terms of best and worst water consumption per tonne of cloth produced.

### Overhead 64 Metering reduces waste

A recent survey<sup>4</sup> of companies in the UK textile dyeing and finishing industry showed that the more water meters installed, the lower the specific water consumption. 'If you don't monitor it, you can't measure it.' Ask the delegates if they could benefit from monitoring water use.

### Overhead 65 Wider benefits of ongoing monitoring

The ongoing benefits of metering and monitoring are much wider than simply measuring the quantities and costs of major inputs and outputs. Measuring the base-line position allows companies to demonstrate to senior management and staff that waste minimisation initiatives have achieved improvements and savings. Accurate metering also helps to set realistic targets for waste reduction and provides a mechanism for ongoing monitoring of achievements against these targets. Remind delegates of the numerous Case Studies that demonstrate the savings achievable from measuring and monitoring.

### Overhead 66 Prioritise your options

Encourage delegates to use the data assessment table to summarise information on waste quantities and costs for their company and then use this tool to identify priority areas for reducing wastes and costs. Identifying monitoring requirements and establishing systems for data collection will put the company in a better position to measure and monitor wastes and costs on an ongoing basis.

Stress that delegates don't have to tackle every aspect at once, but should set a timetable to cover each issue in time.

**The key action is to use the data assessment table to determine and rank waste production.**



<sup>4</sup> See Environmental Performance Guide (EG98) *Water Use in Textile Dyeing and Finishing*, available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

## 3.8 SYNDICATE GROUP EXERCISE 2: PREPARING AN ACTION PLAN FOR YOUR COMPANY



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Overhead number	Title
67	Syndicate group exercise 2

### Overhead 67 Syndicate group exercise 2

This overhead outlines the syndicate group task.

The delegates' handout for this syndicate group exercise is given in Appendix 3. Ask delegates to nominate one or two members of the syndicate group to present their findings to the rest of the delegates.

The aim of the second syndicate group exercise is to help delegates write an action plan. This will enable delegates to return to their companies and convince colleagues of the savings possible and make a fast start on reducing waste. Ideally, the action plan should contain no more than ten points.

As in the previous exercise, encourage delegates to share ideas and discuss how the application of savings in one company may apply to others - even though their activities and processes may be quite different.

#### Tips

Key actions could include the following ideas or references:

- convincing senior managers about the possible benefits and savings;
- identifying obvious areas of waste and fast start savings;
- reviewing water, electricity, gas and waste disposal bills for the previous year and relating costs to production figures;
- appointing a Champion and identifying members of the project team;
- walking around the site to identify waste and where it is generated - use a digital camera to take photographs and then distribute them around the company, eg by e-mail;
- talking to waste management contractors.

Use the action plan checklist in Appendix 10 to prompt delegates, but make sure that delegates see the checklist only when the workshop exercise is completed.

## 3.9 WHERE DO WE GO FROM HERE?

### 3.9.1 Ten point action plan



GG174-J.PPT

Overhead number	Title
68	Where do we go from here?
69	Typical ten point plan (1)
70	Typical ten point plan (2)
71	Think globally - act locally
72	Individual actions
73	Promote good practice

## Overhead 68 Where do we go from here?

A clear synopsis of what delegates need to do when they return to their companies should be given.

The action plan will help delegates to maintain their impetus and enthusiasm for waste minimisation - even when faced with the business pressures of time constraints, meeting production targets and dealing with management issues.

There are many simple actions that delegates and their colleagues can take as individuals, which will also help to reduce company costs and improve profits. Ask delegates to compare their action plan with the following typical ten point plan.

## Overhead 69 Typical ten point plan (1)

Emphasise the key steps in the process:

- 1 Obtain senior management commitment.
- 2 Appoint a Champion and project team.
- 3 Publicise the project.
- 4 Establish quantities and costs of wastes.
- 5 Set-up an auditing system and identify monitoring requirements.

## Overhead 70 Typical ten point plan (2)

- 6 Collate information from raw material, product, utility use and waste data sheets.
- 7 Identify waste reduction opportunities.
- 8 Prepare a plan for improvements.
- 9 Set realistic waste reduction targets.
- 10 Review progress against targets and publicise results.

### 3.9.2 Individual actions

## Overhead 71 Think globally - act locally

There are many ways that an individual can contribute to improving the global environment through local actions, however small they appear. What is important is to think globally and act locally. As well as improving the environment, individual actions can make a contribution to the bottom line for delegates' companies.

## Overhead 72 Individual actions

Here are a few facts to make delegates think.

**Turn it off.** Inefficient use of office machines costs UK businesses up to £400 million in electricity every year. Turning off just ten computer monitors when they are not being used could save each business £200/year in energy costs.

**Don't be a drip.** UK office workers use enough water every day to fill 150 Olympic-sized swimming pools. If only 1 000 businesses with 100 employees installed tap regulators, the UK could save 15 million gallons of water/year.



**Copy right.** In the UK, we make nearly 500 billion photocopies/year - around 930 000 copies every minute of every day. If this was reduced by only 1%, we could save around 30 000 tonnes of paper, that is, up to 400 000 trees.

**Just the fax.** There are now over one million fax machines in use in the UK. If everyone switched from full-page to half-page cover sheets, we could save about 120 000 miles worth of fax paper - without reducing the number of faxes.

**Recycle the rest.** About half of the waste an average company produces can be recycled. Glass produced from recycled materials reduces air pollution by 20% and water pollution by 50%. Recycling cardboard saves about 25% of the energy needed to produce it from raw materials.

### Overhead 73 Promote good practice

Delegates should use the ten point plan to implement their own systematic waste minimisation programme.

**The key action for all delegates is to contribute to waste minimisation by promoting good practice at both local and global levels.**



## 3.10 CLOSING REMARKS

Overhead number	Title
74	Support from the Environmental Technology Best Practice Programme



GG174-K.PPT

### Overhead 74 Support from the Environmental Technology Best Practice Programme

Thank delegates for participating in the workshop and remind them of the support available from the Environmental Technology Best Practice Programme.

The Environment and Energy Helpline on freephone 0800 585794 can:

- arrange for delegates to be sent free copies of relevant Environmental Technology Best Practice Programme publications;
- advise about relevant environmental and other regulations;
- provide free up-to-date information on environmental issues, equipment suppliers and technologies;
- arrange for a specialist to visit and advise companies that employ fewer than 250 people (at the discretion of the Helpline Manager).

## OVERHEAD TEMPLATES

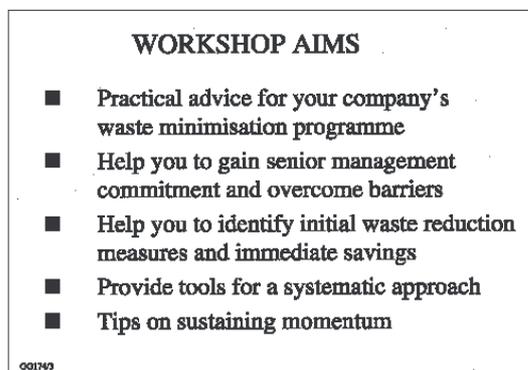
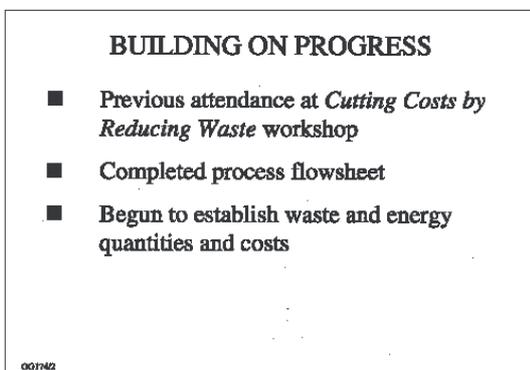
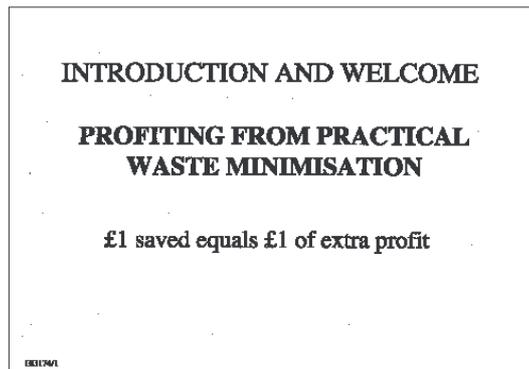
This Appendix contains a reduced version of all the templates for reference while you prepare your presentation.

A disk with a copy of all the overhead templates in Microsoft® PowerPoint 97 for Windows® is provided in a pocket in the back cover of the Guide. If you do not have access to this software, please contact the Environment and Energy Helpline on freephone 0800 585794 for help.

The 74 overhead templates are provided in 11 PowerPoint files as shown in Table A1.

File name	Overhead numbers
GG174-A.PPT	1 - 3
GG174-B.PPT	4 - 15
GG174-C.PPT	16 - 28
GG174-D.PPT	29 - 37
GG174-E.PPT	38
GG174-F.PPT	39 - 48
GG174-G.PPT	49 - 52
GG174-H.PPT	53 - 66
GG174-I.PPT	67
GG174-J.PPT	68 - 73
GG174-K.PPT	74

Table A1 PowerPoint files needed for the workshop





GG174-B.PPT

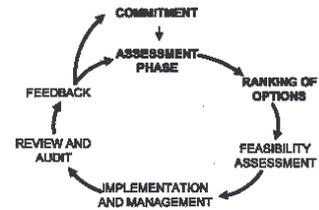
## WHAT IS WASTE MINIMISATION?

### Systematic reduction of waste at source

- Reduced raw material consumption
- Reduced water and energy use
- Reduced emissions to air, land and water
- Reduced waste of effort

GG174A

## SYSTEMATIC APPROACH TO WASTE MINIMISATION



GG174B

## HOW IS WASTE MINIMISATION ACHIEVED?

- Prevention at source
- New process technology
- Re-use and recycling
- Examining supplier and customer links
- NOT end-of-pipe, NOT added costs

GG174C

## WASTE ASSESSMENT RULES

- Waste can always be reduced
- What comes in must go out
- Every waste has a source
- Every effect has a cause
- Understanding waste leads to control, efficiency and quality

GG174D

## BENEFITS OF WASTE MINIMISATION

- ✓ Financial
- ✓ Process performance and efficiency
- ✓ Competitive edge
- ✓ Public and customer image
- ✓ Compliance
- ✓ Environmental

GG174E

## FINANCIAL BENEFITS

“...the initiatives have produced significant cost savings with minimal capital and operating costs.”

*Merck Ltd*

- Cost savings of over £23 000 in the first year

GG174F

## PROCESS IMPROVEMENT BENEFITS

“We are saving money on every aspect of our water treatment and waste disposal.”

*Amphenol Ltd*

- Cost savings of over £102 000/year

GG174G

## COMPETITIVE BENEFITS

“The new system has enabled us to improve our market competitiveness significantly by reducing costs and minimising workplace emissions.”

*James Maude & Co Ltd*

- Cost savings of £210 000/year

GG174H

### PUBLIC RELATIONS BENEFITS

"We actually surprised ourselves by the benefits that came out of the review."

*Mold Hygiene Chemicals Company Ltd*

- Cost savings of £15 000/year

As part of the review, the Company developed an environmental policy to demonstrate its green credentials to customers.

GG17413

### COMPLIANCE BENEFITS

"...we have peace of mind from knowing that we can demonstrate compliance with all relevant environmental regulations."

*Wolstenholme International Ltd*

- Cost savings of over £96 000/year

GG17413

### ENVIRONMENTAL BENEFITS

"The unexpected side benefit of environmental awareness, not least for the accountants, has been that what is good environmentally is also good for the bottom line."

*Ulster Carpet Mills Ltd*

- Cost savings of over £13 000/year

GG17414

### WHAT ARE THE BENEFITS FOR YOUR COMPANY?

- Financial and environmental benefits are easily achieved through a systematic approach to waste minimisation
- Start by implementing measures with immediate savings
- ✓ Identify the main benefits of waste minimisation for your company to help obtain senior management commitment

GG17415





GG174-C.PPT

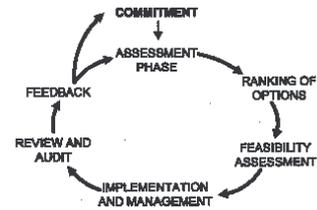
## SESSION 1

### OVERCOMING BARRIERS AND GETTING STARTED

Getting senior management commitment

GG174/16

### SYSTEMATIC APPROACH TO WASTE MINIMISATION



GG174/17

### WHAT ARE THE BARRIERS?

- Senior management commitment
- Money
- Resources
- Time
- Process and operational changes
- Holidays and shutdowns

GG174/18

### WINNING SUPPORT

- Emphasise the potential for cost savings
- Provide evidence that savings can be made
- Choose a few areas with immediate savings
- Present findings to senior managers

GG174/19

### MAKING THE CASE

- Use Case Studies of other companies' successes
- For SMEs, get ideas from an Environmental Technology Best Practice Programme counselling visit to your company
- Use the process map for your company to demonstrate obvious targets
- Identify some simple no-cost measures with immediate savings

GG174/20

### SEGREGATE AND RECYCLE WASTE

'Consider all wastes from your processes as potential sources of income. Do not regard your waste as general waste just because no alternative comes to mind.'

- A textile company made immediate savings of about £2 000/year by recycling cardboard rather than disposing of it to landfill

GG174/21

### COMMUNICATE WITH SUPPLIERS

'Discuss with your suppliers the minimum amount of packaging that can be used to protect their product and return waste packaging for re-use wherever possible.'

- An automotive manufacturer saved £1 200/year in landfill tax by returning waste chemical drums to the supplier for re-use

GG174/22

### COMMUNICATE WITH CUSTOMERS

'Talk to your customers about re-using packaging.'

- A manufacturer saved about £10 000/year by re-using cardboard boxes and halving the amount of new packaging used to deliver goods to customers

GG174/23

### TACKLE COMPRESSED AIR LEAKS

'Large amounts of air are simply lost from compressed air distribution systems through leaks. Simple checks can reduce leaks by up to 20%.'

- An Eastleigh printer made immediate savings of £700/year by reducing compressor leaks

0017424

### DEMONSTRATING COMMITMENT

- Draw up a Statement of Commitment
- Publicise senior management commitment
- Demonstrate visible leadership
- Encourage others to get involved
- Publicise achievements

0017425

### STATEMENT OF COMMITMENT

- Short and simple
- Realistic and achievable
- Easy to read and understand
- Dated and endorsed by a senior manager
- Remember, you set the timetable
- NOT legally inhibiting and NOT added costs

0017426

### PUBLICITY

- Team briefings
- Management meetings
- Notice-board
- Posters
- Company newsletter
- Company literature
- Ask for ideas and feedback

0017427



### OBTAIN AND DEMONSTRATE COMMITMENT

- Win support from senior management by emphasising the potential for easy cost savings
- Active support from management will overcome company barriers
- Encourage others to get involved through effective publicity
- ✓ Draw up a Statement of Commitment and get it endorsed by senior management

0017428



GG174-D.PPT



## SESSION 1

### OVERCOMING BARRIERS AND GETTING STARTED

Winning support with teams and Champions

0017400

### WHY HAVE TEAMS AND CHAMPIONS?

- Appoint a company Champion to co-ordinate and facilitate
- Recruit a project team to achieve results
- Increase staff awareness and motivation to take action
- Maintain success by providing feedback

0017400

### THE CHAMPION'S ROLE

- Co-ordinate and facilitate
- Communicate the programme
- Build the team
- Be the project manager for resources, actions and training
- Lead in the early stages
- Raise awareness and motivation

0017401

### CHAMPION PROFILE

- Enthusiasm for the role
- Credibility at all levels
- Organisational skills
- Ability to motivate others
- Ability to communicate

0017402

### VALUE OF TEAMS

- Ownership and ideas
- Cross-functional benefits
- Removes barriers for change
- Provides self-training

0017403

### WHY IS AWARENESS IMPORTANT?

- Raising awareness stimulates participation
- Communicate facts to raise awareness
  - What is waste and its true cost?
  - What impact does waste have?
  - What generates the most waste?
  - What should be targeted for waste reduction?
  - What are the potential savings?

0017404

### WHY IS MOTIVATION IMPORTANT?

- People need to know why they are being asked to change the way they work
- Well-motivated staff generate ideas
- Savings are made through people
- Achievements maintain interest and enthusiasm
- Incentives can drive motivation

0017405

### INCENTIVE SCHEMES

- Use to encourage and motivate staff
- Recognition
- Donation to employee-nominated charity
- Annual or monthly prize
- Do not have to provide financial rewards

0017406

### DEVELOP AWARENESS AND MOTIVATION

- Appoint a Champion
- Set up a project team
- Involve others to generate ideas
- Promote achievements and savings
- ✓ Raise awareness and motivate staff at all levels to maintain their interest and enthusiasm

0017407

## SYNDICATE GROUP EXERCISE 1:

### Making a start in your company

- Identifying options for reducing waste
- Drafting a Statement of Commitment

GG17408



GG174-E.PPT

## SESSION 2

### TOOLS FOR THE JOB

#### Identifying and quantifying waste

GG17409

## SYSTEMATIC APPROACH TO WASTE MINIMISATION



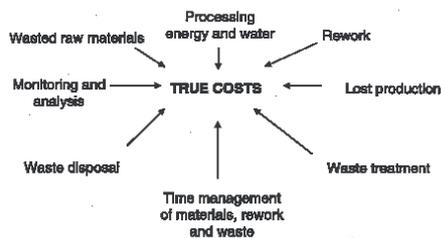
GG17409



GG174-F.PPT



## IDENTIFYING THE TRUE COST OF WASTE



GG17441

## GATHERING AND ORGANISING INFORMATION

- Find sources of information
- Identify inputs and outputs
- Collect information on quantities
- Collect information on costs
- Identify the true costs of waste

GG17442

## INITIAL ASSESSMENT

- Adopt a systematic approach
- Use document checklist to source information
- Use appropriate tools for the job, eg site and process maps, inventories

GG17443

## WHERE DO WE FIND INFORMATION?

- Site and process maps
- Company records and reports
- Meter readings and energy bills
- Water company bills
- Waste disposal contractor bills

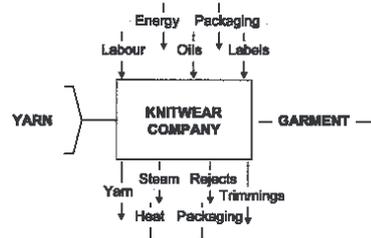
GG17444

## OTHER SOURCES OF INFORMATION

- Effluent discharge consents
- Water abstraction licences
- Process authorisations
- Duty of Care documentation
- Packaging Waste Regulations data

GG17445

## PROCESS MAPPING AT A SITE LEVEL



GG17446



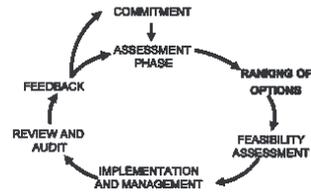
## SESSION 2

### TOOLS FOR THE JOB

Priority areas for action

GG17425

## SYSTEMATIC APPROACH TO WASTE MINIMISATION



GG17424



GG174-H.PPT

## RANK OPTIONS

- Use the data assessment table
- Summarise information on waste quantities and costs
- Prioritise areas to tackle
- Identify obvious areas to target for reduction
- Set targets for waste reduction

GG17423

## DATA ASSESSMENT EXAMPLE

The Knitwear Company: 1998 data

Material	Quantity	Units	Rank	Cost/£	Rank
Yarn	100	tonnes	2	1 000 000	1
Labels	2	tonnes	3	4 000	3
Packaging	200	tonnes	1	10 000	2
Energy	Quantity	Units	Rank	Cost/£	Rank
Electricity	5	MWh	1	90 000	1
Gas	1	MWh	2	30 000	2
Wastes	Quantity	Units	Rank	Cost/£	Rank
Packaging	75	tonnes	1	4 000	2
Yarn and trim	5	tonnes	2	9 000	1

GG17426



## DATA ASSESSMENT TABLE

Organisation		Department			
Prepared by		Process/line			
Inputs and wastes	Amount quantity	Units	Rank (by quantity)	Cost (£/year)	Rank (by cost)
Raw materials					
Water					
Energy					
Waste/effluents					

GG17427

## COMPLETING YOUR DATA ASSESSMENT

- Provide data estimates for missing or incomplete information
- Identify monitoring requirements
- Put measuring systems in place

GG17428

## MEASURING TO MANAGE

Remember:

If you don't measure it - you can't manage it

GG17429

## MEASURING AND MONITORING

- Use simple measuring systems
- Check bills
- Meter the site
- Meter individual processes and machines

GG17430

### RULES OF THUMB

- Make best estimates
- Relate quantities and costs to production levels
- Meter and monitor water and energy use
- Compare your performance with industry best practice

GG17461

### MONITORING SAVES MONEY

'A dyer in the woven cloth sector assumed that a scouring machine was using 120 litres/minute of water as stated in the manufacturer's specifications. When water consumption was monitored, actual use was found to be double.'

- Setting the machine correctly halved the cost of water, saving £15 000/year

GG17462

### BENCHMARKING STIMULATES SAVINGS

'In the knitwear sector, specific water consumption ranges from 70 m<sup>3</sup>/tonne to 206 m<sup>3</sup>/tonne of cloth produced. For a company producing the sector's average output, the difference in water costs between the worst and the best performance is nearly £474 000/year.'

GG17463

### METERING REDUCES WASTE

'In a recent survey of water use by the UK textile dyeing and finishing industry, it was found that the more water meters installed at the site, the lower its specific water consumption.'

- Could your company benefit from installing more meters?

GG17464

### WIDER BENEFITS OF ONGOING MONITORING

- Demonstrates that savings have been made
- Targets for waste reduction
- Ongoing monitoring of achievements

GG17465

### PRIORITISE YOUR OPTIONS

- Summarise your information in the data assessment table
- Identify monitoring requirements
- Set up systems for measuring against targets
- ✓ Use the data assessment table to rank your options for waste reduction
- ✓ Remember, you set the programme - don't try to tackle everything at once

GG17466

### SYNDICATE GROUP EXERCISE 2:

Preparing an action plan  
for your company

GG17467



GG174-I.PPT

## WHERE DO WE GO FROM HERE?

- Action plan
- Individual actions

GG174/8

## TYPICAL TEN POINT PLAN (1)

- 1 Obtain senior management commitment
- 2 Appoint a Champion and project team
- 3 Publicise the project
- 4 Establish quantities and costs of wastes
- 5 Set-up an auditing system and identify monitoring requirements

GG174/8



GG174-J.PPT

## TYPICAL TEN POINT PLAN (2)

- 6 Collate information from raw material, product, utility use and waste data sheets
- 7 Identify waste reduction opportunities
- 8 Prepare a plan for improvements
- 9 Set realistic waste reduction targets
- 10 Review progress against targets and publicise results

GG174/8

## THINK GLOBALLY - ACT LOCALLY

- Individual actions
- The bottom line for your company
- The environment

GG174/7



## INDIVIDUAL ACTIONS



GG174/7

## PROMOTE GOOD PRACTICE

- Use the ten point plan to implement a systematic approach to waste minimisation
- Think globally - act locally
- Every individual can contribute to improving the environment through local actions
- ✓ Make a start in your company

GG174/7

## SUPPORT FROM THE ENVIRONMENTAL TECHNOLOGY BEST PRACTICE PROGRAMME

Contact the Environment and Energy Helpline on freephone 0800 585794 for:

- Copies of free publications
- Free advice on waste minimisation
- Site visits from a consultant (for SMEs)

GG174/4



GG174-K.PPT

# Appendix 2

## WORKSHOP AGENDA

### PROFITING FROM PRACTICAL WASTE MINIMISATION

Date:.....

Venue:.....

#### AGENDA

08.45 **Coffee and Registration**

09.00 Introduction and welcome

09.15 The benefits of a systematic approach to waste minimisation

#### **Session 1: Overcoming barriers and getting started**

09.25 Getting senior management commitment

09.40 Winning support with teams and Champions

10.00 Syndicate group exercise 1: Making a start in your company

10.55 Syndicate reporting 1

11.05 **Coffee**

#### **Session 2: Tools for the job**

11.20 Identifying and quantifying waste

11.40 Focusing on priority areas for action

12.00 Syndicate group exercise 2: Preparing an action plan for your company

12.40 Syndicate reporting 2

12.50 Where do we go from here?

■ Ten point action plan

13.00 **Closing Remarks**

## Appendix 3

# HANDOUTS FOR SYNDICATE GROUP EXERCISES

This Appendix contains a copy of the:

- handout for syndicate group exercise 1: Making a start in your company;
- handout for syndicate group exercise 2: Preparing an action plan for your company;
- Initial Waste Minimisation Options spreadsheet;
- Opportunity Checklist.

For further advice and free publications on waste minimisation, contact the Environment and Energy Helpline on freephone 0800 585794.



## SYNDICATE GROUP EXERCISE 1: MAKING A START IN YOUR COMPANY

### Task 1: Identifying options for reducing waste

The aim of this exercise is to help you identify potential options for minimising waste and then estimate the cost savings and other benefits for your company. Use the Initial Waste Minimisation Options spreadsheet to identify obvious areas where you can reduce waste in your company. Choose one or two options that give immediate savings and present these to senior management. Evidence that real savings can be made will help you to gain senior management commitment and convince your company to begin a systematic programme to reduce waste.

#### Hints

- Identify obvious opportunities to reduce waste and major sources of waste, eg packaging, spent chemicals, water, heat and rework.
- To help you, use:
  - the Opportunity Checklist you have been given;
  - the process map prepared by your company at the workshop *Cutting Costs to Reduce Waste*;
  - ideas from *Finding Hidden Profit: 200 Tips for Reducing Waste* (ET30);
  - examples from Environmental Technology Best Practice Programme publications.

All Environmental Technology Best Practice Programme publications (including ET30) are available free of charge through the Environment and Energy Helpline on freephone 0800 585794.

### Task 2: Drafting a Statement of Commitment

The second part of this exercise is to help your company write a Statement of Commitment for a waste minimisation programme. This Statement can be presented to senior managers in draft for their approval. By drafting a Statement of Commitment in the workshop, you will be able to return to your company confident of the principles and benefits of having a Statement.

#### Hints

- Look at the example Statements of Commitment provided and decide on your approach to writing a Statement for your company.
- Select ideas and issues that are appropriate for your company. Keep the Statement short, simple and easy to read. Make sure that it is realistic and achievable for your company. Remember, the Statement of Commitment is unique to each company and should reflect your company's culture and needs.
- Include the answers to the following questions:
  - Who is making the commitment?
  - What is to be achieved and how?
  - What are the drivers, eg costs, legislation, supply chain pressure, and image?
  - Contact name for further information?

## SYNDICATE GROUP EXERCISE 2: PREPARING AN ACTION PLAN FOR YOUR COMPANY

The aim of this exercise is to work with other members of the group to produce a joint action plan to help you all get started with a systematic approach to waste minimisation. The action plan will help you to convince your colleagues of the potential savings from waste reduction and make a fast start with key tasks.

Ideally, the action plan should contain no more than ten points.

Nominate one member of your group to present the joint action plan to the rest of the delegates.

### Hints

- Do any barriers need to be overcome to get started?
- Do senior managers need to be convinced of the benefits and savings possible?
- Review water, electricity, gas and waste disposal bills for the previous year and relate costs to production figures. Are there any obvious areas of waste reduction?
- Who should be involved in the project and who would be the most appropriate co-ordinator?

At the end of the exercise, you will be given an action plan checklist to help you develop an action plan specific to your company.



# OPPORTUNITY CHECKLIST

Department	Area	Possible waste	
Incoming materials	Loading docks, pipelines, receiving areas	Packaging/containers	<input type="checkbox"/>
		Off-spec deliveries	<input type="checkbox"/>
		Damaged containers	<input type="checkbox"/>
		Spill residue	<input type="checkbox"/>
		Cleaning rags, etc	<input type="checkbox"/>
		Pallets (non-returnable)	<input type="checkbox"/>
		Gloves, overalls, etc	<input type="checkbox"/>
Storage (raw materials, parts, final products)	Tanks, silos, warehouse, drum storage, yards, storerooms	Tank bottoms	<input type="checkbox"/>
		Off-spec materials	<input type="checkbox"/>
		Excess materials	<input type="checkbox"/>
		Damaged containers	<input type="checkbox"/>
		Empty containers	<input type="checkbox"/>
		Leaks from pumps/valves/pipes	<input type="checkbox"/>
		Out-of-date materials	<input type="checkbox"/>
		No-longer-used materials	<input type="checkbox"/>
		Damaged products	<input type="checkbox"/>
Production	Melting, curing, baking, distilling, washing, coating, forming, machining	Washwater	<input type="checkbox"/>
		Solvents evaporating	<input type="checkbox"/>
		Still bottoms in tanks	<input type="checkbox"/>
		Off-spec product rejects	<input type="checkbox"/>
		Catalysts	<input type="checkbox"/>
		Empty containers	<input type="checkbox"/>
		Sweepings	<input type="checkbox"/>
		Ductwork clearout	<input type="checkbox"/>
		Additives	<input type="checkbox"/>
		Oil	<input type="checkbox"/>
		Process solution dumps	<input type="checkbox"/>
		Rinse water	<input type="checkbox"/>
		Excess materials	<input type="checkbox"/>
		Filters	<input type="checkbox"/>
		Leaks from tanks/pipes/valves	<input type="checkbox"/>
		Spill residue	<input type="checkbox"/>
Swarf/off-cuts	<input type="checkbox"/>		
Sludge	<input type="checkbox"/>		
Drag-out from baths	<input type="checkbox"/>		
Packaging of dispatched goods	<input type="checkbox"/>		

Support services	Laboratories, maintenance shops, garages, offices	Chemicals	<input type="checkbox"/>
		Samples and containers	<input type="checkbox"/>
		Solvents	<input type="checkbox"/>
		Cleaning agents	<input type="checkbox"/>
		Degreasing sludges	<input type="checkbox"/>
		Sand blasting waste	<input type="checkbox"/>
		Lubricating oils and greases	<input type="checkbox"/>
		Scrap metal	<input type="checkbox"/>
		Caustics	<input type="checkbox"/>
		Filters	<input type="checkbox"/>
		Acids	<input type="checkbox"/>
		Batteries	<input type="checkbox"/>
		Office paper, etc	<input type="checkbox"/>
Energy	Buildings, processes, boiler plant and plant distribution system	High temperatures	<input type="checkbox"/>
		Lights left on	<input type="checkbox"/>
		Taps left running	<input type="checkbox"/>
		Doors left open	<input type="checkbox"/>
		Air leaks from compressor lines	<input type="checkbox"/>
		Heat loss through roof/doors/windows	<input type="checkbox"/>
		Money wasted through buying electricity, gas and water at high tariffs	<input type="checkbox"/>
		Discharge lamps beyond economic life	<input type="checkbox"/>
		Poorly controlled or inefficient heating/hot water systems	<input type="checkbox"/>
		Electric motors over five years old	<input type="checkbox"/>
		Process heat not re-used	<input type="checkbox"/>
Water	Processes, toilets, kitchens	Urinals flushing continually	<input type="checkbox"/>
		Underground leaks	<input type="checkbox"/>
		Taps left running	<input type="checkbox"/>
		Wasteful wash-downs	<input type="checkbox"/>
Other	Consumables	Detergents	<input type="checkbox"/>
		Overalls	<input type="checkbox"/>
		Gloves	<input type="checkbox"/>

## *Appendix 4*

# EXAMPLE STATEMENTS OF COMMITMENT

This Appendix contains copies of two Statements of Commitment kindly supplied by the Companies.



13 October 1997



### STATEMENT OF COMMITMENT

The Pascon Group of Companies comprising Selwood, Palmers and Croker have made a Board resolution to ensure that all company practices, manufacturing processes and any business operations with which it is involved, will be carried out through environmentally sound methods.

The Group will seek to significantly reduce or eliminate, wherever possible, pollution in any form, and will ensure all employees are made fully aware of this policy. It will also seek to persuade suppliers, customers and sub contractors of the importance of this issue and where possible, lead the way to a greener environment by example.

In recognition of this pledge, the Pascon Group has chosen to take part in the "Southampton & Eastleigh Waste Minimisation Club".

As Managing Director of the Group, I would like to take this opportunity to fully endorse the company's commitment and pledge the full support of all employees to assist in the active development of minimising waste throughout the surrounding areas.

Signed on behalf of THE PASCON GROUP LTD

A handwritten signature in black ink, appearing to read "K P BRIGHT".

K P BRIGHT  
Group Managing Director

The finishing touch



IGT Industries Limited  
Westside Road  
Westside Road Industrial Estate  
Eastleigh  
Hampshire  
SO50 4ET

Tel: 01703 610616  
Fax: 01703 610628  
E-mail: [ig@igtdirect.com](mailto:ig@igtdirect.com)  
Web: <http://www.igt.com>

## **STATEMENT OF COMMITMENT.**

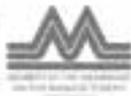
I.G.T. Industries Limited has made a clear policy decision at Board level to ensure that its company's practices, processes & business operations are all carried out in an environmentally sound manner.

As a company, it will seek to eliminate, significantly reduce, prevent the production of pollution, where possible, it will seek to extend this influence to its suppliers, sub-contractors and customers.

With I.G.T. Limited placing a substantial commitment to these pledges, it has chosen to take part in the "Southampton & Eastleigh Waste Minimisation Club". I would therefore take this opportunity to fully endorse the company's commitment through its representative, to play a full and active role in its operation & development.

Sign on behalf of I.G.T. Limited.

N. Giles.  
Managing Director.



Director: N.A.Giles, D.L.Jupp, Y.Ugilt, D.McCaughlin

Company registered No. 2164021 England. Registered Office: The Old House, Park Road, Eastleigh, Surrey, SO50 7JH



## DOCUMENT CHECKLIST

The following documents contain useful information about the costs and quantities of raw materials, utilities and wastes. Use the checklist to help you collect information about your company's inputs and outputs.

Documentation	Location	Copy in file?
■ Purchase ledger		
■ Invoices		
■ Flow diagrams of unit operations		
■ Gas meter readings		
■ Electricity meter readings		
■ Water supply meter readings		
■ Effluent meter readings		
■ Gas bills		
■ Electricity bills		
■ Water bills		
■ Trade effluent bills		
■ Waste contractor bills		
■ Waste transfer notes		
■ Special waste consignment notes		
■ Water abstraction licence		
■ Trade effluent consent		
■ IPC or LAPC authorisation		
Others:		



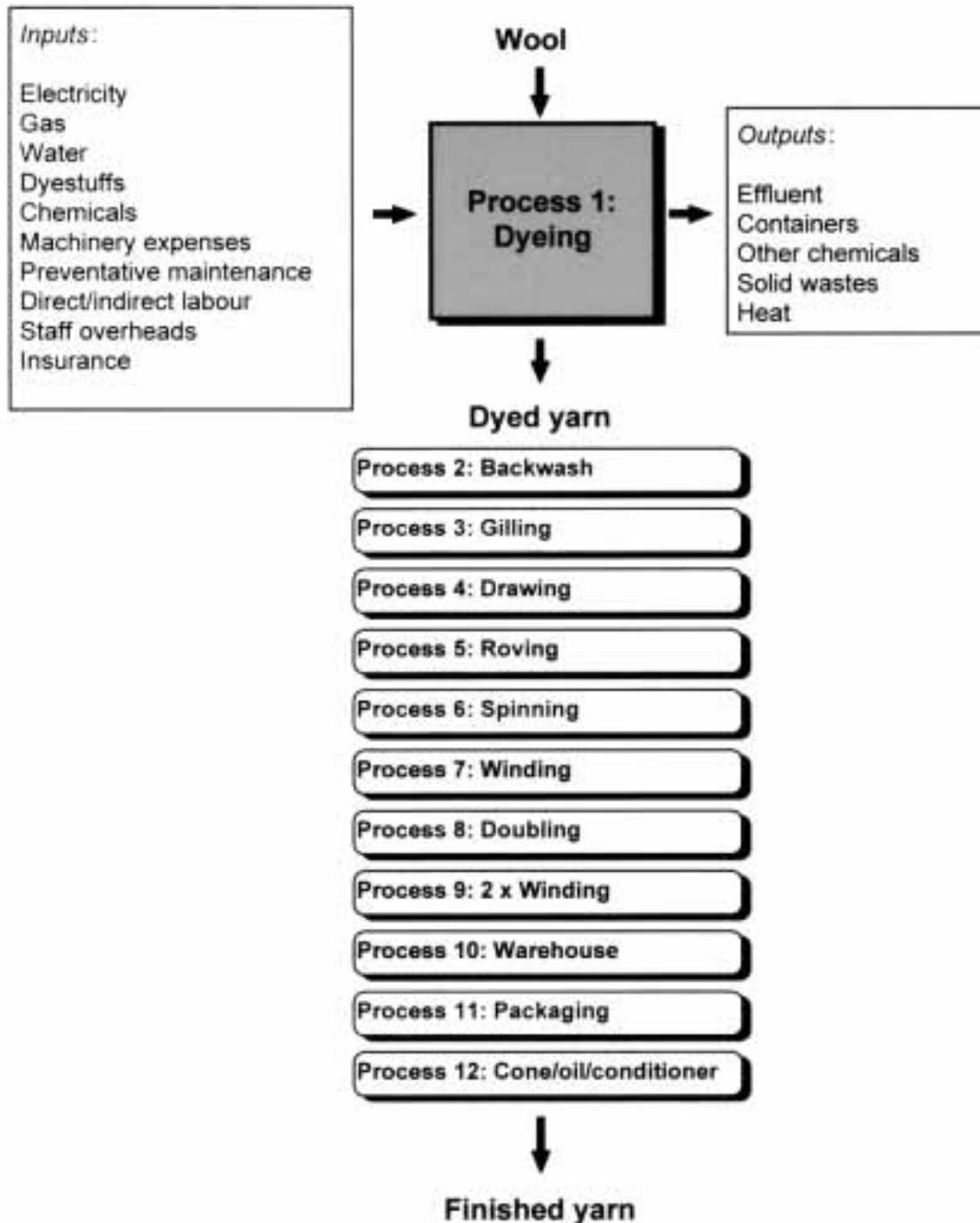






# EXAMPLE PROCESS FLOWSHEET

## PROCESS MAP: COMPANY EXAMPLE



# EXAMPLE CALCULATION: VALUE ADDED COSTS

This calculation is based on the example process flowsheet for a worsted yarn company shown in Appendix 7.

Item/process		Cost (£/kg)	Value added to product (£/kg)
	Raw material: wool	2.50	
1	<b>Dyeing</b>	3.33	<b>+0.83</b>
2	Backwash	3.47	+0.14
3	Gilling	3.66	+0.19
4	Drawing	3.82	+0.16
5	Roving	3.99	+0.17
6	<b>Spinning</b>	4.56	<b>+0.57</b>
7	Winding	4.92	+0.36
8	Doubling	5.26	+0.34
9	2 x Winding	5.52	+0.26
10	Warehouse	5.66	+0.14
11	<b>Packaging</b>	6.36	<b>+0.70</b>
12	Cone/oil/conditioner	6.43	+0.07
	<b>End product: Finished yarn</b>	<b>6.43</b>	<b>3.93</b>

# DATA ASSESSMENT TABLE

If possible, use the same unit of measurement for the different categories of inputs and wastes to make ranking easier, eg tonnes/year for materials and wastes, kWh/year for energy and m<sup>3</sup>/year for water.

Organisation		Input/output			
Prepared by		Process/site			
Inputs and wastes	Annual quantity	Units	Rank (by quantity)	Cost (£/year)	Rank (by cost)
<b>Raw materials</b>					
<b>Water</b>					
<b>Energy</b>					
<b>Waste emissions</b>					

## ACTION PLAN CHECKLIST

This checklist contains the actions needed to establish a successful waste minimisation programme. Not all of these actions will be appropriate for your company, so use the checklist as a prompt to choose the ones that are.

Action	Person responsible	Completion date
■ Tell others about the workshop.		
■ Look at waste costs.		
■ Identify quick savings.		
■ Get an endorsed Statement of Commitment.		
■ Publicise the project.		
■ Appoint a Champion and set up the project team.		
■ Overcome barriers to progress.		
■ Educate and train staff.		
■ Complete the process mapping.		
■ Complete inventories of processes, inputs and products.		
■ Complete an inventory of water and energy use.		
■ Complete an inventory of wastes and emissions.		
■ Complete a data assessment table.		
■ Rank priorities for reducing waste on a cost basis.		
■ Identify monitoring requirements.		
■ Identify opportunities for reducing waste.		
■ Set targets.		
■ Develop an action plan to achieve continual improvement.		
■ Maintain records.		
■ Set up a suggestion/reward scheme.		
■ Talk to suppliers, customers, contractors, etc.		
■ Contact the Environment and Energy Helpline on freephone 0800 585794.		
Other ideas:		

The Environmental Technology Best Practice Programme is a joint Department of Trade and Industry and Department of the Environment, Transport and the Regions programme. It is managed by AEA Technology plc through ETSU and the National Environmental Technology Centre.

The Programme offers free advice and information for UK businesses and promotes environmental practices that:

- **increase profits for UK industry and commerce;**
- **reduce waste and pollution at source.**

To find out more about the Programme please call the Environment and Energy Helpline on freephone 0800 585794. As well as giving information about the Programme, the Helpline has access to a wide range of environmental information. It offers free advice to UK businesses on technical matters, environmental legislation, conferences and promotional seminars. For smaller companies, a free counselling service may be offered at the discretion of the Helpline Manager.

FOR FURTHER INFORMATION, PLEASE CONTACT THE ENVIRONMENT AND ENERGY HELPLINE

**0800 585794**

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world wide web: <http://www.etsu.com/etbpp/>

