



INTEGRATED POLLUTION CONTROL LICENSING

GUIDANCE NOTE FOR: ANNUAL ENVIRONMENTAL REPORT

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of the Environmental Protection Agency Act, 1992 and the Environmental Protection Agency (Licensing)
Regulations 1994 (S.I. No. 85 of 1994).*

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Integrated Pollution Control Licensing

Guidance Note For:
Annual Environmental Report

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Preface

In February 1997, the Environmental Protection Agency (EPA) published, in draft form, guidance for the preparation of an Annual Environmental Report (AER) as defined by Integrated Pollution Control (IPC) licences. Interested parties were invited to comment on the format and contents of this guidance note. Following consideration of all comments received and the assessment of almost 100 submitted reports, the Agency is now in a position to publish the guidance note on Annual Environmental Report content in final format.

The aim of the AER is for each licensee to produce a single annual report on the environmental performance of the activity as required by the licence. The report also sets out the programme of work to be completed in the coming year. The AER is a useful source of environmental data for the Agency, licensed companies and for third parties.

The EPA recognise that an AER for the various industrial facilities and sectors will vary depending on the complexities of the on-site activities and the specific issues required in the particular IPC licence. In addition, it should be noted that future EU regulation may have implications for the type of information to be reported by companies. Further guidance will be issued by the Agency if considered necessary.

The general format and structure for the AER document should, in as far as possible, conform to the guidance given. It is anticipated that every licensee would report "Summary Information" as well as details relating to the "Management of the Activity". The information contained in the "Licence-Specific Reports" section is licence-specific and individual licensees should refer to their IPC licences to ascertain what reports need to be included there.

Specific guidance on technical issues (bund integrity, toxicity, noise, etc) is not included here and the Agency should be contacted in the event of any queries.

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1. Introduction

In order to implement the 5th Action Plan, the European Union has issued a number of directives aimed at improving the level of environmental performance at industrial sites. In the context of environmental permitting of industrial activities the most significant of these is the Integrated Pollution Prevention and Control (IPPC) Directive 96/61/EC.

The current Integrated Pollution Control (IPC) Licensing regime fulfils most of the requirements of the IPPC Directive, although a full implementation will require additional work by industry with the efficient use of energy, in particular, being an issue needing closer attention. IPPC is required by the Directive to be fully implemented by 2007. This Annual Environmental Report (AER) Guidance Note sets out the requirements to satisfy the current IPC regime and directs licensees towards meeting the requirements of IPPC.

The advent of IPC Licensing in Ireland has seen a significant increase in the level of reporting by industry on matters of environmental significance. The nature of the IPC licences issued to date has been such that multiple reports are required to be submitted to the Agency on a whole range of different topics. The IPC approach is a participative one, allowing the company to set out programmes for continuing environmental improvements through the promotion of the use of cleaner technologies rather than end-of-pipe treatment. These programmes are outlined in the Annual Environmental Report.

These reports play an important role in the development of an environmental strategy in the industries involved as it necessitates the examination of issues in a structured and logical manner. The AER brings together all the individual reports required as part of the IPC licence under one cover and allows for effective evaluation of the environmental issues at the site. This document provides guidance in relation to the preparation of a satisfactory AER. The aim of the EPA is to reduce the frequency of environmental reporting but to improve its quality, clarity and usefulness.

Where clarification is required on the issues presented in this guidance note licensees are advised to contact the Agency.

2. Report Structure

2.1 Introduction

The introduction to the Annual Environmental Report shall include the following:

- The licence register number;
- The name and location of the site;
- A brief description of the activities at the site;
- Company environmental policy (where available);
- Company organisation chart for Environmental Management.

2.2 Summary Information

A summary of the items listed below shall be included in the AER and submitted, where possible, in electronic format. Guidance on the level of detail required is outlined in Chapter 3 of this document. In particular, Section 3.5 outlines the requirements for the submission of the AER summary data. Chapter 3 addresses the following:

- Self-Monitoring data (a summary of the company data on)
 - emissions to waters/sewer;
 - emissions to air;
 - waste arisings;
- Energy and Water consumption;
- Environmental incidents and complaints;
- AER Summary Data table.

2.3 Management of the Activity

This section shall include the:

- Company's Schedule of Environmental Objectives and Targets;
- Environmental management programme report (for the current year) and,
- Environmental management programme proposal (for the following year)
- Pollution Emission Register
- Other significant environmental aspects, audits or expenditure, as appropriate.

Guidance on the level of detail required is outlined in Chapter 4 of this document.

2.4 Licence-Specific Reports

Other reports may be required to be included in an AER as a condition of the IPC licence. These reports are specified in the reporting schedule of the IPC licence. While no specific guidance is given here on these reports, Chapter 5 outlines the approach, which should be adopted by licensees with additional reporting requirements.

3. Summary Information

Summary Information should be presented for the previous calendar year. For example, if the AER is due in July of 2000, information reported should be for the calendar year January - December 1999.

3.1 Self-Monitoring Data

3.1.1 Emissions to Waters/Sewer

A typical IPC licence will include the following condition:

“A summary report of emissions to water/sewer shall be submitted to the Agency as part of the AER. The information contained in this report shall be prepared in accordance with any relevant guidelines issued by the Agency.”

The intention of this condition is to provide information pertaining to annual emissions to waters/sewer for IPC facilities. This emissions data should be based upon the averaged monitoring data available for the facility and not on maximum or minimum values. It is recommended that an averaged mass emission figure be determined and multiplied by the duration of the emission.

The licensee is required to generate a report/table for all licensed parameters in this section. The adoption of this methodology allows for the generation of summary tables, graphs, trend analyses etc. such as those presented below. Licensees may wish to comment on changes in production volumes. Non-compliance with the emission limit values specified in the licence should be reported in this section. See tables below for example;

Parameter	Mass Emissions (Kg) (Previous year)	Mass Emissions (Kg) (Present year)	Licensed Mass Emissions (Kg)
Volume (m ³)	7000m ³	6500m ³	10000m ³
pH	----	----	---
BOD	510	420	1500
COD	800	610	2000
Phosphate (P)	175	110	200
Total N	250	220	300
Other Licensed parameters			

Table 1: Example Summary Table for Emissions to Waters/Sewer

Date	Non-compliance	Cause	Corrective Action
23/02/99	COD and BOD Emission Limit Values exceeded (600mg/l Vs 350mg/l)	Discharge of expired buffer solutions through SE1	New procedure for diversion of buffer wastes for off-site disposal
19/04/99	pH outside specified limits of 6-9	Discharge of balance tank prior to neutralisation	Tank modified and recommissioned to ensure compliance

Table 2: Summary of Non-compliances

3.1.2 Emissions to Atmosphere

A typical IPC licence will include the following condition:

“A summary report of emissions to atmosphere shall be submitted to the Agency as part of the AER. The information contained in this report shall be prepared in accordance with any relevant guidelines issued by the Agency.”

The intention of this condition is to provide information pertaining to annual emissions to atmosphere from IPC facilities. This emissions data should be based upon the averaged monitoring data available for the facility and not on maximum or minimum values. It is recommended that an averaged mass emission figure be determined and multiplied by the duration of the emission.

The licensee is required to generate a report/table for all licensed parameters in this section. The adoption of this methodology allows for the generation of summary tables, graphs, trend analyses etc. such as those presented below. Licensees may wish to comment on changes in production volumes. Non-compliance with the emission limit values specified in the licence should be reported in this section. See tables below for example;

Parameter	Mass Emissions (Kg) (Previous year)	Mass Emissions (Kg) (Present year)	Licensed Mass Emissions (kg)
Sulphur dioxide	560	480	700
Nitrogen oxide	214	198	300
Particulates	46	43	100
Carbon dioxide	314	302
VOC halogenated	62	43	100
VOC non-halogenated	497	501	750
Other (including Greenhouse Gases where appropriate)			

Table 3: Example Summary Table for Emissions to Atmosphere

Date	Non-compliance	Cause	Corrective Action
14/06/00	Leak of Hydrochloric Acid fumes from Reactor vessel	Incorrect vent header setting meant scrubber was bypassed.	Correct header setting and review all other settings to ensure proper configuration
17/08/00	Exceedance of solvent loading Emission Limit Value (4.3 Vs 3 kg/hr)	Inadequate cooling on condenser	Install new control system to modify coolant flowrate in order to ensure compliance

Table 4: Summary of Non-compliances

3.1.3 Waste Management

A typical IPC licence will include the following condition:

“A full record, which shall be open to inspection by authorised persons of the Agency at all times, shall be kept by the licensee on matters relating to the waste management operations and practices at this site. This record shall as a minimum contain details of the following:

- A. *The names of the agent and transporter of the waste.*
- B. *The name of the persons responsible for the ultimate disposal/recovery of the waste.*
- C. *The ultimate destination of the waste.*
- D. *Written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site.*
- E. *The results of any analyses required under Schedule 3(iii) Waste Analysis.*
- F. *The tonnages and EWC Code for the waste materials listed in Schedule 3(i) Hazardous Wastes for Disposal/Recovery and Schedule 3(ii) Other Wastes for Disposal/Recovery, sent off-site for disposal/recovery.*
- G. *Details of any rejected consignments.*
- H. *The tonnages and EWC Code for the waste materials listed Schedule 3(i) Hazardous Wastes for Disposal/Recovery and Schedule 3(ii) Other Wastes for Disposal/Recovery recovered/disposed of on-site.*

A copy of this Waste Management record shall be submitted to the Agency as part of the AER for the site.”

The National Waste Database (NWD) has been established by the Agency to record and report waste management statistics for the country. To facilitate the updating of the NWD, licensees are required to include information on waste arisings in the AER Summary Data table in Section 3.5 and submit it as part of their AER. Information on waste arisings should be presented for the previous calendar year. Tables 9 and 10 provide guidance on the codes to be used in completing the AER Summary Data table.

Appendix I contains an example of a fully completed AER Summary Data table for a small engineering/manufacturing firm.

3.2 Agency Monitoring and Enforcement

3.2.1 Introduction

The responsibility for compliance with the IPC Licence rests with the licensee and the monitoring required of, and undertaken by, the company contributes to the compliance assessment. In addition, the Agency conducts its own monitoring and inspections to assess company performance vis a vis licence requirements.

Agency monitoring and enforcement takes a number of forms:

- Emissions sampling and analysis by Agency laboratory staff (both aqueous and atmospheric emissions)
- Site visits and inspections carried out by an Agency Inspector
- Detailed audit of facility carried out by Agency personnel

In this section, the licensee should highlight any significant differences between their monitoring and that of the Agency.

3.3 Energy and Water Consumption

3.3.1 Energy Consumption

In order to determine the usage of fuel by IPC licensed facilities and thus the conversion to oxides of nitrogen, sulphur and carbon for national reporting requirements, the licensee is required to outline the consumption of energy by the activity. The licensee may also include a trend analysis of past and present years indicating the efficiency of energy usage in terms of energy consumption/kg of product. All data should be presented in Megawatts. The energy usage figures may be sub-divided by source e.g.:

Heavy fuel oil	
Light fuel oil	
Natural gas	
Electricity	
Coal, etc	

Table 5: Energy Consumption Summary

Licensees are required to include information on energy consumption in the AER Summary Data table in Section 3.5 and submit it as part of their AER.

3.3.2 Water Consumption

The licensee shall outline the consumption of water by the activity. The licensee may also include a trend analysis of past and present years indicating the efficiency of water usage in terms of water consumption/kg of product. The water usage figures may be sub-divided by source e.g.:

On-site ground water	
On-site surface water	
Municipal supply	

Table 6: Water Consumption Summary

Licensees are required to include information on water consumption in the AER Summary Data table in Section 3.5 and submit it as part of their AER.

3.4 Environmental Incidents and Complaints

3.4.1 Introduction

A typical IPC licence will include the following condition:

“A summary report of reported incidents shall be submitted to the Agency as part of the AER. The information contained in this report shall be prepared in accordance with any relevant guidelines issued by the Agency.”

“A summary of the number and nature of complaints received shall be included in the AER.”

Incidents include situations that affect the normal operation of the activity and which may create an environmental risk. Emergency situations, such as fires, that develop on-site, malfunctions of any monitors or breakdown of control equipment need to be reported in this section as well as all complaints of an environmental nature.

3.4.2 Environmental Incidents

As part of the IPC Licence there is a requirement to inform the Agency of the following:

- Any release to atmosphere from any potential emission point.
- Any emission which does not comply with the requirements of the licence.
- Any malfunction or breakdown of control equipment or monitoring equipment which is likely to lead to loss of control of the abatement system
- Any incident with the potential for environmental contamination of surface water or groundwater, or posing an environmental threat to air or land, or requiring an emergency response by the Local Authority.

The summary of these incidents reported to the Agency throughout the year should be included in tabular format in this section with a brief description of the incident, date, brief description of action taken and authorities contacted.

3.4.3 Complaints

As part of the IPC Licence there is a requirement to inform the Agency of all environmental complaints relating to the operation of the activity with details such as the date of complaint, the category of complaint (odour, noise, water, procedural or miscellaneous) and actions taken if any.

The definitions of the first three categories of complaint are self-explanatory. Procedural complaints relate to on-site practices which lead to an environmental impact. Miscellaneous refers to complaints that can not be categorised easily into odour, noise, water or procedural.

The summary of complaints should include the number of complaints reported to the Agency throughout the year in each category and a total for the year. The industry may wish to include a discussion on the corrective actions taken on foot of these complaints and any conclusions drawn on the source of the complaint in this section.

Licensees are required to include information on complaints in the AER Summary Data table in Section 3.5 and submit it as part of their AER.

3.5 Submission of Summary Information

In addition to the reports required under the individual sections above, licensees are also required to complete the AER Summary Data Table below. Information, in this format, will allow the Agency to fulfill European reporting requirements for environmental data as well as develop key statistics to focus on trends in environmental change. This information will facilitate the Agency's work in areas such as publishing reports on the State of the Environment and on National Environmental Indicators. Options for submission of the AER Summary Data are;

- Download table from EPA website (www.epa.ie) through the IPC link of the Licensing page and email to ipcaer@epa.ie
- Submit data on diskette format (diskette available from IPC Licence Inspector)

If neither of the above options are feasible, the required information may be submitted in paper format.

It is anticipated that the AER Summary Data will be posted on the Agency website and used to generate national statistics on pollutant loads to the environment. The AER Summary Data Table is reproduced in the following pages.

Summary Of Emissions					
Company					
Location Address					
Contact Name					
Telephone					
e-mail			GPS Co-ordinates		
Register Number				NACE CODES	
Activity details	IPC Class	IPPC Class	NOSE-P Code	Section	
				Sub-Section	
				Division	
				Group	
				Class	
Emissions to:	Freshwater	Sewer	Sea		
Parameter	Unit	Licensed emission	1998	1999	2000
Volume	M ³				
Suspended Solids	Kg				
BOD	Kg				
COD	Kg				
Total Dissolved Solids	Kg				
Total Nitrogen	Kg				
Phosphate	Kg				
Toxicity	TU				
Hg	Kg				
Cd	Kg				
Pb	Kg				
Cr	Kg				
As	Kg				
Zn	Kg				
Cu	Kg				
Ni	Kg				
% Compliance	%				
Number of Samples					
Emissions to air					
Parameter	Unit	Licensed emission	1998	1999	2000
Particulates	Kg				
SOx	Kg				
NOx	Kg				
CO ₂	Kg				
TA Luft Class I	Kg				
TA Luft Class II	Kg				
TA Luft Class III	Kg				
Total Organic (as C)	Kg				
Non-Methane VOC	Kg				
Ammonia	Kg				
Total Heavy Metals	Kg				
% Compliance	%				
Number of Samples					

Boiler Emissions to air		Licensed emission	1998	1999	2000
Parameter	Unit				
Dust	Kg				
SOx	Kg				
NOx	Kg				
CO ₂	kg				
CO	Kg				
Energy Consumption	Unit	Sulphur Content	1998	1999	2000
Heavy Fuel Oil	M ³				
Light Fuel Oil	M ³				
Coal	Kg				
Electricity	MW				
Natural Gas	M ³				
Waste					
Total quantity of waste produced in calendar year (Tonnes)			1998	1999	2000
· total quantity of waste disposed of on-site					
· total quantity of waste disposed of off-site					
· total quantity of waste recovered on-site					
· total quantity of waste recovered off-site					
Quantity of non-hazardous waste produced in calendar year(Tonnes)			1998	1999	2000
· quantity of non-hazardous waste disposed of on-site					
· quantity of non-hazardous waste disposed of off-site					
· quantity of non-hazardous waste recovered on-site					
· quantity of non-hazardous waste recovered off-site					
Quantity of hazardous waste produced in calendar year			1998	1999	2000
· quantity of hazardous waste disposed of on-site					
· quantity of hazardous waste disposed of off-site					
· quantity of hazardous waste recovered on-site					
· quantity of hazardous waste recovered off-site					
Water Consumption			1998	1999	2000
On-site groundwater use	M ³				
On-site surface water use	M ³				
Municipal water use	M ³				
Environmental Complaints			1998	1999	2000
Complaints received					
Complaints requiring corrective action					
Categories of complaint					
Odour					
Noise					
Water					
Air					
Procedural					
Miscellaneous					
Accreditation					
EMAS					
ISO 14000					

Pollution Emission Register														
Pollutant Name	CAS No.	Input Kg/Year	Gross Usage Kg/Year	Outputs (Kg/year)										
				Air	MOM	Liquid Effluent	MOM	Waste	MOM	Product	MOM	Recovery	Treated	Unaccounted
Total Annual Solvent Usage (kg/year) (including non PER Solvents)														

MOM - Method of Measurement.
 This refers to the method used in determining losses to Air, Water and Land.
 The following codes are to be used to demonstrate the method used:

Method	Code	Method	Code
Direct	M	Material Balance	C
Measurement			
Engineering	E	Other	O
Estimates			

AER Summary Data Table (cont/d)

4. Management of the Activity

4.1 Introduction

It should be noted that in future as the IPPC legislation is fully implemented all licensees will have to use Best Available Techniques (BAT) by 2007. It is expected that the use of objectives & targets will enable licensees to meet this requirement in a controlled, managed way.

A typical IPC licence will include the following condition:

“The licensee shall prepare a schedule of Environmental Objectives and Targets. The schedule shall include time frames for the achievement of set targets. The schedule shall address a five year period as a minimum. The schedule shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER)”

4.2 Schedule of Environmental Objectives and Targets

This is a long-term strategy and it is recommended that the Environmental Objectives & Targets be derived from an initial review of significant environmental aspects of the operation. Such a review facilitates a structured examination and prioritisation of important areas in need of attention.

The purpose of this requirement is to ensure that there are clear environmental goals within an organisation as a whole. Goals should be set (ideally as part of a rolling 5 year programme) to achieve a year-on-year improvement but not necessarily in every area of the activity, i.e. they are strategic and not short-term. The requirement is a comprehensive set of objectives and targets, from the boardroom to the shop floor, integrated into the day-to-day business activities of the managers and staff.

Targets should be demanding, in that they should require special effort to achieve them. There is little point in setting targets at low levels as they are unlikely to be approved by the Agency and demonstrate an over-cautious approach. Objectives and Targets should be quantified wherever this is practical to ensure that real attainment is recorded against the targets.

The Agency acknowledges that, by their nature, objectives and targets may not always be met as novelty and innovation will be involved. In the event of failure to meet targets, it is important to demonstrate clearly the reason as well as modifying the target in light of experiences gained.

The Agency emphasises pollution prevention and minimisation of waste at source rather than end-of-pipe treatment. In keeping with this BATNEEC philosophy, the Agency has been flexible in setting of targets and associated timeframes through the Environmental Management Programme (EMP). Should the opportunity for investigation of alternatives (as required in the EMP) not be taken, the Agency may decide that it is necessary to review the licence in order to ensure that certain standards are reached. This is just an example of the kind of approach the Agency is willing to adopt. This is the application of the NEEC part of BATNEEC and it also demonstrates a balanced common-sense approach.

In setting objectives and targets the licensee should take into account compliance with all conditions and schedules of their Integrated Pollution Control licence and their financial, operational and business requirements.

The environmental targets must be documented. Realistic time-scales for completion should be set and managers and staff alike should monitor progress towards achieving targets within the time frame.

A partial checklist for developing suitable objectives & targets would address the following;

- Do the objectives and targets establish realistic and meaningful improvements?*
- Have you used all available information in establishing your objectives and targets?*
- Can they be properly quantified?*
- Are there areas where more information is needed to establish objectives?*

An example of a possible Schedule of Environmental Objectives and Targets is given in Table 8.

Licence Objectives	Licensee Targets
1. Process modifications resulting in improved yields, elimination or reduction of wastes or the use of alternative less hazardous materials.	Eliminate all hazardous materials by 2002. Improve recyclability of product to 80% by 2001.
2. Improved process control (equipment and management) to reduce waste.	Reduce average daily weight of waste to land fill by 10 tonnes (20%) by the end of 2002.
3. Improvements in equipment cleaning procedures resulting in reduced materials usage or alternative materials usage.	Eliminate solvent cleaning systems by 2001.
4. Maintenance and calibration of control and monitoring equipment.	Reduce down time of all on-line monitoring equipment to less than 5% by 2002.
5. Improvements in treatment/abatement systems to reduce emissions.	Achieve 10% overall effluent reduction by 2001. Reduce solvent emissions to atmosphere by 25% by 2002 against 1997 figures.
6. The use of alternative treatment/abatement systems.	Replace emission scrubber system in favour of carbon absorption system (CAS) with solvent recovery.
7. Recovery, reuse, recycling of waste material both on-site and off-site.	Recycle 100% of recyclable materials by the end of 2000.
8. Reduction in fugitive emissions.	Establish the solvent loss from all on-site activities through fugitive emissions by 2000. Reduce solvent loss through fugitive emissions plant wide to less than 5% by 2002.
9. Prevention of incidents with the potential for environmental consequences and the preparation and implementation of contingency plans in the event of an incident.	Reduce the number of environmental incidents by 50% over 1998 levels by 2001 by the implementation of improved operating procedures. Reduce emissions to the environment through such incidents to the lowest levels practicable by the implementation of appropriate contingency plans. Appropriate plans will be drafted and implemented by the end of 2000.
10. Savings in energy and material usage.	Reduce energy consumption by 15% by 2001 against 1997 figures.

Table 8: Example of Environmental Objectives and Targets

4.3 Environmental Management Programme (EMP) Report

4.3.1 Introduction

A typical IPC licence will include the following condition:

“A report on the programme, including the success in meeting agreed targets, shall be prepared and submitted to the Agency as part of the AER “

4.3.2 Content

The EMP report shall address the implementation of each project proposed in the previous years EMP. This report shall include, but shall not be limited to;

- the stated target for the project
- achievement versus targets
- difficulties encountered (including reasons for failure where applicable)
- corrective actions implemented

4.4 Environmental Management Programme (EMP)

4.4.1 Introduction

A typical IPC licence will include the following condition:

“The licensee shall... submit to the Agency for agreement an EMP, including a time schedule, for achieving objectives and targets.”

The purpose of the EMP is to ensure that the licensee’s Schedule of Environmental Objectives and Targets is supported by a realistic programme which is implemented throughout the organisation.

4.4.2 Content

Each project proposal which forms part of the environmental management programme shall address the following:

- ***A rationale for undertaking a specific project.***

It should be clear that the proposed projects address the most pressing or significant environmental issues within the company and relate directly to the licensee’s objectives and targets.
- ***The targets to be achieved;***

Targets should be as definitive as possible and should include a reference to the over-all targets set by the licensee.
- ***A “programme” for achieving these targets***

The programme shall outline what is to be done to achieve the stated targets.
- ***Designation of responsibility.***

The responsibility for the implementation of the specified project shall be assigned. Assignment shall be to a position/job-title within the company rather than an individual.
- ***Time frame.***

The time frame for completion of the project shall be specified.

4.4.3 Assessment of EMP

As a rule of thumb in assessing any EMP the Agency will seek to be satisfied that the following interrogatives have been addressed:

- Why:** undertake this project?
- What:** are the company going to do?
- When:** is it going to be done?
- Who:** is responsible to ensure it has been done properly?
- How:** is it going to be done?

It should be noted that targets set in an EMP are just that: "targets". Failure to meet specified targets may not be a compliance issue, *if* the licensee can demonstrate that a "reasonable" effort has been made to achieve the set target.

It may also be the case, particularly in relation to smaller companies, that licensees are not required to address all of the agreed Environmental Objectives each year. The scope of each year's EMP will be a matter for agreement between the licensee and the Agency.

If it is apparent that the EMP addresses a "reasonable" number of issues, which are in-line with the stated environmental objectives and targets of the licensee, this may be regarded as satisfactory. However progress towards set targets will have to be clearly demonstrated.

Where an issue is deemed to be of particular environmental significance, the Agency may consider the issue as mandatory for inclusion in the EMP. Licensees shall prioritise additional issues to be included in the EMP based on the significance of their environmental impact.

Where a licensee suggests that specific issues may not be addressed due to regulations imposed by other bodies (e.g. the FDA or HSA), a copy of the correspondence with such bodies in relation to the proposed project will be required in order to substantiate such claims. The following checklist provides a useful means of ensuring the required elements are in place:

- Does the programme show how the objectives and targets will be met?
- Is there a relationship between the programme and the objectives and targets?
- Is responsibility for each activity of the programme clearly defined?
- Does the programme show how the targets will be achieved?
- Has a structured approach been set up to ensure consistency of implementation of programmes across the company?
- Are the priorities clearly identified and relevant to the whole organisation's goals?

4.4.4 Example

Relationship to Objectives and Targets

Reason for undertaking project

In-line with the companies objective to reduce solvent emissions to atmosphere by 25% by 2002 against 1997 figures, XYZ Ltd. propose to undertake the following projects during 2000.

Project 1

Solvent X emissions from the fluidised bed dryer vent (A6) are in excess of BATNEEC guidance limits. Condition 5.3 of our IPC licence requires that these emission levels comply with BATNEEC on or before 1 June 2002.

Target XYZ Ltd. aims to reduce solvent emissions from the fluidised bed dryer by approximately 80% during 2000 by the implementation of a solvent recovery system. This will reduce solvent X emission concentration to 80 mg/Nm³ which will comply with the 2002 licence ELV.

Project summary:

A brief written description of the project should be provided. This should be accompanied by Gantt charts or equivalent where possible to illustrate the implementation of the proposed programme or project.

Project set-out clearly

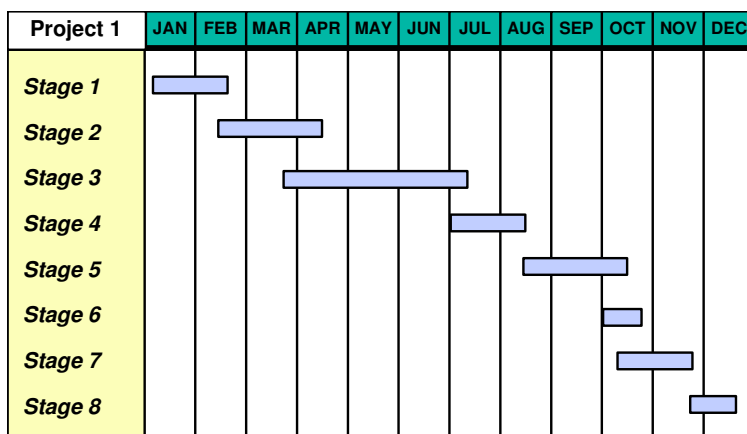


Figure 1 Project GANTT Chart

Designation of responsibility.

The Environmental Manager is responsible for the implementation of this project. The process engineer will assist on stage 1, stage 4 and stage 5

Investment in project and payback time.

The cost of this project is estimated at £350,000. It is anticipated 35,000 l of solvent X will be recovered. This may be used to substitute solvent Y in the first washing of product A. Hence an annual saving of £87,500 may be achieved. This would result in a payback time of four years.

Time-frame

It is proposed to fully implement this project by the end of December 2002.

The example below would not be considered adequate for inclusion in an EMP;

XYZ Ltd. are committed to the reduction in solvent emissions during 2000. Subsequent to emission monitoring surveys, priority vents will be identified and measures put in place to reduce said emissions to the lowest levels practicable.

4.5 Pollution Emission Register (PER)

4.5.1 Introduction

A typical IPC licence will include the following condition:

“The PER shall be prepared in accordance with any relevant guidelines issued by the Agency and shall be submitted as part of the AER.”

The following discussion is intended to provide guidance to industry on the requirements for a Pollution Emissions Register (PER). In general the licence condition has specified that where certain substances are used on site, a proposal must be made listing these substances along with the methodology to be used in their determination. An annual report must be submitted outlining pollutant releases in air, effluent and waste streams, in addition to pollutants recovered.

The PER is to be drawn up with the agreement of the Agency on a prioritisation basis. The primary purpose of the Pollution Emissions Register (PER) is to ensure that the destination of major priority pollutants is tracked. It is anticipated that the information provided by the Register will assist industry to focus on problem pollutants and highlight priority areas for improvement.

The PER will facilitate the

- elimination and reduction of emissions through the use of cleaner technologies,
- implementation of efficient and effective pollution control systems,
- identification of options for improvement such as improved measurement, material substitution by less harmful ones etc.

Of equal benefit, however, is the knowledge gained from a thorough understanding of material flows in a facility. This can result in options for waste reduction and improved operating procedures which is fundamental to Integrated Pollution Control Licensing as administered by the EPA.

4.5.2 Content

The PER Report should be submitted as part of the AER Summary Data table (c.f Section 3.5 for submittal options) and submitted as part of the AER. The substances to be included have to be agreed in advance with the Agency. The Pollution Emissions Register List (PERL) given in Appendix II should be consulted in arriving at the pollutants to be included.

The PERL is the same as the European Pollution Emission Register list arrived at by a working group set up to implement provisions of the Integrated Pollution Prevention and Control Directive (96/61/EC). The PERL was arrived at following extensive discussions at which all stakeholders were involved and represents the consensus view on a list of significant pollutants whose emissions will be reported on at a European level.

Factors which may be considered by the Agency when considering a proposal for a substance's inclusion/exclusion from the full PER include

- Usage of the material,
- Persistence of the material in the environment.

Once it has been decided that a proposal is to be submitted, the flowchart in Figure 2 illustrates the different steps that must be undertaken in order to submit a satisfactory proposal.

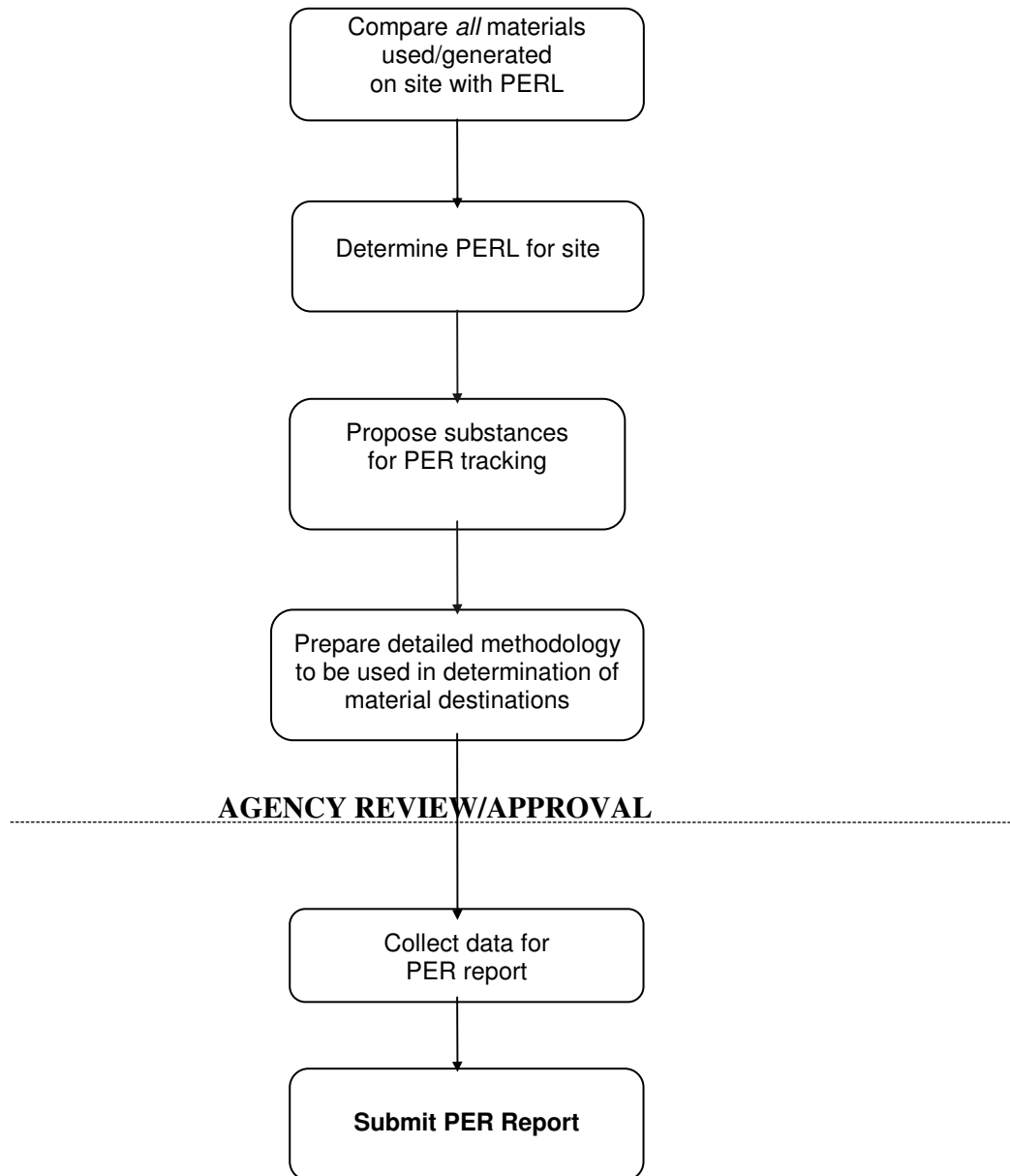


Figure 2: PER Flowchart

4.5.3 Compiling a PER Report

Licensees are required to complete the PER section of the AER Summary Data table in Section 3.5 and submit it as part of their AER. Information gathered during the year should be used in reporting emissions data. The licensee is required to indicate the principal method used to arrive at the reported emissions. The appropriate letter codes should be entered to indicate the primary method applicable to the reported emission.

The efficiency with which substances are used can be derived from the information presented in a PER. Indices may be prepared, which link emissions to throughput. These are very useful trending tools. It is difficult to prescribe a universal means of calculating such indices, which would ensure meaningful results. The licensee is encouraged, therefore, to propose their own system of index determination to the Agency for agreement.

It is possible, for example that a multi-process site would calculate indices for each process line, thereby facilitating identification of problem areas for improvement. On and off site recovery of material can also be factored into the calculations. The draft standard ISO 14031 - Environmental Performance Indicators may provide a useful means of demonstrating environmental efficiency and is worthy of consideration.

Appendix II, along with the PERL, contains an example of a completed PER Summary Data table for a small engineering/manufacturing firm.

5. Licence-Specific Reports

5.1 Introduction

As mentioned in the Preface and elsewhere in this document, individual licences often require a wide range of reports, surveys, investigations, etc to be carried out and submitted as part of the AER. The frequency of these reports vary from once-off through to annual etc. Subsequent reports may well depend on the results obtained in the first programme of work. These form an important part of the information available on environmental performance and environmental protection measures on site. Licensees should consult their IPC licences to ascertain what reports need to be included here.

Examples of the type of reports include;

- Noise Survey
- Bund Integrity Testing
- Hydrogeological Investigation
- Toxicity Testing
- Residuals Management Plan
- Environmental Liabilities Risk Assessment
- Firewater Retention Study

Many of these projects require the licensee to submit a proposal to the Agency and obtain the prior written agreement before undertaking any work. Guidance on the level of detail required is best given at that stage.

INDUSTRIAL WASTE MANAGEMENT QUESTIONNAIRE - FOOTNOTES

- [1] *Please include only one entry for each of the wastes described in the European Waste Catalogue. In the case of wastes for which extended 8-digit waste catalogue entries have been assigned, please use the extended versions wherever possible. Please indicate whether or not the waste is hazardous.*
- [2] *Please give a brief description (i.e. a few words) of the nature, form, characteristics and generating process(es) for each individual waste type.*
- [3] *The preferred units for quantification of the waste produced are tonnes per annum. If, and only if quantification on a weight basis is impossible, please give a detailed description of the volumes collected e.g., number and volume of skips, degree of compaction of waste etc.*
- [4] *Please specify the disposal/recovery operation use, according to the following options.*

Disposal Operations (No Recovery)

- (D1) Deposit into or onto land (e.g. landfill etc.).
- (D2) Land treatment (e.g. biodegradation of liquid or sludgy discards in soils. etc.)
- (D3) Deep injection (e.g. injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.)
- (D4) Surface impoundment (e.g. placement of liquid or sludge discards into pits ponds or lagoons etc.).
- (D5) Specially engineered landfill (e.g. placement into lined discrete cells which are capped and isolated from one another and the environment etc.)
- (D6) Release into a water body except seas/oceans
- (D7) Release into seas/oceans including sea bed insertion
- (D8) Biological treatment not specified elsewhere in this list which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12.
- (D9) Physico-chemical treatment not specified elsewhere in this list which results in final compounds or mixtures which are discarded by means of any of operations numbered D1 to D12 (e.g. evaporation, drying and calcination etc.).
- (D10) Incineration on land
- (D11) Incineration at sea
- (D12) Permanent storage, (e.g. emplacement of containers in a mine etc.).
- (D13) Blending or mixture prior to submission to any of the any of operations numbered D1 to D12.
- (D14) Repackaging prior to submission of any of the operations numbered D1 to D12.
- (D15) Storage pending any of the operations numbered D1 to D12.

Recovery/Recycling/Re-use Operations

- (R0) Re-use of material in current form without further treatment.
- (R1) Use as a fuel (other than in direct incineration) or other means to generate energy
- (R2) Solvent reclamation/regeneration.
- (R3) Recycling/reclamation of organic substances which are not used as solvents, including composting and other biological transformation processes.
- (R4) Recycling/reclamation of metals and metal compounds.
- (R5) Recycling/reclamation of other inorganic materials.
- (R6) Regeneration of acids or bases.
- (R7) Recovery of components used for pollution abatement.
- (R8) Recovery of components from catalysts.
- (R9) Used oil re-refining or other re-uses of previously used oils.
- (R10) Land treatment resulting in a benefit to agricultural or ecological improvement.
- (R11) Uses of residual materials obtained from any of the operations numbered R1 to R10
- (R12) Exchange of wastes for submission to any of the operations numbered R1 to R11
- (R13) Accumulation of material intended for any operation number R1 to R12.

- [5] *Please specify the disposal/recovery location for each waste type according to the following options.*

(a) On-site; (b) Off-site (Ireland); (c) Off-site (abroad), and name the location at which disposal/recovery occurs

Table 10: Table of Codes to be used in completing Waste Information Table

NACE SECTORS

IPC Class	IPC Description	NACE Section	NACE subsection	NACE Description
1	Minerals and Other Materials	C	A	Mining and Quarrying of Energy Producing Materials
		C	B	Mining and Quarrying Except Energy Producing Materials
2	Energy	E		Electricity, Gas and Water Supply
3	Metals	D	J	Manufacture of Basic Metals and Fabricated Metal Products
4	Mineral Fibres and Glass	D	I	Manufacture of Other Non-Metallic Products
5	Chemicals	D	G	Manufacture of Chemicals, Chemical Products and Man-Made Fibres
6	Intensive Agriculture	A		Agriculture, Hunting and Forestry
7	Food and Drink	D	A	Manufacture of Food Products, Beverages and Tobacco
8	Wood, Paper, Textiles and Leather	D	D	Manufacture of Wood and Wood Products
		D	E	Manufacture of Pulp, Paper and Paper Products; Publishing and Printing
9	Fossil Fuels	C	A	Mining and Quarrying of Energy Producing Materials
		C	A	Service activities incident to oil and gas extraction excluding surveying
		D	F	Manufacture of refined petroleum products
10	Cement	D	I	Manufacture of Other Non-Metallic Mineral Products
11	Waste	O	O	Other Community, Social and Personal Service Activities (see Sewage and refuse disposal, sanitation and similar activities)
12	Surface Coatings			Refer to NACE Regulation
13	Other Activities			Refer to NACE Regulation

Table 11: Table Detailing NACE Sector Codes as per EEC761/93

Table 12 - EXAMPLE TABLE 7 - SUMMARY INFORMATION ON WASTE ARISING

Company Name	ACME Ltd
IPC Register No.	XYZ

NACE CODES	
Section	D
Sub-Section	J
Division	
Group	
Class	Class 3 of EPA Act

Calendar Year	1998
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Note 1: Total Waste = Non-Hazardous Waste + Hazardous Waste

Note 2: Enter data into unshaded cells only - remaining cells will be filled in automatically

ITEM	(Tonnes/annum)
Total quantity of waste produced in calendar year	144.58
· total quantity of waste disposed of on-site	17.0
· total quantity of waste disposed of off-site	65.08
· total quantity of waste recovered on-site	3.0
· total quantity of waste recovered off-site	59.5
Quantity of non-hazardous waste produced in calendar year	126.58
· quantity of non-hazardous waste disposed of on-site	0
· quantity of non-hazardous waste disposed of off-site	65
· quantity of non-hazardous waste recovered on-site	3
· quantity of non-hazardous waste recovered off-site	59.5
Quantity of hazardous waste produced in calendar year	18.0
· quantity of hazardous waste disposed of on-site	17.0
· quantity of hazardous waste disposed of off-site	0
· quantity of hazardous waste recovered on-site	0
· quantity of hazardous waste recovered off-site	1

EWC Code [1]								HAZ (y/n) [1]	Description of waste [2]	Quantity (Tonnes/annum) [3]	Method of Disposal/Recovery [4]	Location of Disposal/Recovery [5]	Name of Waste Disposal/Recovery Contractor (if applicable)
1	2	0	1	0	1			n	Iron filings and general machining waste	14	R4	(b) Birr, Co Offaly	Steel Services Ltd
1	2	0	1	0	4			n	Aluminium scrap from fabrication processes	20	R4	(C) Birmingham, England	Al Recovery Ltd
1	2	0	1	0	5			n	Waste plastic from forming processes	5	D1	(b) Dunbally Landfill, Co Meath	???? Co Council
1	2	0	1	1	3			n	Waste solder material and waste flux	0.5	R5	(c) Glasgow, Scotland	Welding Services Int.
1	2	0	3	0	1			y	Waste water from metal degreasing operations	17	D4	(a)	-
1	3	0	2	0	2			y	Waste lubrications oils - non-chlorinated	1	R9	(b) Drogheda, Co Lough	Irish Oil Recovery Ltd
1	5	0	1	0	1			n	Waste packaging - paper	18	R3	(b) Navan, Co Meath	Paper Products Ltd
1	5	0	1	0	2			n	Plastic Pallets	3	R0	-	-
1	5	0	1	0	4			n	Cleaned empty paint cans	0.08	D15	-	-
1	6	0	5	0	1			n	Used gas containers - returned to supplier	6	R0	(b) Limerick	Gas Suppliers Ltd
1	7	0	7	0	1			n	Mixed building waste	2	D1	(b) Dunbally Landfill, Co Meath	Meath Co Council
1	7	0	9	0	1			n	Water treatment waste	11	D1	(b) Dunbally Landfill, Co Meath	Meath Co Council
1	9	0	9	0	2			n	Water treatment waste	14	D1	(b) Dunbally Landfill, Co Meath	Meath Co Council
2	0	0	1	0	8	0	1	n	Canteen Food Waste	33	D1	(b) Dunbally Landfill, Co Meath	Meath Co Council

Table 12: Example Waste Sheet for Small Engineering/Manufacturing Firm cont/d

APPENDIX II

1. Environmental Themes

CH₄
CO
CO₂
HFCs
N₂O
NH₃
Non-Methane VOCs
NO_x
PFCs
SF₆
SO_x
Total Nitrogen
Total Phosphorus

2. Heavy Metals

As and compounds
Cd and compounds
Cr and compounds
Cu and compounds
Hg and compounds
Ni and compounds
Pb and compounds
Zn and compounds

3 Chlorinated Organic Substances

Dichloroethane-1,2 (DCE)
Dichloromethane (DCM)
Chloro-alkanes (C10-13)
Hexachlorobenzene (HCB)
Hexachlorobutadiene (HCBD)
Hexachlorocyclohexane (HCH)
Halogenated organic compounds
PCDD+PCDF (dioxins+furans)
Pentachlorophenol (PCP)
Tetrachloroethylene (PER)
Tetrachloromethane (TCM)
Trichlorobenzenes (TCB)
Trichloroethane-1,1,1 (TCE)
Trichloroethylene (TRI)
Trichloromethane

4. Other Organic Compounds

Benzene
Benzene, toluene, ethylbenzene, xylene
Brominated diphenylether
Organotin - compounds
Polycyclic Aromatic Hydrocarbons
Phenols
Total Organic Carbon

5. Other Compounds

Chlorides
Chlorine and inorganic compounds
Cyanides
Fluorides
Fluorine and inorganic compounds
HCN
PM₁₀

Table 13: Pollution Emissions Register List (PERL)

Example

ACME Engineering Limited fabricate sheet metal products according to customer specified requirements. Unit operations on site include metal punching and forming, welding, degreasing, painting and assembly/packaging. The most significant products manufactured on site are computer enclosures for hard-disks etc. Having examined the substances used on site and compared them with the PERL, Dichloromethane (DCM) is the only substance to be included in the PER.

Summary of Methodology

A consideration of all inputs and outputs is first carried out in order to determine a mass balance for the DCM. The following were identified as potential inputs/outputs

Inputs	Outputs
<i>Fresh Solvent</i>	<i>Stack Emissions</i>
<i>Change in inventory</i>	<i>Fugitive Emissions</i>
	<i>Sludge disposal from scrubbers</i>
	<i>Liquid Effluent</i>
	<i>Unaccounted</i>

The full results of the Mass Balances are not presented here. A general overview is given of the techniques and strategies employed to generate the data from which the PER form was completed.

All of the Dichloromethane (DCM) is used in the Degreasing unit on site. Atmospheric emissions arise from five licensed stack emission points. These are monitored quarterly and the results used to generate a yearly emission in kg.

Fugitive emissions are considered to be minor and are not being included as a potential output for this year's Mass Balance report.

There is potential for water circulating in the paint spray booths to absorb DCM and the sludges, when disposed of, would contain DCM. This sludge was analysed and the amount of DCM contained in it determined.

There is no trade effluent generated on site. The spray booths are continuously recirculated with the sludge removed as already described. The bunding and drainage used on site means that the emissions to surface waters are assumed to contain no solvent. Justification for this is provided by the results of a solvent screen carried out on the surface water discharge which indicated no DCM was present.

Interpretation of PER Results

The value of the PER to the Agency and the industry is in the provision of information with which to plan future strategies. A possible number of observations can be made about the PER in this example:

- The relatively high amount of DCM unaccounted for (8%) suggests that fugitive emissions may be a significant source of loss. The applicant is asked to prepare a proposal for the assessment and quantification of fugitive emissions and include the results as part of next year's Annual Environmental Report.
- The accuracy of existing measurement techniques should be examined and records of monitoring equipment calibrations will be sought as part of next years EMP Audit.

POLLUTION EMISSIONS REGISTER

FACILITY IDENTIFICATION														
Facility Name	ACME Engineering Limited													
Register No.	M***													
NationalGrid Reference	01234E 56789N													
Reporting Period (mm-yy to mm-yy)	January 1999 - January 2000													
Production units/amount	Fabricated Sheet Metal Products													
Employee No.	38													
POLLUTANTS SUMMARY														
Pollutant Name	CAS No.	Input	Gross Usage	Outputs								Recovery	Treated	Unaccounted
				Air	MOM	Liquid Effluent	MOM	Waste	MOM	Product	MOM			
Dichloromethane	75-09-2	27550	27550	23345	M	0	M	2045	M	0	E	0	0	2160

MOM - Method of Measurement.

This refers to the method used in determining losses to Air, Water and Land.

The following codes are to be used to demonstrate the method used:

<i>Method</i>	<i>Code</i>	<i>Method</i>	<i>Code</i>
Direct Measurement	M	Material Balance	B
Engineering Estimates	E	Other	O

Table 14: Example of completed PER for Small Engineering/Manufacturing firm