Ricoh Group's Guideline For Environmental Management System

Fourth Edition March 2009

Preface

The environmental problems facing our world cannot be tackled and solved individually by a person, enterprise or state. We each need to recognise the global environmental problems we are facing, with a view to working together to minimise and eliminate them for the future of the world. These issues can only be tackled and solved through the actions of each state, enterprise and person throughout the world.

For a better future we must all work together to continuously solve environmental problems while sustaining development.

In recognition of this fact all members of the Ricoh Group have been working to improve their Environmental Management Systems by placing priority on recycling and resource conservation, energy saving and pollution prevention activities, along with establishing and maintaining Environmental Management Systems based on ISO 14001.

The Ricoh Group manufactures its products successfully through fostering sound relationships with our suppliers. For this reason we believe that our environmental burden rests not only with our environmental activities but also through developing and producing a product that has minimal environmental impact on our world by increased focus on the total life cycle of the product. From raw material acquisition, developing more energy efficient processes, better use of distribution networks, recycling of our product and total waste management systems we can all contribute to a brighter future.

Therefore, as we move into the 21st. Century we are looking to forge new partnerships with our suppliers in which the reduction of environmental burden and the avoidance of environmental risks will be carried out as the common tasks of our business life.

We thank you for your understanding of our aims and look forward to working with you.

Kenichi Kanemaru
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Procurement Control Center
Production Business Group
Executive officer
Ricoh Company, Ltd.

Ricoh Green Procurement Policy

Ricoh recognise environmental conservation as one of the most important missions given to mankind and to this end we have striven to be an environmentally friendly enterprise.

As testament to this view all manufacturing facilities within the Ricoh group have obtained certifications under ISO 14001. Each site has created Environmental Action Plans and work to continually improve our activities, products and services in line with these plans.
Although control of our internal systems is important, we also recognise that our suppliers have an important role in reducing the environmental burden throughout our product's lifecycle.
In recognition of this we are planning to obtain our components and materials from suppliers who have, or will have, obtained certification under ISO14001 (or equivalent), or who will have actively striven for environmental conservation by following The Ricoh Green Procurement System. Our target is that all suppliers will gain certification under ISO14001 (or equivalent) or The Ricoh Green Procurement system by March 2003.
From this point in time Ricoh will be requiring all new suppliers to be conducting business in an environmentally friendly manner.

We look to our suppliers to voluntarily understand and address their environmental activities and work with us to achieve our environmental targets. We intend to work with you to address all issues (quality, environmental, technical and commercial) with a view to improvement activities, in order to achieve long-standing partnerships with our suppliers.

Introduction to Ricoh Green Procurement System

Background

The following documentation has been produced to help Ricoh suppliers incorporate Ricoh's Green Procurement System into their organisation and details all the steps necessary to become an approved supplier to Ricoh.

1. Green Procurement Audit Guidelines

The Green Procurement Audit Guideline document specifies the controls we expect you to put in place when implementing your Environmental Management System.

2. Green Procurement Workbook

The Ricoh Green Procurement Workbook is aimed at helping you introduce an Environmental Management System into your organisation.

Objective of Green Procurement Workbook

Ricoh requires the submission of an Environmental Action Plan as part of the implementation of your Environmental Management System. For this plan to have meaning it is necessary that an initial review be carried out on your site. This review can then be used as a base upon which year on year improvements and plans can be compared and contrasted. It can also be used to collate the data on which your self-assessment can be based, prior to Ricoh audit.

The first chapter of the Workbook comprises of your Initial Review of Burden data. You should start investigating your Burden Data immediately. We will offer any support you may need in order to complete your Burden Data.

The second chapter of the Workbook details the creation of an Environmental Action Plan. This section includes a detailed description of what should be included in your plan, to satisfy the minimum requirements in the Green Procurement System.

The third and final chapter of the Workbook is the implementation of your Environmental Management System. This section outlines the importance of completing a Self-Assessment and provides you with a step by step Self-Assessment Example.

Completion of your Environmental Management System

Once you have implemented your Environmental Management System, and confirmed this via your *'self-assessment'* results, we intend to conduct an environmental audit in order to ascertain that you have implemented a System that meets the requirements of Ricoh's Green Procurement System.

This type of activity will become a regular feature of the Ricoh/Supplier partnership.

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Audit Guidelines

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Green Procurement System Implementation Schedule

Thank you for choosing to implement The Ricoh Green Procurement system.

Detailed below are the activities you should follow to become an approved Ricoh supplier under the Ricoh Green Procurement Guidelines:

I. Submission of your proposed implementation schedule. This schedule must include the following activities:

1) Initial Review
- Establishment of Environmental Aspects of business (Environmental Burden Data and Significant Environmental Aspects List)
- Establishment of compliance with legislation (List of legislation and regulations)

2) Environmental Action Plan
- Establishment of your objectives and targets to reduce your environmental burdens
- Creation of your Environmental Action Plan

3) Implementation of your Environmental Management System
- Establish structure and responsibility
- Establish an Environmental Policy
- Establish Training, Awareness, and Competence requirements
- Establish Communication Procedures
- Establish Document control
- Establish Operational control
- Establish procedures for Emergency Preparedness and Response
- Establish procedures to monitor and measure your key activities
- Establish procedures to monitor and measure corrective actions
- Establish Environmental Records
- Perform a Self-Audit (Self-Assessment)
- Establish a Management Review Process

4) Submission of self-assessment result to Ricoh
- Include preliminary date for Ricoh audit

II. Implementation of Ricoh Green Procurement System.
The implementation of your Environmental Management System will follow your proposed schedule and cover all points specified above.

III. Submission of your self-assessment document
When self-assessment is complete please submit to Ricoh with proposed audit date.

IV. Ricoh audit

To be arranged upon acceptance of self-assessment result.

1. Initial Review

1. Planning (Environmental Aspects)

Ricoh Requirements

Your organisation must complete the following items, and maintain a list in which all of your Significant Environmental Aspects are identified.

a) You must identify the Environmental Aspects of all of your activities, products or services that can be controlled and over which you can be expected to have influence and introduce a system to establish which of those aspects are significant to your company. All identified Significant Environmental Aspects must be listed in a Significant Environmental Aspects list.
   - Note: When considering your Environmental Aspects attention must be paid to Normal, Abnormal and Emergency Conditions.

b) Information related to Significant Aspects must be kept up to date.

Audit Check Points

We will check whether the Significant Environmental Aspects list is current (taking into account newly installed equipment, an amendment to a law etc) and complete.

The tables in the Green Procurement Workbook will help your organisation to review current environmental burdens and identify all Significant Environmental Aspects relating to your operations.
This information can also help you to create an Environmental Action Plan (Chapter 2) and perform a self-assessment (Chapter 3).

Note: An example of a Significant Aspects list is shown in Appendix 2

2. Legal and Other Requirements

Ricoh Requirements

Ricoh expect your organisation to put in place procedures to:

1. Identify all legal regulations applicable to the Environmental Aspects of the business.
2. Identify any other requirements applicable to the Environmental Aspects of the business.
3. Control access to regulations across the organisation

In addition, you must establish and maintain a list of all Legislation/Regulations/other requirements applicable to the Environmental Aspects of your business.

Audit Check Points

The following points will be checked:

- There is a list of legal and other requirements
- There is documentation supporting your list of legal and other requirements
- There are procedures in place to control access to your legal documentation.
- The amendments made to your list of legal/other documents when introducing any new equipment, buildings or plants.

Note: An example of a legislation and regulation list is shown in Appendix 3

2. Environmental Action Plan

1. Objectives and Targets

Ricoh Requirement

Your organisation must establish and maintain documented environmental objectives and targets, at each relevant function and level.

In addition you must consider the following, in setting and reviewing the environmental objectives of your organisation:

1. Legal and other requirements
2. Significant Environmental Aspects
3. Your technology options and financial, operational and business requirements
4. The views of interested parties

Your objectives and targets must be consistent with your environmental policy, including commitment to the prevention of pollution.

Once you have collated all of the necessary information you will be expected to produce an Environmental Action Plan.

Audit Check Points

Your Environmental Action Plan will be examined to assess whether or not the establishment of the objectives and targets has been based on the Significant Environmental Aspects list.

Note: An example of documented objectives and targets is shown in Appendix 4

2. Environmental Action Plan

2. Creating an Environmental Action Plan

Ricoh Requirement

Your organisation is expected to establish and maintain an Environmental Action Plan to achieve your environmental objectives and targets.

The Environmental Action Plan shall include the following:

a) Designation of responsibilities for achieving environmental objectives and targets.
b) The means and time frame by which objectives and targets are to be achieved.

If the project relates to the new developments and new or modified activities, products or services, the Environmental Action Plan should be amended, where relevant, to ensure that environmental management applies to such projects.

Audit Check Points

Ricoh will assess your Environmental Action Plan prior to auditing your system to ensure that it covers all requirements of the Ricoh Green Procurement system. Chapter 2 of the Green Procurement Workbook advises how to create an Environmental Action Plan.

Note: An example of an Environmental Action Plan is shown in appendix 4.

3. Implementation of Environmental Management System

1. Structure and responsibility

Ricoh Requirement

You must define the roles, responsibilities and authorities of the personnel, function or level pertaining to your organisation's environmental management.

You should document and communicate the above roles, responsibilities and authorities appropriately within your organisation.

Top management must appoint a specific Environmental Management Representative(s).

The roles, responsibilities and authorities of the Environmental Management Representative(s) should be defined and shall include the following requirement:

- Reporting the performance of the Environmental Management System to Top management in order to review and improve it.

Audit Check Points

We will look for evidence of the following-:

- the roles and responsibilities relevant to the environmental management system have been defined.
- the responsibilities of key personnel have been publicised within the organisation.

We will request documentary evidence to support the progress of the environmental action plan.

2. Environmental policy

Ricoh Requirements

Top Management must produce an environmental policy that:

a) Is appropriate to the nature, scale and environmental impacts of your organisation's activities, products and services
b) Includes commitments to Continual Improvement, Pollution prevention, and compliance with the relevant environmental regulations and legislation and any other requirements to which your organisation subscribes
c) Provides a framework for setting and reviewing environmental objectives and targets
d) Is documented, implemented, maintained and communicated to all employees

Audit Check Points

Ricoh will ensure that copies of the environmental policy are presented appropriately at the premises and that employees are aware of the policy.
(random interviews with employees may take place to ascertain awareness and understanding of the policy)

We will check that the policy addresses the commitment of the organisation to its environmental objectives and that you demonstrate commitment to the following points:

- Continual Improvement
- Pollution Prevention
- Compliance with relevant environmental legislation and regulations
- Compliance with any other requirements

Note - An Example of an Environmental Policy is shown in Appendix 1.

3. Training, awareness and competence

Ricoh Requirement

You must identify all training needs and ensure that all personnel, whose work may create a significant impact on the environment, have received appropriate training.

Personnel who perform the tasks that cause significant environmental impacts must be competent on the basis of appropriate education, training or experience.

You must establish and maintain procedures to ensure your employees, or members at each relevant function and level, are aware of their roles and responsibilities in achieving conformance with the environmental policy and procedures, and with the requirements of the Environmental Management System (including emergency preparedness and response requirements).

Audit Check Points

We will conduct interviews with a number of employees to confirm that they are aware of their responsibilities as detailed above.

In addition, checks will be made to ensure that personnel performing the tasks, for which legal compliance or competence is required, have a legal licence.

4. Communication

Ricoh Requirements

With regard to your Significant Environmental Aspects list and the Environmental Action Plan, your organisation must establish and maintain procedures to control the receipt, documentation and response to relevant communication from external interested parties.

Audit Check Points

We will follow through a number of requests from external parties, where applicable, to ensure conformity with the above procedure.

5. Document Control

Ricoh Requirement

Your organisation must establish and maintain procedures for controlling all documents required by this policy to ensure that:

a) They are regularly reviewed and revised and approved for adequacy by authorised personnel.
b) Current versions of relevant documents are available and in their proper locations for effective functioning of the environmental management system.

Audit Check Points

We will check that the current versions of the following documents are available and in their proper locations.

- Environmental Policy (Appendix 1)
- Significant Environmental Aspects list (Appendix 2)
- A Regulation and legislation list (Appendix 3)
- An environmental action plan (Appendix 4)
- Procedures created by the organisation.

6. Operational Control

Ricoh Requirements

Your organisation must identify those operations and activities that cause the identified Environmental Aspects.

In addition the organisation must plan any activities, including maintenance, in order to ensure that they are carried out under the following conditions:

a) Establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the environmental policy and the objectives and targets,
b) Stipulate operating criteria in the procedures,
c) Establish and maintain procedures related to the identifiable Significant Environmental Aspects of goods and services used by the organisation and requirements to suppliers and contractors.

Audit Check Points

We will check that you have implemented procedures for operational control that adhere to the conditions above. (For example, by identifying a way in which your carbon dioxide emissions can be reduced)

7. Emergency Preparedness and Response

Ricoh Requirements

You must establish and maintain documented procedures to identify the potential for, and the response to, accidents and emergency situations.

Audit Check Points

We will check the effectiveness of your procedures to deal with emergency situations/accidents. We expect you to test such procedures, if practicable, and we will require documentary evidence of responses following a test or live situation. Examples of emergency situations may be a sudden shut down of electric power, a fire, a flood, a heavy storm, or a bomb scare.

8. Monitor and measure Key Activities

Ricoh Requirement

You must have established and maintained procedures to monitor and measure, on a regular basis, the key operations and activities that have Significant Environmental Aspects in relation to the business.

Monitoring and measuring includes recording information to track performance, relevant operational controls and conformance with objectives and targets.

You must establish and maintain a procedure to regularly evaluate compliance with relevant environmental legislation and regulations.

Audit Check Points

We will check the results of monitoring/measurement of the organisation's key operations and activities that can have significant impact on the environment.
This will include records of calibration on monitoring equipment and the results of compliance with relevant environmental legislation and regulations.

Note: An example of a legislation and regulation list is given in Appendix 3

9. Monitor and Measure corrective and preventative actions

Ricoh Requirements

Any corrective and preventative action should be appropriate to the magnitude of the actual or potential non-conformance and the environmental impact encountered. Procedures should be modified to reflect the corrective or preventative action following the identification of a non-conformance.

Audit Check Points

We will check corrective and preventative action records to ensure effectiveness of the corrective or preventative action and to ensure that modification of existing procedures or implementation of new procedures reflects recommendations.

10. Records

Ricoh Requirement

Environmental records must be legible, identifiable and traceable to the activity, product or service involved.

Environmental records must be retrievable and protected against damage, deterioration & loss.

The retention times of the records must be established and recorded.

Audit Check Points

We will ensure that your organisation has stored and maintained the following environmental records:

- Records on corrective or preventative actions
- Records on performance of the reduction of carbon dioxide emissions, waste generations, and other environmental burdens.
- Records on the results of monitoring or measurement of the key operations and activities causing a significant environmental impact.

11. Environmental Management Audit

Before the Ricoh initial audit or periodic re-evaluation for Ricoh's certification and registration of a supplier, you are *recommended* to perform a Self-Assessment.

Note: An example of an Environmental Management System Audit Self-Assessment is shown in Chapter 3 ' Implementation of Environmental Management System' of the Green Procurement Workbook

12. Management Review

Ricoh Requirements

Top management shall, at intervals that it determines, review the environmental management system, to ensure that it remains suitable, adequate and effective.

The management review process shall ensure that the necessary information is collected to allow management to carry out its evaluation. This review shall be documented.

Audit Check Points

We will ensure that the management review is addressing the need for possible changes in the policy, objectives and other elements of the environmental management audit results.

In addition we will check that you have considered all changes in circumstances and the commitment to continual improvement when addressing the need for these changes.

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Ricoh Group's Guideline For Environmental Management System

Workbook

1. Initial Review

a) Establishing your Environmental Burden Data

Businesses that wish to assess their environmental related activities must first ascertain the burden their operations place on the environment.

This Workbook provides a number of different checklists to help you assess your environmental burdens generated by the activities of both your office and production facilities.

For the purposes of the Ricoh Green Procurement System we require you to collect, and report on, the environmental burdens detailed below. The information you collect will be used to monitor your Environmental Burdens for year on year improvements.

1) The amount of carbon dioxide emitted

The amount of carbon dioxide emitted during the course of operations should be measured and the results converted into figures representing the weight of carbon discharged (table 1).

2) The amount of waste discharged from your processes

The amount of waste products generated from operations should be calculated (table 2).

3) The amount of general waste discharged

The amount of water, paper, packaging and other materials used during operations should be calculated (table 3).

4) The amount of chemical substances you use and store

The amounts of chemicals you use and store in the course of operations should be recorded.

This data should be recorded according to necessity, using methods that suit your employees working conditions and practices.

The results of these assessments should be compared annually with the documented results of the most recent comparable assessments (preferably those from the previous year). Where possible, results covering a two-to-three year period should be studied to identify trends.

The following sections are designed to assist you in planning environment-related activities, compiling your Significant Environmental Aspects list, compiling your List of Legislation and Regulations and producing your Environmental Action Plan.

1) Carbon Dioxide Emissions (Table 1)

The following table should be used to identify and monitor your carbon dioxide emissions. The emission of carbon dioxide by businesses and factories as a result of fuel combustion is calculated by multiplying energy consumption by the carbon dioxide emissions coefficient for the fuel used. The figures calculated using these emission coefficients are in units of KgC and represent the weight of carbon.

For example:

100kgC or 100kg of carbon = An emission of approximately 367 kg of carbon dioxide.

The coefficients for each kind of fuel are averages and may require slight adjustment to allow for variations in quality. For the purpose of this Workbook you may use your own known fuel coefficients.

Where electric power is purchased, although carbon dioxide is not emitted by the facilities consuming that power, the consumption can be regarded as contributing to the emission of carbon dioxide, as the plant where the power is generated is contributing to the emission of carbon dioxide. Thus for the purpose of this Workbook, carbon dioxide emitted as a result of the consumption of purchased electric power will be calculated as if emissions were from direct combustion of fuels.

The following table is intended to serve as a model for determining your carbon dioxide emission levels and should be amended to suit your own companies operating conditions and practices, if necessary.
To ensure that useful comparisons can be made, it is essential that the calculation method remains constant year on year.

Notes for completing Table 1:

Fuel:
Record your fuel consumption (including gas, oil etc) for the year in question, excluding any fuel used as a raw material in the manufacture of products.

Purchased electric power:
Record the volume of electric power supplied by your electricity supplier during the year in question.

Alternative Energy Sources:
Record energy obtained from solar, geothermal, or other alternative energy sources on the amount of heat used.

Other:
Steam or other forms of heat supplied by outside suppliers or from neighbouring facilities or any other forms of energy not recorded elsewhere should be recorded here.

Carbon dioxide emission coefficient:
For energy sources not listed in table 1 carbon dioxide emission coefficients should be based on available information.

Carbon dioxide emissions:
To obtain this figure, multiply your energy consumption by the carbon dioxide emission coefficient

Carbon dioxide emission subtotal (Excluding emissions from fuel used for motor vehicles):
Add the figures for the carbon dioxide emissions listed in the table.

Fuel used for motor vehicles (E.g. Company Cars)
Record the amount of fuel used by your motor vehicles
Where the transportation of products is entrusted to outside contractors the emission of carbon dioxide resulting from such transportation should be included in the total if possible.

Carbon dioxide emission total (Including emissions from motor vehicles)
Add the emission totals from table 1

Carbon dioxide emission in operations related units

The emission totals from table 1 should be used to obtain figures for carbon dioxide emissions in the following categories: Per tonne of production, per €10,000 worth of goods shipped, per employee or per square meter of floor space.

NB: €10,000 is an arbitrary figure. You may choose a more appropriate figure, providing the same figure is used in future years.

Recovery of Waste Materials

If you recover any waste materials generated by incineration on <u>your</u> site please provide details of this activity in Table 1 showing the amount and type of waste materials incinerated and carbon dioxide generated as a by-product of this activity. The table below can be used as a guide to the typical CO^2 emission coefficients used to establish the amount of CO^2 emitted through the recovery process, although you may use your own known figures if appropriate.

Waste Material Recovered	CO^2 Emission Co-Efficient
Pulp black liquor	323 KgC/t
Domestic Waste	239 KgC/t
Industrial Waste (sludge)	300 KgC/t
Industrial Waste (oil)	800 KgC/t
Industrial Waste (plastic)	700 KgC/t
Industrial Waste (paper)	450 KgC/t
Industrial Waste (wood)	450 KgC/t

Table 1: Carbon Dioxide Emissions

Energy Consumption		Amount Used	Carbon Dioxide Emission Co-Efficient	Carbon Dioxide Emission
Fuel	Kerosene	kl	690 kgC/kl	( ) kgC
	A Grade Heavy Oil	kl	736 kgC/kl	( ) kgC
	B Grade Heavy Oil	kl	773 kgC/kl	( ) kgC
	C Grade Heavy Oil	kl	802 kgC/kl	( ) kgC
	LPG	t	820 kgC/t	( ) kgC
	Coal	t	705 kgC/t	( ) kgC
	City Gas	m ³	0.584 kgC/m ³	( ) kgC
	Natural Gas	m ³	0.584kg/³	( ) kgC
	Waste Materials	( ) ( )	( ) kgC/ ( )	( ) kgC
Energy Sources	Purchased Electric Power	KWh	0.104 kgC/kWh	( ) kgC
	Solar Power	KWh	0.0 kgC/kWh	( ) kgC
	( )	( ) ( )	( ) kgC/ ( )	( ) kgC
Other Heat Supply	Steam	T	58.1 kgC/t	( ) kgC
	( )	( ) ( )	( ) kgC/ ( )	( ) kgC
	( )	( ) ( )	( ) kgC/ ( )	( ) kgC
Carbon Dioxide Emission Sub-Total (Excluding Automobile Emissions)				**( ) kgC**
Use of Fuel – Automobiles	Petrol	Kl	643 kgC/kl	( ) kgC
	Diesel	Kl	721 kgC/kl	( ) kgC
	( )	( ) ( )	KgC/ ( )	( ) kgC
	( )	( ) ( )	KgC/ ( )	( ) kgC
Carbon Dioxide Emission Sub-Total (Including Automobile Emissions)				**( ) kgC**
Carbon Dioxide Emissions by Operations-Related Units		**Excluding Automobile Emissions**		**Including Automobile Emissions**
	Per Production Volume	KgC/t		KgC/t
	Per €10,000 worth of shipped goods	KgC/€10,000		KgC/€10,000
	Per Employee	KgC/per employee		KgC/per employee
	Per M² of floor space	KgC/m²		KgC/m²

2) Waste Material Emissions (Table 2)

Table 2 can be used to record the amount of waste emitted from offices and plants during one year. Waste, in this case, refers both to waste without any value and waste with value, including reusable paper and scrap metal.

Table 2 is intended to serve as a model for determining waste emission levels and can be amended to suit your own operations and practices, if necessary.
As mentioned previously, it is important to ensure that annual emission volume is compared using the same measurements year on year.

Notes for completing table 2:

Classification of waste:
Waste discharged through business activities should be classified by type-:

- *Industrial waste*, which may be disposed of by yourself or by an industrial waste disposal company - includes ash, dust and sludge, as well as waste oil, waste acid and waste alkali generated from operations.

- *Municipal waste* is waste other than industrial waste that is disposed of by local government bodies.

Amount of waste emitted:
Record the amount of waste discharged from operations

Amount of waste recycled:
Of the amount of waste emitted in table2, how much is recycled? Record the amount of waste taken to a recycling company for recycling, but do not include self-incinerated waste.

Waste disposed of:
Calculate the amount of waste disposed of by subtracting the amount of waste recycled from the total amount of waste generated from operations.

Recycling rate:
Calculate the proportion of waste recycled as a percentage of total waste generated from operations.

Total Waste:
Record the total amount of each form of waste. (E.g. Add all the amounts of waste/s emitted and put in the 'Total Amount of Waste Emitted' box)
The total net recycling rate can be calculated by using the formula below:

Net Recycling rate (%) = Total Recycled amount/ Total waste emitted x 100

Waste emitted in relation to scale of operations:
As in table 1, divide the totals by production volume, goods shipped, number of employees and floor space to determine the emission of waste in relation to the scale of operations.

Hazardous wastes:
Record the amount of hazardous waste produced, the amount of hazardous substances recycled and the amount disposed of. Hazardous waste refers to specially controlled waste as defined by Part 1 of the EC Special waste regulations. Specially controlled wastes are those for which special regulations have been established due to having properties capable of causing explosion, toxicity, or infection or posing other dangers to peoples health and the environment.

Hazardous waste emitted in relation to the scale of operations:
As above, divide the totals derived by production volumes, goods shipped, number of employees and floor space, to determine the emission of hazardous waste in relation to the scale of operations.

Table 2 - Waste emitted from offices and plants

Classification of Waste	Amount of Waste Emitted	Amount of Waste Recycled	Waste Disposed	Recycling %
Municipal Waste				
Paper	t	t	t	%
Plastic	t	t	t	%
Glass	t	t	t	%
Wood	t	t	t	%
Aluminium	t	t	t	%
Steel	t	t	t	%
Canteen	t	t	t	%
Industrial Waste				
	t	t	t	%
	t	t	t	%
	t	t	t	%
	t	t	t	%
	t	t	t	%
Total Waste Calculation (Municipal + Industrial)				
	Total Waste Emitted	Total Waste Recycled	Total Waste Disposed	Net Recycle Rate
Total Waste	t	T	t	%
Waste emission related to scale of operations				
Per production volume				
Per €10,000 of shipped goods				
Per employee				
Per m² of floor space				
Hazardous Waste				
Hazardous Waste	t	t	t	%
Hazardous waste emission related to scale of operations				
Per production volume				
Per €10,000 of shipped goods				
Per employee				
Per m² of floor space				

3) General Waste

The tables below can be used to record the amount of water and paper, along with other raw materials and packing materials, used in office and plant activities. Tables 3 and 3.1are intended to serve as a 'model' for determining waste emission levels and can be amended to suit your own operations and practices, if necessary. As mentioned previously, it is important to ensure that annual emission volume can be compared using the same measurements year on year.

Table 3 : Amount of Resources Used in Operations

Resources	Classification	Amount Used
Water	Piped Water	
	Water for Industrial Use	
	Underground Water	
	Other ….	
Paper (Office Related)	Copy Paper (Split into % recycled paper used and non-recycled paper)	
	Computer Paper (Split into % recycled paper used and non-recycled paper)	
	Other paper	
	Total paper used	
Raw Materials	Amount of raw materials used	
Packaging Materials	Amount of packaging materials used	

Table 3.1 Resources used in operations in relation to scale of operations

Amount of resource used	Water	Paper	*( )	*( )
Per Production Volume				
Per Goods Shipped (€10,000)				
Per number of employees				
Per Floor space (m2)				

( ) - Refers to any other materials or resources you may use in your operations that you wish to record within this table.

4) Amount of Chemical Substances Used and Stored

Table 4 consists of a checklist for tracking the volume of chemical substances used and stored in the operations of offices and plants.

There are many chemical substances that require caution when handled so as to protect the environment. Some local government bodies offer guidance in the usage and control of such substances, having made lists of chemical substances that ought to be handled with particular care. Where such guidance is available, it should be adhered to.
Where guidance is not available, the names, amounts used, and the amounts in storage of substances that need to be carefully monitored should be recorded in Table 4 with reference to the information given below and by reference to the sources detailed in the following section.

Heavy Metal Compounds

Cadmium is used in such items as compound metals, plating, pigments, and PVC stabilisers. Mercury is used in such items as compound metals, thermometers, fluorescent lamps, and batteries, as well as in chemical manufacturing processes. Care should be taken to ensure such hazardous heavy metals and their compounds are not released into the environment.

Organic Chlorine based agents

Organic chlorine based agents, including trichloroethylene, tetrachloroethylene, 1,1,1 trichloroethane and carbon tetrachloride are used in organic solvents and cleaners. Measures should be taken to prevent such solvents and cleaners from seeping underground and contaminating underground water as well as to prevent evaporation.

Types of Freon and Halon Gases

Such Freon gases as Trichlorofluoromethane (CFC 11), which is used in refrigerants for refrigerators and air conditioners, spray injection agents, and cleansing agents for electronic parts, damage the ozone layer, care is necessary in using hydroflurocarbons, as these also can cause global warming if emitted into the atmosphere

Aromatic Hydrocarbons

Aromatic hydrocarbons, which include Benzene, Toulene and Xylene, are used in a wide range of solvents and organic chemical substances and materials. Given the carcinogenic nature of such substances, vigorous efforts should be made to minimise evaporation and discharge into water.

Table 4: Usage and Storage amount of chemical substances

Name of Chemical substances	***Amount Used in tonnes***	***Amount Stored in tonnes***
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
	tonnes	tonnes
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b) Identification of and Sources of Environmental Legislation

As part of the Green Procurement system Ricoh will expect you to put in place procedures to identify and take account of legislation relevant to your business and its environmental aspects.

The type and volume of environmental legislation will vary according to the business area you operate in. In addition, the range of application of European Directives will vary according to the country you are based in, as they may interpreted differently in different countries.

To understand the types of legislation that may be relevant to you please see detailed below a number of sources that may be used to identify key legislation relevant to your operations-:

1. The EU Environmental Information & Legislation Database

   This can be found on the Internet at **http://kola.dcu.ie/~environ/welcome.htm**

2. The NSCA Pollution Handbook

   This annual publication provides a comprehensive overview of legislation on Integrated pollution control and summarises relevant EC Directives/Regulations to show how they have been interpreted in the UK.

   Reference : ISBN 0 903474 38 7

3. The European Environment Agency

   The agency's web page can be found at **http://www.eea.eu.int/** and provides links to national web sites for environmental information by country on **http://eionet.eea.eu.int/**

Information relating to environmental issues may also be found by contacting your National information networks, such as The Environment Agency (UK) and The French Environment Institute (IFEN) for further details.

Environment Agency (EA)

Contact : Head Office

Rio House
Waterside Drive, Aztec West
Almonsbury
Bristol
BS32 4UD

Tel: 01454 624400
Fax: 01454 624409
Internet: http://www.environment-agency.gov.uk/

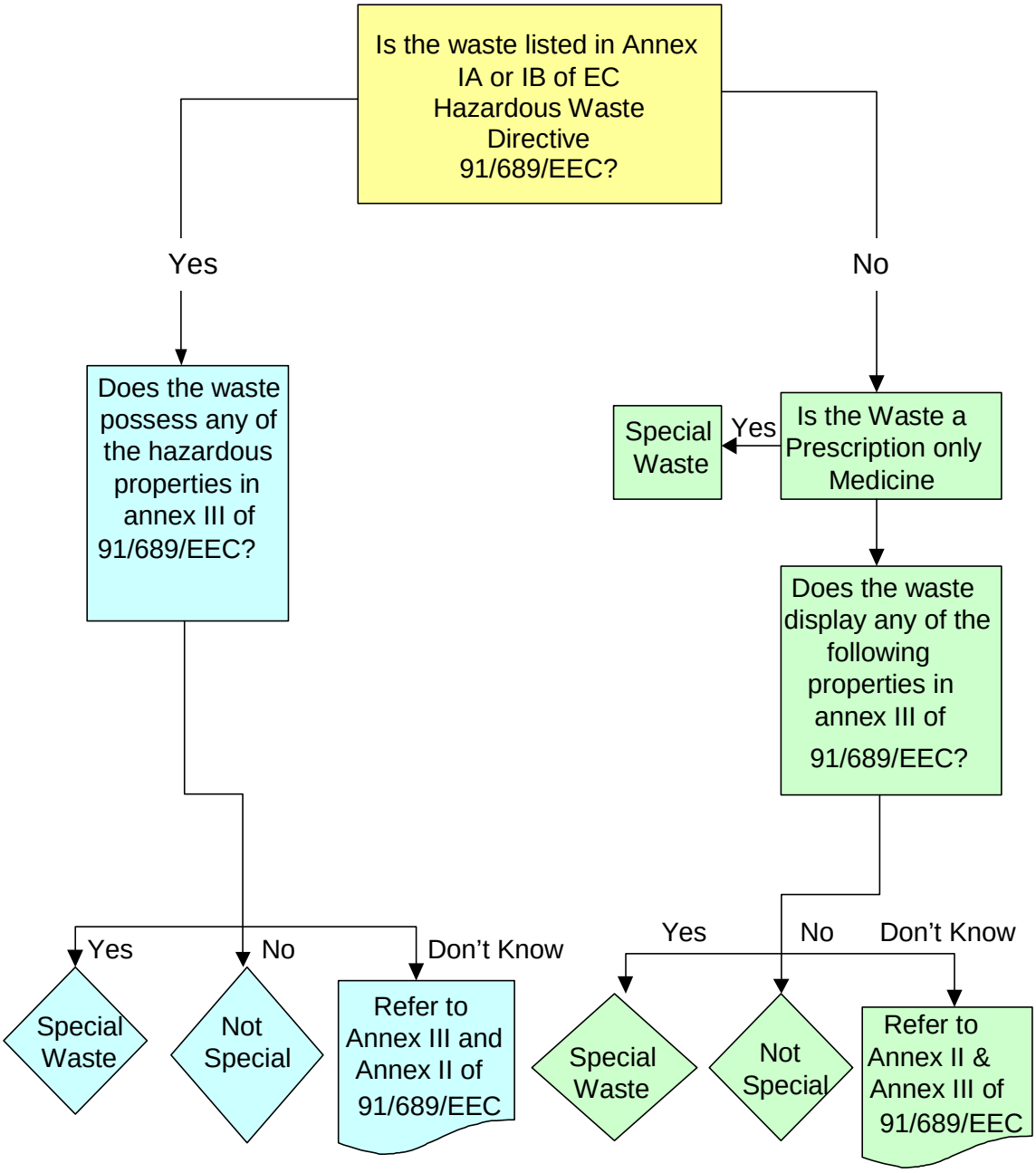
The French Environment Agency (IFEN)

Institut français de l'environnement
61, boulevard Alexandre Martin
45058 ORLEANS CEDEX 1

Tel: 02 38 79 78 78
Fax: 02 38 79 78 70
Internet: ifen@ifen.fr

c) How to Define Special Waste

The following flow chart can help you to define any of your wastes that may be deemed to be 'special' and should be used in conjunction with EC Directive 91/689/EEC .



Now that you have completed your environmental burden data tables, you have recognised and assessed your environmental burdens and may proceed with your initial review. From this point the following documentation must also be produced:

- **A Significant Environmental Aspects list**
  An example of a Significant Environmental Aspects list is shown in appendix 2

- **A Legislation and Regulation list**
  An example of a Legislation and Regulation list is shown in appendix 3

Note: Both of the documents described above must be produced in line with the Green Procurement Audit Guidelines.

2. Creating an Action Plan

a) Defining your Objectives and Targets

Before you can produce an environmental action plan you must have considered your objectives and targets in relation to your companies operations and activities and identified significant aspects.

Objectives and targets must be documented and therefore may be submitted in your action plan.
(An example of objectives and targets within an Environmental Action Plan is shown in appendix 4)

b) Creating your Action Plan

This section includes a detailed description of what should be included in your Environmental Action Plan to satisfy the minimum requirement of the Green Procurement System.

Summary of Business Activities

At the beginning of your action plan, please include the following information.

- The name of your company (Company Name, Name of Plant, or Store Name) and it's Managing Director
- Your Company Address
- The name of the Environmental Management Representative and contact numbers
- A brief summary of your Business activities
- A description of the scale of your business (Production volume and shipment value of your main products, the number of employees, and your site floor space)

Targets for reducing your burden on the environment

Based on the results of your environmental burden data collated in Chapter 1 (Initial Review) formulate and list the following targets.

1. A target for reducing your carbon dioxide emissions
2. A target for reducing your waste disposal volumes.
3. A target for reducing your other impacts on the environment

- Targets should be stated in terms of reduction in size over a period of time (For Example 5% per annum) and per scale of operations, based on **one** of the following criteria-:
  - floor space,
  - production volume,
  - shipping value, **or**
  - per employee.

- Targets may also be stated in terms of a reduction in overall discharge by a certain ratio over a period of several years, or in more specific terms such as improvements in energy utilisation efficiency or recycling rates (e.g., reduce electricity usage by 5%)

- The environmental burdens created from the use of raw materials for business purposes, directly from source or through a manufacturer, can also have reduction targets set, but in terms of natural resource usage, encouragement of recycling, and utilisation of reprocessed items.

- Another approach is to set targets for manufactured and sold products which pose an environmental burden during their usage or during disposal.

Making quantitative assessments of indirect burdens on the environment are very difficult. The following are examples of estimates of the emission of carbon dioxide produced.

1. Ratio of Carbon dioxide emitted to the cost of water processed	
Water Works	1038kgC/€10,000 (0.115kgC/m3)
Industrial Water	779kgC/€10,000 (0.0174kgC/m3)
Sewerage	1492kgC/€10,000
2. Ratio of Carbon Dioxide Emitted to the cost of Industrial Waste Disposed	
Waste	319kgC/€10,000
3. Ratio of Carbon Dioxide Emission per Distance of Transportation	
Buses	12kgC/1000 passengers/km
Motor Vehicles	39kgC/1000 Passengers/km
Trucks	81kgC/tonne/km
Railways	4.9kgC/1000 passenger/km or 5.9kgC/tonne/km
Ships	236kgC/1000 passengers/km or 9.7kgC/tonne/km
Aircraft	33kgC/1000 passenger/km or 451kgC/tonne/km
4. Carbon Dioxide emissions per tonne of paper, bottles and cans recycled.	
Paper	231kgC/t
Glass Bottles	82kgC/t
Steel Cans	381kgC/t
Aluminium Cans	1841kgC/t

From the second year of participation in the program, the targets set in the previous year should be reviewed, and revised as necessary.

Specific Commitments Regarding Environmental Preservation

Based on the results of the Environmental Burden Data in Chapter 1, create a schedule to help you achieve your environmental objectives and targets.

Your schedule format can be categorised by your identified environmental burdens (for example Carbon Dioxide emissions, waste volumes etc.) or may be based on the list of items below.

1. Reducing the burden that factories, offices, retail outlets and other facilities have on the environment.
2. Environmental considerations for building construction, demolition process and development projects.
3. Reducing the Burden of traffic on the environment.
4. Using materials, products, and services that place a minimal burden on the environment.
5. By designing Environmentally Friendly Products.
6. Providing information, contributing to society, and preserving the local environment.
7. Consideration of overseas organisations and giving consideration to environmental issues effecting overseas operations
8. Environmental considerations in investment and financing decisions
9. Ecobusiness and technological development
10. Environmental education and environmental preservation activities
11. Customer relations

From the second year of participation in the program, the plans and schedules set in the previous year should be reviewed, and revised as necessary.

Implementation of an environmental action plan

It is meaningless to create an environmental action plan without first setting and implementing your Schedule. Therefore, it is essential that you review your activities and results at the end of each annual Environmental Action Plan period.

An example of an environmental action plan is shown in appendix 4. Please note this is just an example. It is not necessary to adhere to the same sequence, length or format of the document, provided that the necessary items are presented in a comprehensive manner. It is also acceptable to write simple sentences or to include charts and graphs so that your planned goals are clear.

On completion of your Environmental Action Plan please submit it to Ricoh's Pan European Procurement Centre for their review. (Once your Environmental Action Plan has been approved you may begin to implement your Environmental Management System in line with the Green Procurement Audit Guidelines)

3. Implementation of Environmental Management System

Following the conclusion of your initial review, your approved schedule and action plan you must implement your Environmental Management System. Once your system is complete our intention is to perform an environmental audit.

It will be difficult to know whether your Environmental Management System satisfies all of the Green Procurement System at this stage. Therefore we would advise you to complete the following Self-Assessment and, if satisfied that it does meet Ricoh's requirements, please submit it with a proposed date for your Ricoh Audit to Ricoh's Pan European Procurement Centre.

Note: Please attach any supporting documentation as necessary.

Self-Assessment Example

A. COMPANY DETAILS

Name of company:

Address:

Postcode:

Telephone Number: Fax Number:

Environmental Management Representative:

Position:

Holding/parent organisation (if applicable):

B. COMPANY ACTIVITIES

Nature of business:
(Attach extra sheet if necessary)

ACTIVITY	ON SITE	CORPORATE
Product/service design Comments:	YES / NO	YES / NO
Production of raw materials Comments:	YES / NO	YES / NO
Packaging of supplies Comments:	YES / NO	YES / NO
Transport/distribution Comments:	YES / NO	YES / NO
Sales/use Comments:	YES / NO	YES / NO
Recovery/Recycling/Reuse/ Disposal Comments:	YES / NO	YES / NO

C. SELF-ASSESSMENT QUESTIONS

	Criteria	Evaluation Result/Evidence
Identification of Environmental Aspects	The environmental aspects of your business have been considered -: • Carbon dioxide emissions • Waste emissions (including hazardous waste) • General Waste emissions (including water usage) • Chemicals used and stored	
Identification of relevant legislation and other requirements	Legislation and other requirements have been considered-: • All legal regulations applicable to the environmental aspects of the business have been identified • Other requirements applicable to the environmental aspects of the business have been identified (such as the Ricoh Green Procurement audit guidelines) • Access to regulations within the company is controlled/maintained	
Objectives and targets	Objectives and targets have been established that-: • Take into account environmental burden data and legislatory (or other) requirements • Take into account the views of interested parties • Are documented	

Environmental Policy	An environmental policy has been established that is-: • Appropriate to nature of business/environmental aspects • Is committed to pollution prevention, continual improvement, compliance with legislation/other requirements • Is documented, implemented, maintained and communicated	
Environmental Management Structure	Environmental Management structure has been implemented including the following-: • Environmental management representative has been appointed • Roles and responsibilities relating to environmental issues have been assigned/communicated • Training needs have been identified, communicated and training undertaken where necessary • Communication routes for interested parties have been identified • Controls have been implemented to ensure all documents are reviewed, revised, approved and current • Operations and activities that have environmental aspects are identified • The potential for accident and/or emergency conditions and the responses thereof have been identified • Key operations and activities having	

	significant environmental aspects are monitored, measured and their results documented • Environmental records are legible, identifiable and traceable to the activity or service involved • Procedures have been created to ensure the above items are controlled/maintained • A pre-Ricoh assessment audit has taken place • A documented Management Review process has been considered/implemented	

Completed by: Date