中小企製造業 環保資源指南

主辦機構 香港工業總會 FHKI

執行單位 BUSINESS ENVIRONMENT COUNCIL 商界環保協會

資助機構 工業貿易署 Trade & Industry Department

Environmental Resource Guidebook for SME Manufacturers 中小企製造業環保資源指南

Environmental Resource Guidebook for SME Manufacturers

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TID SME Development Fund Project "Business Facilitation and Incubation Centre for SME Manufacturers in Hong Kong and Pan Pearl River Delta to Enhance Environmental Excellence"

About this guidebook

This project was developed as part of a larger industrial support project funded by the SME Development Fund of the Trade and Industry Department, HKSAR Government.

The project is led by the Federation of Hong Kong Industries with the Business Environment Council as the implementation Agent to provide technical support.

Disclaimer

About us

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Contents

1. Introduction

This guidebook provides a One-Stop location for business from the following sectors to assist them in understanding of and taking action on environmental issues:

- Food and Beverage Industry
- Printed Circuit Board Industry
- Printing and Packaging Industry
- Textile and Garment Industry
- Toy Industry
- Watch Industry

You can find information, e.g. Food and Beverage Industry, on:

- Key environmental Issues – overview to your sector
- How to get started – environmental management
- Tools to assist your sector on system development and continual environmental improvement
- Relevant legislation to your sector
- FAQs and links to other information

The project is conceived with the aim to reduce and roll back pollution that is affecting residents in Hong Kong and the Pearl River Delta (PRD) region.The key mission of the programme is to help SME manufacturers build capacity to address upcoming environmental challenges from local authority and global supply chain and transfer practical knowledge to SMEs and the next generation of industrialists.

Objectives

- To build capacity to address up-coming environmental challenges from local authority and global supply chain
- To establish an One-Stop Knowledge Database (OKD)
- To transfer practical knowledge to SMEs and next generation of industrialists
- To initiate a long-term environmental culture in Hong Kong's industrial community

2. Industry Overview and Key Environmental Issues

2.1 FOOD AND BEVERAGE INDUSTRY

Overview

Up to June 2006, there are 772 establishments of Food and Beverage Industry in Hong Kong. This sector is dominated by small and medium-sized enterprises with 80% of establishments engaging less than 20 employees.

In general, there are a number of common environmental characteristics of Food and Beverage Industry:

- The wastewaters contain the conventional pollutants of oil and grease, suspended solids, and detergents and have high BOD values.
- The pH may be alkaline as a result of detergents used.
- Grease traps have to be installed resulting in a reduction of the oil and grease concentrations as well as the settleable solids to discharge as a requirement of the food licence issued by the Food and Environmental Hygiene Department.
- It is noted that inadequate design and maintenance of grease traps is a common occurrence, particularly in the small establishments.

(Source: Hong Kong Trade Development Council and Trade and Industry Department)

Challenges for SMEs

Owing to increasingly stringent regulatory requirements and progressively higher social pressure towards environmental protection, manufacturers all over the world have to identify and implement cost-effective measures to properly tackle their environmental problems.

In addition, issues such as food hygiene, raw material availability, production cost and efficiency, and increased competition are also placing pressure on food and beverage processors to improve their environmental and economic performance.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding to global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources

Key Environmental Issues

During the manufacturing of food and beverage, the followings have been identified as key environmental issues of its manufacturing operation:

◎ Use of fuel for cooking ◎ Oily fumes generated during cooking processes ◎ Exhaust emission from vehicles	**Air Emission**
◎ Discharge of oil / grease into the effluent ◎ Discharge of cleansing water	**Water Pollution**
◎ Disposal of food waste ◎ Disposal of spent oil ◎ Disposal of grease trap waste ◎ Disposal of packaging materials	**Waste Disposal**
◎ Noise generated from air emission control equipments ◎ Noise emission from vehicles	**Noise Emission**
◎ Use of fuel for cooking ◎ Use of water for beverage, cooking and cleansing ◎ Use of electricity for equipments, air conditioning and lighting ◎ Use of chemicals for preserving ◎ Use of packaging materials (e.g. carton boxes) ◎ Fuel consumption by vehicles	**Resource Consumption**

For detailed information, please go to Appendix I (P.30).

2.2 PRINTED CIRCUIT BOARD INDUSTRY

Overview

In Hong Kong, most of the printed circuit board factories are small and medium-sized enterprises.

The Printed Circuit Board (PCB) manufacturing industry shares many of the problems of the electroplating industry due to the similarity in unit processes involved. The environmental characteristics include:

- Large quantities of chemical waste including spent etchants (containing high concentrations of copper), dry film developer, resist strip and spent solvent.
- Atmospheric emissions from etchant solutions and solvents may also require control, primarily for protection of worker health and safety.
- Noise from the cutting machines may be a problem within the factory boundary, but is unlikely to impact on ambient noise levels.

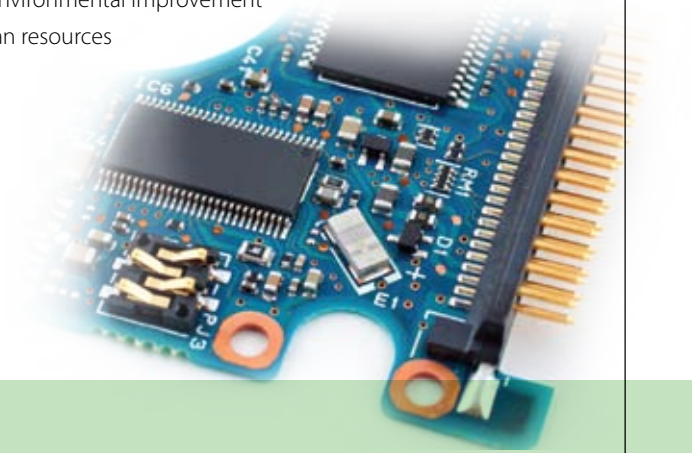
(Source: Trade and Industry Department)

Challenges for SMEs

Owing to increasingly stringent regulatory requirements and progressively higher social pressure towards environmental protection, manufacturers all over the world have to identify and implement cost-effective measures to properly tackle their environmental problems.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding to global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources



Key Environmental Issues

During the manufacturing processes, the followings have been identified as key environmental issues of its manufacturing operation:

○ Dust generated from cutting and trimming materials ○ Vapor generated from heating ○ VOC emission from heating and treatment line ○ Acidic vapor emission from treatment line ○ Caustic vapor emission from treatment line ○ Exhaust emission from vehicles	**Air Emission**
○ Discharge of rinsing water ○ Leakage of chemicals	**Water Pollution**
○ Disposal of used drums and containers ○ Disposal of packaging waste ○ Disposal of used filter cartridges ○ Disposal of scraps generated from cutting and trimming ○ Disposal of spent filter ○ Disposal of spent lubricant and hydraulic oil ○ Disposal of spent chemicals ○ Disposal of heavy metal waste ○ Disposal of precious metal waste ○ Disposal of activated carbon powder ○ Disposal of chemical sludge	**Waste Disposal**
○ Operation of water and air pumps ○ Operation of blowers ○ Operation of ventilation fans ○ Ventilation of compressors ○ Operation of rotary cutters ○ Operation of mini press and baking oven ○ Operation of trimming machines	**Noise Emission**
○ Use of electricity for equipments, air conditioning and lighting ○ Use of alcohol for surface cleaning ○ Use of acids and alkaline ○ Use of chemicals ○ Fuel consumption by vehicles	**Resource Consumption**

For detailed information, please go to Appendix I (P.30).

2.3 PRINTING AND PACKAGING INDUSTRY

Overview

In Hong Kong, the Printing Industry is the largest manufacturing industry in Hong Kong in terms of the number of establishments, with a total of 4,262 manufacturing establishments as of September 2005. Most of them are small and medium enterprises (SMEs) employing less than 10 workers in Hong Kong.

The environmental characteristics of Printing Industry include:

- It generates significant amount of liquid solvent wastes and rags after the cleaning processes.
- The solvent-based processes generate VOC emissions.
- Use of significant amount of energy

On the other hand, there is only a total of 304 packaging materials manufacturing establishments in Hong Kong as of September 2004. Many Hong Kong manufacturers have relocated their production to the mainland, considering the lower operation costs and proximity to the market.

The Packaging Industry generates much paper and plastic wastes during the manufacturing operation and there are VOC emissions when using adhesives.

(Source: Hong Kong Trade Development Council and Trade and Industry Department)

Challenges for SMEs

Owing to regulatory requirements which are becoming more stringent, Printing and Packaging manufacturers are required to mould their materials to meet higher environmental standards, so that their customers can meet the environmental standards in the respective countries where their products are sold.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

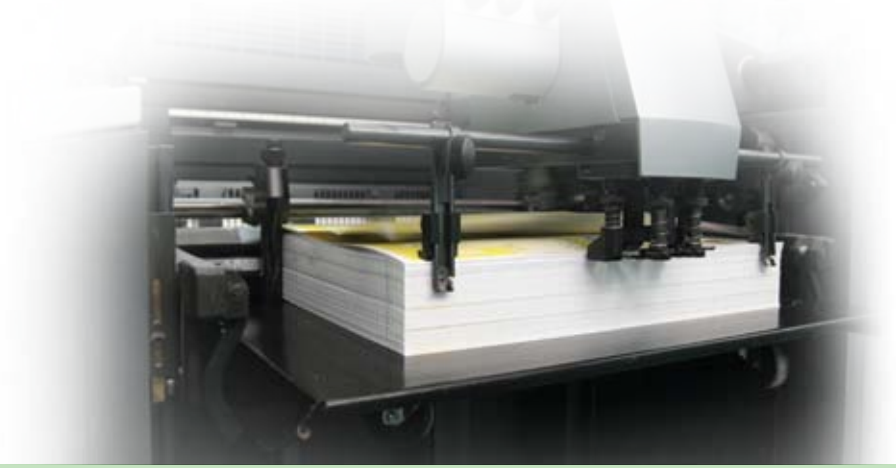
- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding to global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources

Key Environmental Issues

During printing and packaging processes, the followings have been identified as key environmental issues of its manufacturing operation:

◎ VOC emission from workshop ◎ Generation of metal dust during book binding process ◎ Exhaust emission from vehicles	**Air Emission**
◎ Spillage of chemical substances ◎ Waste water discharge	**Water Pollution**
◎ Disposal of chemical waste ◎ Sludge generated from grinding machine ◎ Disposal of paper waste ◎ Disposal of rejected products ◎ Disposal of packaging materials	**Waste Disposal**
◎ Noise generated from equipments ◎ Noise emission from vehicles	**Noise Emission**
◎ Use of electricity for equipments, air conditioning and lighting ◎ Use of chemicals ◎ Use of paper ◎ Use of stationery ◎ Use of ink ◎ Use of earplugs and gloves ◎ Use of packaging materials (e.g. carton boxes) ◎ Fuel consumption by vehicles	**Resource Consumption**

For detailed information, please go to Appendix I (P.30).



2.4 TEXTILE AND GARMENT INDUSTRY

Overview

The Textile Industry comprising spinning, weaving, knitting and finishing of fabrics had a total of 889 manufacturing establishments as of September 2006, which is one of the Hong Kong's major export earners.

The bleaching and dyeing sub-sector faces significant compliance problems with environmental legislation. This is mainly due to:

- Large volumes of effluent to be treated.
- The space and loading constraints imposed by the location of many firms in multi-storey industrial buildings.

In general, the values of Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) vary depending on the unit processes and types of dye materials or chemicals used.

The environmental characteristics of the printing sector include:

- Wastewater generation which arises from washing of the printing blanket and sourcing of the printed fabric.
- Small quantities of chemical waste may be generated where silk screening is used, from the solvents used for cleaning the screens.
- Emissions of VOC originate from solvent-based processes in the form of fugitive emissions during application of print paste to the fabric and process emissions when the solvents are driven off in the drying step.

The Garment Industry is a major manufacturing sector of Hong Kong. It is the second largest manufacturing sector with 1,649 establishments as of June 2006.

The Garment Industry is not generally a heavy water user. Typically, water is only used for the final washing of the finished garment. This is not considered a major polluting sub-sector.

(Source: Hong Kong Trade Development Council and Trade and Industry Department)

Challenges for SMEs

Owing to regulatory requirements which are becoming more stringent, the Textile and Garment Industry will suffer from environmental pressure if they could not find cost-effective ways to tackle their environmental problems.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources

Key Environmental Issues

During the manufacturing of textile and garment, the followings have been identified as key environmental issues of its manufacturing operation:

◎ Dust emission from manufacturing processes ◎ VOC emission from dye mixing ◎ VOC from paint mixing ◎ Spillage of chemicals ◎ Exhaust emission from vehicles	**Air Emission**
◎ Waste water discharge ◎ Leakage of liquid dye or chemicals ◎ Spillage of chemicals	**Water Pollution**
◎ Disposal of rejected cotton or yarns ◎ Generation of waste lube oil ◎ Disposal of empty chemicals container ◎ Disposal of extra linings or broken needles ◎ Disposal of rejected products ◎ Disposal of packaging materials	**Waste Disposal**
◎ Noise generated from machinery operation ◎ Noise emission from workshop ◎ Noise emission from vehicles	**Noise Emission**
◎ Use of electricity for equipments, air conditioning and lighting ◎ Use of lube oil for various machinery ◎ Use of blenching chemicals ◎ Use of dye ◎ Use of materials (threads/linings/needles etc) ◎ Use of packaging materials (e.g. carton boxes) ◎ Fuel consumption by vehicles	**Resource Consumption**

For detailed information, please go to Appendix I (P.30).

2.5 TOY INDUSTRY

Overview

In Hong Kong, there was a total of 118 manufacturing establishments as at September 2005. Most of these establishments were small and medium-sized enterprises (SMEs). Hong Kong toy manufacturers produce a wide range of toys with particular strength in plastic toys.

The Toy Industry is not a significant water user. Its environmental characteristics may include:

- A minimum of recycle water used for cooling.
- Some emission of VOCs as a result of solvents or inks used as colorants or for printing.
- The only major sources of chemical wastes are spent oils and lubricants from injection moulding machines, disposal of which is not anticipated to present problems of compliance.

Thus, toy manufacturing is not expected to be an industry which is subject to significant problems of compliance.

(Source: Hong Kong Trade Development Council and Trade and Industry Department)

Challenges for SMEs

Owing to regulatory requirements which are becoming more stringent, toy industry will suffer from environmental pressure if they could not find cost-effective ways to tackle their environmental problems.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding to global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources

Key Environmental Issues

During the manufacturing of toy, the followings have been identified as key environmental issues of its manufacturing operation:

◎ Hot air emission ◎ VOC emission from paint spraying ◎ Emission of exhaust air from soldering ◎ Evaporation of organic solvent/lube oil ◎ Generation of metal dust from cutting machinery ◎ Exhaust air emission from solvent/adhesive storage ◎ VOC from paint mixing ◎ Exhaust emission from vehicles	**Air Emission**
◎ Cleaning of paint spray head/gun ◎ Waste water discharge from air scrubber ◎ Spillage of chemicals	**Water Pollution**
◎ Generation of waste lube oil ◎ Generation of trim waste ◎ Generation of toxic waste ◎ Generation of chemical waste ◎ Disposal of spent container ◎ Disposal of waste parts ◎ Disposal of rejected products ◎ Disposal of packaging materials	**Waste Disposal**
◎ Noise generated from machinery operation ◎ Noise emission from workshop ◎ Noise emission from vehicles	**Noise Emission**
◎ Use of electricity for equipments, air conditioning and lighting ◎ Use of lube oil for various machinery ◎ Use of paint ◎ Use of raw materials ◎ Use of lead-free solders ◎ Use of earplugs and gloves ◎ Use of rag for surface cleaning ◎ Use of packaging materials (e.g. carton boxes) ◎ Fuel consumption by vehicles	**Resource Consumption**

For detailed information, please go to Appendix I (P.30).

2.6 WATCH INDUSTRY

Overview

Hong Kong is a leading exporter of watches in the world. According to the latest available statistics, Hong Kong was the world's second largest exporter of complete watches in terms of both value and quantity in 2004.

Most of the process operations in the Watch Industry are automated and strict Quality Assurance/Quality Control (QA/QC) procedures are followed.

In fact, the watch manufacturing is not expected to be an industry which is subject to significant problems of compliance except:

- Spent oils and lubricants may be generated from watch assembling.
- Toxic air emission may be generated from the soldering process may generate toxic air emission.

(Source: Hong Kong Trade Development Council and Trade and Industry Department)

Challenges for SMEs

Owing to the growing consciousness of environmental protection and health concerns, especially in the EU, the watch industry will suffer from environmental pressure if they could not find cost-effective ways to tackle their environmental problems.

Moreover, due to the growing concerns of quality conscious buyers, more and more companies have acquired the ISO 9000 certification to strengthen their quality management systems.

However, SME manufacturers face a number of barriers during the course of looking for self-improvement and becoming a green and responsible industrialist. The main barriers for SME in improving their environmental performance are:

- Ability in adopting the right cleaner production concepts in the production process
- Know-how in eco-product design
- Identifying a cost-effective pollution control technology
- Understanding the local and global legal requirements in environmental protection
- Proper ways in responding to global environmental supply chain pressures
- Strategic planning for long-term environmental improvement
- Constraints from capital and human resources

Key Environmental Issues

During the manufacturing of watches, the followings have been identified as key environmental issues of its manufacturing operation:

◎ Emission of exhaust air from soldering ◎ Evaporation of organic solvent/lube oil ◎ Generation of metal dust from cutting machinery ◎ Dust emission from machinery ◎ Toxic exhaust air emission from argon soldering machinery ◎ Exhaust emission from vehicles	**Air Emission**
◎ Waste water discharge from air scrubber ◎ Waste water discharge from humidifier ◎ Spillage of chemicals	**Water Pollution**
◎ Generation of waste lube oil ◎ Generation of tin waste ◎ Disposal of waste gloves ◎ Disposal of trim waste ◎ Disposal of waste parts ◎ Disposal of rejected products ◎ Disposal of packaging materials	**Waste Disposal**
◎ Noise generated from machinery operation ◎ Noise emission from workshop ◎ Noise emission from vehicles	**Noise Emission**
◎ Use of electricity for equipments, air conditioning and lighting ◎ Use of lube oil for various machinery ◎ Use of cadmium composition at solder joints ◎ Use of lead composition in tin strips ◎ Use of earplugs and gloves ◎ Use of chemicals ◎ Use of lead free solder ◎ Use of packaging materials ◎ Fuel consumption by vehicles	**Resource Consumption**

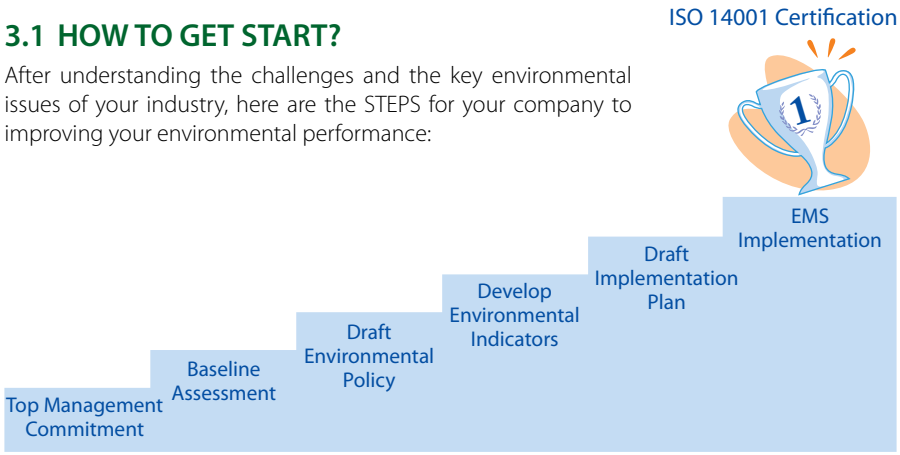
For detailed information, please go to Appendix I (P.30).

3. How to Enhance Environmental Excellence?

Congratulations! You have already taken the first move to enhance environmental excellence in your company by entering this section. This indicated your interest in gaining commitment to improving your environmental performance.

3.1 HOW TO GET START?

After understanding the challenges and the key environmental issues of your industry, here are the STEPS for your company to improving your environmental performance:



STEP 1 - Top Management Commitment

Gaining top management commitment is a fundamental step in the implementation of an Environmental Management Systems (EMS), as for any other major project. Top management commitment will be needed to give the project importance within the organization, as well as for approving any necessary resources and changes.

STEP 2 - Baseline Assessment

In order to be able to identify what needs to be done to implement an EMS for your organization, it will first be necessary to establish the current situation. The baseline assessment provides a quick and easy to understand approach for gaining an understanding of the current level of environmental performance and issues facing the organization. (For detailed information, please go to Section 4 - Practical Tools.)

STEP 3 - Developing a Draft Environmental Policy

The environmental policy is a short public declaration that states your intentions and commitment to improving your environmental performance, but above all else it provides the focus for the development and operation of the EMS.

STEP 4 - Developing Environmental Indicators

"What gets measured can be managed". Measurement, analysis, assessment, and review of real data, relating to the environmental performance of your organization, will help you to operate an effective EMS and achieve stated aims. In addition to this, the collection and use of environmental performance data will support environmental reporting and communication within your organization. Use of environmental indicators has shown to be effective in maintaining focus on environmental goals, and driving continual improvement in environmental performance.

STEP 5 - Developing an Initial EMS Implementation Plan

Planning activities, responsibilities, timescales, resource inputs, costs and benefits, relating to the implementation of an EMS will help you in the effective management of the implementation process to agreed timescales. In addition to this it will also provide a structure outline of the project to assist you in gaining commitment from top management and at other levels within your organization.

STEP 6 - EMS Implementation

An extremely crucial part of environmental management is that your employees know what to do (from an environmental point of view).For example, what is required by law? How they can help the organization to improve your environmental performance or save money? Everyone should be aware of the project and its aims, as well as possessing the knowledge and skills to enable everyone to "get it right the first time". The more informed and skilled your employees are, the higher the chances of the EMS delivering predicted benefits will be. It will also enable the employees to get more back from the EMS programme.

3.2 CERTIFICATION WITH ISO 14001 - ENVIRONMENTAL MANAGEMENT SYSTEM

ISO 14001 is the international standard for environmental management systems, developed over 10 years ago and respected and recognized worldwide. ISO 14001 is based on the two concepts of continual improvement and regulatory compliance. The standard provides a clear management framework based on the well-established management principles of: Plan-Do-Check-Act. It requires an organization to assess the operations impact on the environment, understand how those impacts can be managed, and set clear objectives and targets to continually improve on environmental performance. The standard also requires clearly defined processes and procedures to manage personnel and the activities that the organization undertakes.

The ISO 14001 standard requires an organization to clearly understand the environmental legal requirements that apply to it, and also any other corporate and stakeholder obligations. These requirements then need to be managed by the organization, and their compliance must be checked regularly.

The generic standard is applicable to any type of organization in any industry sector and it has been designed to be compatible and harmonized with other international management system standards, including ISO 9001. It is therefore ideal for integration into existing management systems and processes.

3.3 BEYOND ISO 14001

Since ISO 14001 lays forth a best practice for proactive management of the environmental impact of your organization, you go beyond mere compliance when you have an ISO 14001 certified Environmental Management System. Your focus becomes continual improvement. In order to achieve continual improvement, the followings may able to help:

- Carbon Neutral
- Cleaner Production
- Corporate Social Responsibility
- Eco-Design
- Green Procurement
- Green Product Design
- Life Cycle Analysis

What's next?

By following the above steps, we believe you will be able to make significant environmental improvement in your company. For detailed information, please go to Section 4 – Practical Tools.

4. Practical Tools

Now what next?

Congratulations! You have already taken an extra move to enhance environmental excellence in your company by entering this section. In this section, you will find useful tools, which can help to improving your environmental performance.

4.1 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

- Overview of Environmental Management System
- ISO 14001 - Environmental Management Systems
- Self Evaluation Tools for Environmental Audit

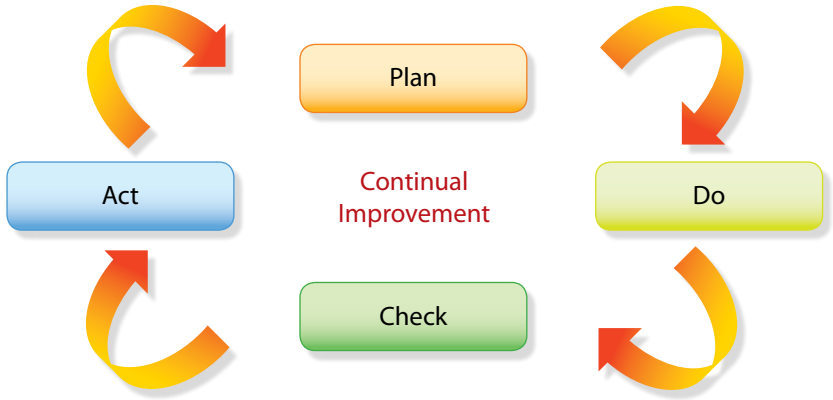
Keep Going!

If you want to stay competitive in the environmentally conscious world business market, you can make use of the step-by-step User Manual to develop an environmental management system (EMS). (Please go to EPD website: http://www.epd.gov.hk) Easy-to-use and practical tips are provided to guide you through the EMS development and implementation process.

4.1.1 Overview of Environmental Management System

An Environmental Management System (EMS) is a continual business cycle of planning, implementing, reviewing and improving the processes and actions that your company undertakes to meet its environmental obligations and continually improve its environmental performance. An effective EMS is developed on "Plan, Do, Check, Act" (PDCA) model which embodies the concept of continual improvement.

Figure 1. "Plan, Do, Check, Act" model



4.1.2 ISO 14001 – Environmental Management System

Requirements with guidance for use:

- It is an international standard which specifies the requirements of an environmental management system.
- It provides a framework applicable to all types and sizes of organisations using the approach shown in Figure 2.
- The success of the system depends on commitment from all levels and functions, especially from top management.
- It enables an organisation to establish and assess the effectiveness of procedures, to develop an environmental policy and objectives, achieve conformity with them, and demonstrate such conformity to others.

Figure 2. ISO 14001 Overview

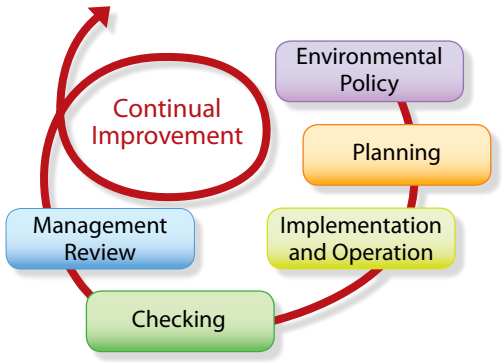


Table 1.

Comparing the PDCA cycle to the ISO 14001:2004 Standard

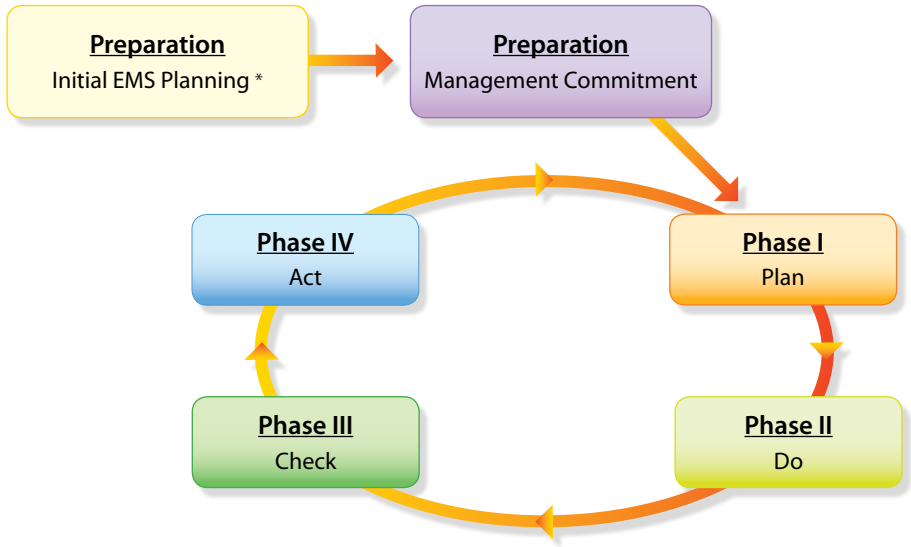
PDCA Cycle	ISO 14001:2004 Standard
PLAN	4.2 Environmental Policy
	4.3 Planning
	4.3.1 Environmental Aspects
	4.3.2 Legal and Other Requirements
	4.3.3 Objectives, Targets and Programme(s)
DO	4.4 Implementation and Operation
	4.4.1 Resources, Roles, Responsibility and Authority
	4.4.2 Competence, Training and Awareness
	4.4.3 Communication
	4.4.4 Documentation
	4.4.5 Control of Documents
	4.4.6 Operational Control
	4.4.7 Emergency Preparedness and Response
CHECK	4.5 Checking
	4.5.1 Monitoring and Measurement
	4.5.2 Evaluation of Compliance
	4.5.3 Nonconformity, Corrective Action and Preventive Action
	4.5.4 Control of Records
	4.5.5 Internal Audit
ACT	4.6 Management Review

Approach to EMS Development and Implementation

This support package recommends the four-step "PDCA" approach to implementing an EMS, since this is the approach taken by most ISO 14001 certified companies. When an EMS is to be initially set-up, two preparatory steps (initial planning and management commitment) are also recommended as shown in Figure 3.

Although these steps are not mandatory requirements under ISO 14001, these steps are useful to facilitate the development and implementation of the EMS in accordance with the ISO 14001.

Figure 3. Approach to EMS Development and Implementation



* *Initial EMS Planning is not an ISO 14001 Standard requirement; however, it is useful preparation work to facilitate the set up and developement of the EMS in accordance with the ISO 14001 Standard.*

The different tasks for each phase and the relevant Generic ISO 14001 EMS Templates that you can use are shown in Table 2. In addition, Table 2 illustrates the estimated time that each phase of EMS development and implementation usually takes for a typical company.

Table 2. Phased EMS Implementation Flow

Approach	Tasks	Useful Generic ISO 14001 EMS Templates / Practical Examples of ISO 14001 EMS	Duration
Initial EMS Planning	Baseline assessment	Initial Environmental Review checklist Gap analysis report	2 weeks
Management Commitment		Environmental Policy	2 weeks
PLAN	Environmental Aspect (EA) identification	Environmental Aspect Register	2 weeks - 1 month
	Identification and compliance with legal and other requirements	Legal and other requirements register	2 weeks
	Evaluating environmental aspects	Environmental aspect identification and evaluation procedure	2 weeks - 1 month
	Developing Objectives and Targets with Programmes	List of objectives, targets and programmes	2 weeks
DO	Developing EMS documentation	EMS Manual EMS procedures	1 month
	Developing operational control procedures	Operational control procedures and work instructions	1-2 months
	Implementation of the EMS	Organisation chart and responsibilities	2-3 months
		Training plan	
		Training materials	
		Guidance notes for supplier control	
		Communication records	
		Forms for implementing procedures	
CHECK	Checking, audit	Monitoring plan	1 month
		Audit plan	
		Audit checklist	
		Audit report	
		Corrective action and preventive action report	
ACT	Review	Management review report	2 weeks
		Total	8 - 12 months

ISO 14001 Certification
OR
Self-declaration of ISO 14001 EMS adoption

4.1.3 Self Evaluation Tools for Environmental Audits

In order to be able to identify what needs to be done to implement an EMS for your company, it will first be necessary to establish the current situation by carrying out baseline assessment. The following Self Evaluation Tools for Environmental Audits are useful to your company. Here are the STEPS for your company to go through the baseline assessment: (For detailed information, please go to Appendix II)

STEP 1: **General Checklist for Environmental Audits** - The purpose of this checklist is to provide information to help you and your company identify potential environmental impacts from the daily operation of your factory, which is the very first step prior EMS development.

STEP 2: **Existing Activities and Operation Review** - This review provides a quick and easy to understand approach for gaining an understanding of the current level of environmental performance and issues facing the organization.

STEP 3: **Benchmarking with Typical EMS** - This is a benchmarking tool to determine the difference between the current state of the management system/procedures at your company and the requirements of ISO 14001 certification. The process allows the identification of difference so as to formulate actions required to achieve a structured EMS and the certification.

4.2 OTHER MANAGEMENT SYSTEMS

Management System	Food and Beverage Industry	Printed Circuit Board Industry	Printing and Packaging Industry	Textile and Garment Industry	Toy Industry	Watch Industry
ISO 9001	✓	✓	✓	✓	✓	✓
ISO 22000	✓					
HACCP	✓					
ISO 26000	✓	✓	✓	✓	✓	✓
SA 8000	✓	✓	✓	✓	✓	✓
OHSAS 18001	✓	✓	✓	✓	✓	✓
IECQ QC 080000		✓			✓	✓

(a) Quality Management Systems - ISO 9001

- Provides a management framework that gives the necessary controls to address risks and monitor and measure performance in your business.
- Helps to enhance image and reputation.
- Enables to look for improvements through internal and external communications.
- Applies equally well to all organization, regardless of type, size, and product provided.

In addition, ISO 9001 is designed to be compatible with other management systems standards and specifications, such as OHSAS 18001 Occupational Health and Safety and ISO 14001 Environmental Management System. They can be integrated seamlessly through Integrated Management.

(b) Food Safety Management Systems - ISO 22000

ISO 22000 is a truly international standard suitable for any business in the entire food chain, including inter-related organizations such as producers of equipment, packaging material, cleaning agents, additives and ingredients. The standard combines generally recognized key elements to ensure food safety along the food chain, including:

- Interactive communication
- System management
- Control of food safety hazards through pre-requisite programmes and HACCP plans
- Continual improvement and updating of the food safety management system

(c) Hazard Analysis and Critical Control Points - HACCP

HACCP is the main platform for international legislation and good manufacturing practices for all sectors of the food industry. HACCP also forms a key component of many certified compliance standards and is recognized as a main element of international trade in food products.

- Helps you to focus on the hazards that affect food safety through hazard identification interactive communication.
- To establish critical control limits at critical points during the production process.
- Relevant to all sectors of the food industry, including primary producers, manufacturers, processors and food service operators who want to demonstrate their compliance with national or international food safety legislation requirements.

(d) Guidance on Social Responsibility - ISO 26000 (Coming Soon)

ISO 26000 is the designation of the future International Standard giving guidance on Social Responsibility (SR). The guidance standard will publish in 2010 as ISO 26000 and be voluntary to use. It will not include requirements and will thus not be a certification standard.

- It is intended for use by organizations of all types, in both public and private sectors, in developed and developing countries.
- It will assist them in their efforts to operate in the socially responsible manner that society increasingly demands.

(e) Social Accountability - SA 8000

SA 8000 is a comprehensive, global, verifiable standard for auditing and certifying compliance with corporate responsibility. The standard was initiated by Social Accountability International (SAI). SAI is a non-profit organization dedicated to the development, implementation, and oversight of voluntary verifiable social accountability standards.

- It is applicable to both small and large companies that want to demonstrate to customers and other stakeholders that they care.
- The heart of the standard is the belief that all workplaces should be managed in such a manner that basic human rights are supported and that management is prepared to accept accountability for this.

(f) Occupational Health and Safety Management - OHSAS 18001

OHSAS 18001 is the internationally recognized assessment specification for occupational health and safety management systems. The following key areas are addressed by OHSAS 18001:

- Planning for hazard identification, risk assessment and risk control
- OHSAS management programme
- Structure and responsibility
- Training, awareness and competence
- Consultation and communication
- Operational control
- Emergency preparedness and response
- Performance measuring, monitoring and improvement

OHSAS 18001 has been designed to be compatible with ISO 9001 and ISO 14001, to help your organization meet their health and safety obligations in an efficient manner.

(g) IECQ QC 080000 Hazardous Substances Process Management (HSPM)

IECQ QC 080000 HSPM is an international certified system qualifies to suppliers who are able to demonstrate their ability to control and manage design activities, their supply chain, materials management, and manufacturing process through implementation and maintenance of Hazardous Substance Process Management (HSPM) for hazardous-substance-free (HSF) electrical and electronic components and assemblies that meet specific local, national and international requirements.

- The standard is developed by the Electronic Industries Alliance (EIA).
- It allows an organization to demonstrate that they are meeting the requirements of RoHS and WEEE and to receive external third party confirmation of their compliance.
- It is regarded as a due diligence to eliminate hazardous substances from all of its products and throughout its supply chain.

4.3 BEST PRACTICE GUIDELINES

In the following, you can find best practice guidelines for your industry by going to the related website.

Noise related guidelines	Source
1. A Guide to the Factories and Industrial Undertakings (Noise at Work) Regulation	Hong Kong Labour Department website www.labour.gov.hk
2. Guidance Notes on Factories and Industrial Undertakings (Noise at Work) Regulation	
Indoor Air Quality related guidelines	**Source**
3. Improve the Indoor Air Quality in Your Building	Environmental Protection Department Website www.iaq.gov.hk
4. Guidance Notes for the Management of Indoor Air Quality in Offices and Public Places	
Energy Efficiency related guidelines	**Source**
5. Guidelines on Energy Audit	EMSD website www.emsd.gov.hk
6. Energy Efficiency and Conservation for Buildings	
Other guidelines	**Source**
7. A Simple Guide to Becoming a Smart Eco-Business for SMEs	Environmental Campaign Committee www.ecc.org.hk

The above publications may be updated by the owner of the websites or their ownership may be changed from time to time. The FHKI accepts no responsibility or liability in respect of any change on such external information.

5. Relevant Legislation

5.1 ENVIRONMENTAL LAWS AND REGULATIONS IN HONG KONG

In Hong Kong, the major environmental legislations cover the following areas:

- Air emission control
- Noise control
- Waste management
- Water pollution control
- Environmental Impact Assessment

For more information useful in complying with Hong Kong's legislative requirements relating to environmental protection, please go to Appendix III.

Also, you may visit the following websites of the Environmental Protection Department (http://www.epd.gov.hk) for an overview of the environmental legislations, standards and guidelines of Hong Kong:

- Environmental Legislations
- Environmental Standards and Guidelines

5.2 REGULATIONS IN MAINLAND CHINA

In mainland China, the major environmental legislations cover the following areas:

- Air emission control
- Noise control
- Waste management
- Water pollution control
- Hazardous Material Management
- Others

For more information useful in complying with mainland China legislative requirements relating to environmental protection, please go to Appendix IV (Chinese Version Only).

Also, you may visit the website of the Environmental Protection of Guangdong Province (http://www.gdepb.gov.cn/) for an overview of the environmental legislations, standards and guidelines of mainland China.

Environmental Resource Guidebook
for SME Manufacturers

Appendices

Appendix I 附錄一 Key Environmental Issue 主要環境問題（只提供英文版本）

IMPORTANT NOTE: Whilst the information provided in the Table of Environmental Aspects is extensive, it is not exhaustive. All companies and processes are different. To be effective, you will need to tailor your templates carefully regarding to the activities, products and services of your company and address your specific environmental impacts, legal requirements and operational processes, etc.

The environmental aspect (EA) tables are presented in the order of office activities as the first item because:

1) This arrangement is a well-accepted and common practice for EMS professionals to prepare the EA register.
2) The EAs for office activities are applicable to all staff, which is important for promoting staff awareness.

However, the EAs for production processes would normally be the most important area to address relevant operational controls.

Food and Beverage Industry

Process Flow Diagram for Food and Beverage Industry

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Raw Food Storage and Cleansing							
Use of food (e.g. meat, vegetables and fruits, etc)	X						
Use of water (washing)	X						
Use of electricity for equipments (e.g. refrigerator)	X						
Use of oil and seasonings	X						
Use of refrigerants				X			
Discharge of oil / grease into the effluent		X					
Disposal of food waste		X					
Disposal of spent oil / portable oil		X					
Disposal of grease trap waste		X					
Disposal of recyclables (e.g. aluminum cans, glass bottles, plastic containers, waste oil, tin containers etc.)		X					
Disposal of packaging materials (e.g. carton boxes)		X					
Potential expired food		X					
Cooking							
Use of fuel	X		X				
Use of water	X						
Use of electricity for equipments (e.g. oven)	X						
Use of oil and seasonings		X					
Disposal of food waste		X					
Disposal of spent oil / portable oil		X					
Disposal of grease trap waste	X						
Discharge of oil / grease into the effluent				X			
Oily fumes emissions			X				
Emergency power outage		X		X		X	X
Potential leakage of Towngas			X				
Preserving and Packaging							
Use of chemicals	X						
Use of water	X						
Use of fuel	X		X				
Use of packaging materials	X						
Use of electricity for equipments (e.g. refrigerator)	X						
Disposal of packaging materials (e.g. carton boxes)		X					
Distribution							
Fuel consumption by vehicle	X						
Type of fuel consumed (legal)			X				
Noise produced by vehicle					X		
Exhaust air emissions			X				
Discharge of vehicle wash water				X			
Venting of refrigerants from air conditioning until of vehicles			X				
Vehicle maintenance : waste generation (old parts, contaminated wastes, lubricant oil disposal)		X				X	
Potential oil leakage		X	X	X		X	
Selection of maintenance and repair services provider	X	X	X	X	X	X	X
Others							
Use of electricity for A/C	X						
Use of electricity for lighting	X						
Use of electricity for equipments (e.g. dish-washing, washing machine)	X						
Pest control - use of insecticide / rodenticide by contractor			X				
Storage of chemicals (solid alcohol fuel / others)		X		X		X	
Emergency power outage		X		X		X	X

Environmental Impacts for Facilities Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use / release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Water Cooling Tower							
Use of water	X						
Use of electricity	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid, ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration				X			
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Steam emission			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
General Maintenance							
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central waste treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves		X					

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries		X					
Disposal of recyclable waste (paper, plastic, aluminum cans)		X					
Potential fire		X	X	X	X	X	
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Printed Circuit Board Industry

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries		X					
Disposal of recyclable waste (paper, plastic, aluminum cans)		X					
Potential fire		X	X	X	X	X	
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Environmental Impacts for Facility Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Cleaning of ventilation ducts			X		X		
Water Cooling Tower							
Use of water	X						
Use of electricity	X						
Use of chemical to purify water in cooling tower	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid, ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration				X			
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Stack emission (steam and smoke from boiler)			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
General Maintenance							
Use of new machinery parts to replace the faulty parts or mechanism	X						
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central wastewater treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves or filters		X					
Disposal of faulty machinery parts		X					

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts								
	Resources Utilisation	Energy Utilisation	Solid Waste	Chemical Waste	Air Pollution	Water Pollution	Noise Pollution	Odour	Others
General									
Electricity consumption		X							
Operation of pumps							X		
Operation of blowers							X		
Operation of ventilation fans							X		
Operation of compressors							X		
Discharge of wastewater						X			X
Disposal of spent lubricant				X					X
Disposal of spent hydraulic oil				X					X
Disposal of spent chemicals				X					
Disposal of used drums and containers			X	X					
Disposal of packaging waste			X						
Disposal of plastic waste			X						
Disposal of paper waste			X						
Disposal of used filter cartridges			X						
Use of alcohol for surface cleaning	X								
Material Preparation/ Baking									
Operation of rotary cutters							X		
Operation of mini press and baking oven							X		
Operation of trimming machines							X		
Dust generated from cutting and trimming					X				
Vapour generated from heating					X				
Disposal of scraps generated from cutting and trimming			X						
Pressing									
Operation of press							X		
Operation of trimming machines							X		
VOC emitted from heating					X				X
Oxide Treatment									
Use of acid	X								
VOC emitted from treatment line					X			X	X
Acidic vapour emitted from treatment line					X			X	X
Vapour emitted from heating					X				X
Tooling Hole Drilling/ Primary, Secondary X-Ray Drilling									
Operation of drilling machines									X
Radiation emitted from x-ray drilling process									X
Disposal of heavy metal waste				X					X
Ultrasonic Deburring									
Operation of water pumps								X	
Disposal of spent filter				X					
Desmear/ PTH									
Use of acids	X								
Use of alkaline	X								
Use of corrosive chemicals (peroxides)	X								
Operation of water and air pumps								X	
Acidic vapour emissions							X	X	X
Caustic vapour emissions							X	X	X
VOC emissions							X	X	X
Diazo Phototool Preparation									
Caustic vapour emissions							X		
Innerlayer / Outerlayer Dry Film Imaging									
Use of alkaline	X								
Use of acids	X								
Acidic vapour emissions							X		X
VOC emissions							X		X
Caustic vapour emissions							X		X
Disposal of pumice powder				X					X
Panel Plating									
Use of acids	X								
Acidic vapour emissions							X		X
OC emissions							X		X
Disposal of activated carbon powder				X					
Pattern Plating									
Use of acids	X								
Use of acid concentrate	X								
Acidic vapour emissions							X		X
VOC emissions							X		X
Alkaline Etching									
Use of caustic soda	X								
Use of sulphuric acid	X								
Caustic vapour emissions							X		X
Acidic vapour emissions							X		X
VOC emissions							X		X
Disposal of chemical sludge				X					
Thermal Cured Soldermask									
Use of sulphuric acid	X								
Caustic vapour emissions							X		X
Acidic vapour missions							X		X
VOC emissions							X		X
High UV exposure									X

Liquid-Photoimageable Soldermask									
Use of sulphuric acid	X								
Caustic vapour emissions					X				X
Acidic vapour emissions					X				X
VOC emissions					X				X
Disposal of chemical sludge				X					X
Dip Cell Gold/ Nickel Plating									
Use of sodium persulphate	X								
Use of sulphuric acid	X								
Use of nickel sulphate	X								
Use of nickel chloride	X								
Use of boric acid	X								
Use of potassium hydroxide	X								
VOC emissions					X				X
Caustic vapour emissions					X				X
Acidic vapour emissions					X				X
Disposal of heavy metal waste				X					X
Disposal of precious metal waste				X					X
Electroless Nickel/ Immersion Gold									
Use of acids	X								
Use of ammonium hydroxide	X								
VOC emissions					X				X
Acidic vapour emissions					X				X
Disposal of heavy metal waste				X					X
Disposal of precious metal waste				X					X
Hot Air Solder Leveling (HASL)									
Use of acid	X								
VOC emissions					X				X
Acidic vapour emissions					X				X
Metal vapour emissions					X				X
Dust and debris emitted from drying					X				
Disposal of metal waste				X					X
V-Cut and Final Clean									
Vapour generated from drying					X			X	X
Dust and debris from v-cut process			X		X		X		
Disposal of metal waste			X						
Packaging/ Delivery									
Use of cardboard and wooden planks	X								
Exhaust emissions from vehicles					X				
Disposal of paper waste			X						
Disposal of plastic waste			X						
Disposal of packaging waste			X						

Environmental Impacts for Storage

Environmental Aspects	Potential Environmental Impacts								
	Resources Utilisation	Energy Utilisation	Solid Waste	Chemical Waste	Air Pollution	Water Pollution	Noise Pollution	Odour	Others
General Good Storage									
Disposal of cardboard and wooden planks			X						
Chemical Storage									
Concentrated acids	X								
Concentrated alkaline	X								
Organic solvents	X								
Corrosive chemicals (peroxides)	X								
Acidic and alkaline etchant solution	X								
Disposal of sand soaked with chemicals				X					X
Dangerous Goods Storage									
Concentrated acids	X								
Concentrated alkaline	X								
Organic solvents	X								
Corrosive chemicals (peroxides)	X								
Disposal of sand soaked with chemicals				X					X
Solid Waste Storage									
General refuse			X						
Cardboard and wooden planks			X						
Demolished machinery and parts			X						
PCB scraps			X						
Aluminum cans			X						
Steel cans			X						
Waste drums, bags and containers			X						
Packaging waste			X						
Paper			X						
Cumulative									
Electricity consumption		X							
Water consumption	X								
Fuel consumption	X	X							
Disposal of general refuse			X						
Disposal of packaging waste			X						
Disposal of paper waste			X						
Disposal of plastic waste			X						
Disposal of metal waste			X						

Printing and Packaging Industry

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries		X					
Disposal of recyclable waste (paper, plastic, aluminum cans)		X					
Potential fire		X	X	X	X	X	
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Environmental Impacts for Facilities Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use /release of CFC substances(e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Water Cooling Tower							
Use of water	X						
Use of electricity	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid, ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration				X			
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Steam emission			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
General Maintenance							
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central wastewater treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves		X					

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Design							
Use of electricity	X						
Use of stationery in design stage	X						
Generation of wastes from design stage		X					

Plate Making							
Use of chemicals	X						
Use of rubber	X						
Generation of solid waste		X					
Generation of chemical waste		X					
Use of Grinding Machine							
Use of electricity	X						
Generation of sludge		X					
Film Processing							
Use of chemicals	X						
Generation of chemical waste		X					
Spillage of chemical substances (e.g. photo resistant agent / fixer etc)				X		X	
Printing							
Use of electricity	X						
Use of paper	X						
Use of ink	X						
Noise emission (from workshop)					X		
VOC emission			X				
Generation of chemical waste		X					
Generation of rejected products		X					
Packing							
Use of electricity	X						
Use of packing materials	X						
Generation of paper waste		X					
Noise emission (from workshop)					X		
VOC emission (from adhesive)			X				
Generation of rejected products		X					
Book Binding							
Use of electricity (cutting machine)	X						
Use of earplugs and gloves	X						
Generation of metal dust			X				
Generation of paper waste		X					
Noise emission					X		
VOC emission (from adhesive)			X				
Generation of waste gloves (contain oil)		X					
Generation of rejected products		X					
Packaging							
Use of packaging materials	X						
Use of electricity for equipments	X						
Disposal of packaging materials (e.g. carton boxes)		X					
Use of De-humidifier							
Use of electricity	X						
Noise emission (from workshop)					X		
Waste waster discharge from dehumidifier				X			
Use of Exhaust Air Fan							
Use of electricity	X						
Noise emission (from workshop)					X		
Warehouse Fire Equipment							
Use of fire fighting equipment (e.g. fire extinguisher/sand bin/fire blanket etc)	X						
Discharge of wastewater				X			
Disposal of waste		X					

Textile and Garment Industry

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries			X				
Disposal of recyclable waste (paper, plastic, aluminum cans)			X				
Potential fire			X	X	X	X	X
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Environmental Impacts for Facilities Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use / release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Cleaning of ventilation ducts			X		X		

Water Cooling Tower							
Use of water	X						
Use of chemical to purify water in cooling tower	X						
Use of electricity	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid, ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration				X			
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Stack emission (steam and smoke from boiler)			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
Wastewater Treatment Plant							
Discharge of wastewater				X			
Noise emission (from pumps)					X		
Odour emission							X
Use of chemicals	X						
Disposal of sludge		X					
General Maintenance							
Use of new machinery parts to replace the faulty parts or mechanism	X						
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central wastewater treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves or filters		X					
Disposal of faulty machinery parts		X					

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Blending of Raw Cotton / Spinning / Weaving / Knitting							
Use of electricity	X						
Noise emission from machinery operation					X		
Dust emission from all various processes			X				
Generation of rejected cotton or yarns		X					
Use of lube oil for various machinery	X						
Generation of waste lube oil		X					
Bleaching							
Use of electricity	X						
Noise emission (from workshop)					X		
Use of bleaching chemicals	X						
Generation of wastewater				X			
Spillage or leakage of bleaching chemicals						X	
Dyeing							
Use of electricity	X						
Noise emission (from workshop)					X		
Use of chemicals (dye)	X						
Generation of wastewater				X			
VOC emission from dye mixing			X				
Spillage of dye						X	
Generation of rejected products		X					
Printing							
Use of electricity	X						
Noise emission (from workshop and fan)					X		
Leakage of liquid dye or chemicals				X		X	
Generation of wastewater				X			
VOC emission from paint mixing			X				
Generation of rejected products		X					
Handling of Materials and Chemicals							
Use of packaging materials	X						
Storage of chemicals / hazardous substances		X	X			X	
Disposal of empty chemicals container		X					
Spillage of chemicals			X	X		X	
Pattern Cutting, Sawing and Stitching for Clothe Making							
Use of electricity	X						
Noise emission from machinery operation					X		
Use of materials (threads / linings / needles etc)	X						
Disposal of extra linings or broken needles		X					
Packaging/ Delivery							
Use of cardboard and wooden planks	X						
Exhaust emissions from vehicles			X				
Disposal of paper waste		X					
Disposal of plastic waste		X					
Disposal of packaging waste		X					

Toy Industry

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries		X					
Disposal of recyclable waste (paper, plastic, aluminum cans)		X					
Potential fire		X	X	X	X	X	
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Environmental Impacts for Facilities Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use /release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Water Cooling Tower							
Use of water	X						
Use of electricity	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid,ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration				X			
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Steam emission			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
General Maintenance							
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central wastewater treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves		X					

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Injection moulding							
Use of electricity	X						
Use of raw materials	X						
Hot air emission			X				
Noise emission (from workshop)					X		
Generation of rejected products		X					
Use of chemical (cleaning and lubricating agents) for moulding heads	X						
Parts Processing							
Use of electricity	X						
Noise emission (from workshop)					X		
Generation of trim waste		X					
Generation of rejected products		X					
Soldering							
Air emission			X				
Noise emission					X		
Generation of toxic waste		X					
Use of lead free solders	X						
Paint Spraying							
Noise emission (from workshop)					X		
VOC emission			X				
Spillage of paint						X	
Generation of wastewater (from water curtain)							
Generation of rejected products		X					
Use of paint (water soluble or non-soluble paint)	X						
Disposal of spent container		X					
Cleaning of paint spray head / spray gun				X			
Parts Assembly							
Noise emission (from workshop)					X		
Use of electricity and adhesive substance	X						
Disposal of waste parts		X					
Generation of rejected products		X					
Solder Point Test							
Use of electricity	X						
Generation of tin waste		X					
Emission of exhaust air			X				
Waste waster discharge from air scrubber				X			
Use of Exhaust Air Fan							
Use of electricity	X						
Noise emission (from workshop)					X		
Storage of Organic Solvant / Lubricant Oil							
Organic solvant / lubricant oil leakage		X				X	
Organic solvant / lubricant oil evaporation			X				
Warehouse Fires							
Use of fire equipment			X				
Discharge of wastewater				X			
Disposal of waste		X					
Exhaust air emission			X				
Use of Cutting Machinery							
Use of earplugs and gloves	X						
Noise emission (from workshop)					X		
Generation of metal dust			X				
Generation of waste gloves (contain oil)		X					
Disposal of waste grinding wheel		X					
Exhaust air emission (hazardous) from solvent/adhesive storage and solder pre-treatment processes			X				
Product Packaging							
Noise emission (from workshop)					X		
Disposal of waste materials from packaging		X					
Use of rag for surface cleaning	X						
Disposal of spent rag		X					
Use of packaging materials	X						
Disposal of excessive packaging materials		X					
Final Performance Testing							
Use of electricity	X						
Disposal of rejected products		X					

Watch Industry

Environmental Impacts for Office Operations

Environmental Aspects	Potential Environmental Impacts						
	Resource Use	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Office Activities (Hong Kong and Mainland China)							
Electricity consumption (for lighting, air conditioning, office equipment and other purposes)	X						
Consumption of papers	X						
Consumption of cartridges for printers, copies, fax machines	X						
Use/release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Domestic wastewater discharge (from pantry, flushing) to foul sewers				X			
Disposal of waste (general refuse)		X					
Disposal of toner cartridges		X					
Disposal of fluorescent lamp		X					
Disposal of batteries		X					
Disposal of recyclable waste (paper, plastic, aluminum cans)		X					
Potential fire		X	X	X	X	X	
Canteen							
Use of detergents and sanitisers	X						
Use and release of refrigerant from refrigerators			X				
Discharge of wastewater				X			
Oily fumes emissions			X				X
Disposal of general refuse		X					
Disposal of food waste		X					
Disposal of oil / grease waste		X					

Environmental Impacts for Facilities Maintenance

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Water Pump Room							
Use of electricity for pumping water	X						
Noise from operating water pump					X		
Potential leakage of water pipes				X			
Ventilation System / Air Conditioning System							
Use / release of CFC substances (e.g. refrigerants for air conditioning units)			X				
Noise from ventilation system					X		
Water Cooling Tower							
Use of water	X						
Use of electricity	X						
Air Scrubber							
Use of water	X						
Use of electricity	X						
Use of alkali solution	X						
Emission of treated air			X				
DI Water Generator							
Use of chemicals (e.g. caustic soda, hydrochloric acid, ion exchange resins)	X						
Disposal of empty chemicals container		X					
Wastewater discharge from regeneration			X				
Potential spillage of chemicals (e.g. strong acid / alkaline)			X	X		X	
Emergency Electricity Generator							
Use of fuel (diesel)	X						
Potential fuel spillage			X	X		X	
Air emission from operation			X				
Noise from operation					X		
Boiler Operations							
Use of water	X						
Use of fuel	X						
Use of chemicals	X						
Steam emission			X				
Discharge of wastewater				X			
Disposal of chemical waste		X					
Landscaping							
Use of water	X						
Use of fertilizer						X	X
General Maintenance							
Use of chemicals (e.g. paint , adhesives, lub oil, and organic solvent)	X						
Use of gloves	X						
Use of cleaning rags	X						
Use of fire extinguishers	X		X				
Noise from maintenance operation					X		
Discharge of wastewater (facility / floor cleaning) to Shenzhen Industrial Estate's central wastewater treatment plant				X			
Disposal of spent lube oil, hydraulic oil, heat transfer oil and solvent		X					
Disposal of spent rags and gloves		X					

Environmental Impacts for Production Process

Environmental Aspects	Potential Environmental Impacts						
	Resources Utilisation	Waste Management	Air Emission	Water Pollution	Noise /Vibration	Land Contamination	Others
Activity Performance Test							
Use of electricity	X						
Noise emission (from workshop)					X		
Generation of rejected products		X					
Contact Performance Enhancement							
Use of electricity	X						
Noise emission (from workshop)					X		
Generation of rejected products		X					
Pressure Test							
Use of electricity	X						
Generation of rejected products		X					
Inspection of Connecting Points							
Use of electricity	X						
Noise emission (from workshop)					X		
Generation of rejected products		X					
Solder Point Test							
Use of electricity	X						
Generation of tin waste		X					
Emission of exhaust air			X				
Waste waster discharge from air scrubber				X			
Use of De-humidifier							
Use of electricity	X						
Noise emission (from workshop)					X		
Waste waster discharge from dehumidifier				X			
Use of Exhaust Air Fan							
Use of electricity	X						
Noise emission (from workshop)					X		
Storage of Organic Solvant / Lubricant Oil							
Organic solvant / lubricant oil leakage		X				X	
Organic solvant / lubricant oil evaporation			X				
Warehouse Fires							
Use of fire equipment			X				
Discharge of wastewater				X			
Disposal of waste		X					
Exhaust air emission			X				
Supply of Solder Joints							
Cadmium composition at solder joints	X						
Lead composition in tin strips	X						
Use of Cutting Machinery							
Use of earplugs and gloves	X						
Noise emission (from workshop)					X		
Generation of metal dust			X				
Generation of waste gloves (contain oil)		X					
Disposal of waste grinding wheel		X					
Exhaust air emission (hazardous) from solvent/adhesive storage and solder pre-treatment processes			X				
Product Packaging							
Noise emission (from workshop)					X		
Disposal of old packing tubing		X					
Disposal of waste materials from packaging		X					
Returned PVC Packaging Materials							
Disposal of waste paper boxes		X					
Disposal of waste PVC material		X					
Use of Argon Soldering Machinery							
Dust emissions			X				
Exhaust air emissions (hazardous)			X				
Use of Mechanical Saw							
Use of earplugs	X						
Noise emission (from workshop)					X		
Wood dust emissions			X				
Disposal of used earplugs		X					
Oxyacetylene Cutting							
Use of acetylene	X						
Use of oxygen	X						
Dust emissions			X				
Disposal of metal corner wastes		X					
Soldering							
Use of electricity	X						
Use of lead free solder	X						
Returned Packaging							
Disposal of waste papers		X					
Machine Maintenance							
Use of electricity	X						
Disposal of waste tin		X					
Assembly Machinery							
Use of electricity	X						
Disposal of waste parts		X					
Calibration							
Use of electricity	X						
Disposal of waste paper		X					
Vibration Test							
Use of electricity	X						
Noise emission (from workshop)					X		
Electrical Appliance Life-span Test							
Use of electricity	X						
Disposal of used light bulbs		X					
Machinery Life-span Test							
Use of electricity	X						
Wrapping							
Disposal of used fingerstall		X					
Disposal of waste plastic tape		X					
Hull Insertion							
Noise emission (from workshop)					X		
Disposal of plastic chips		X					
Final Performance Testing							
Use of electricity	X						
Disposal of rejected products		X					

Appendix II 附錄二 Self Evaluation Tools for Environmental Audits 環境審查之自我評估工具 (只提供英文版本)

STEP 1: General Checklist for Environmental Audits - The purpose of this checklist is to provide information to help you and your company identify potential environmental impacts from the daily operation of your factory, which is the very first step prior EMS development.

General Environmental Checklist

Potential Environmental Impacts	Office Operations	Manufacturing Operations
Air Emissions		
a) Any sources of air emission?		
b) Are the emissions controlled and monitored?		
c) Is indoor air quality monitored?		
d) Comply with relevant legislations?		
e) Any plan for reducing air emissions?		
Water Consumption and Discharges		
a) Any wastewater discharge?		
b) Is the quantity and quality of wastewater controlled and monitored?		
c) Any process modifications to reduce water usage?		
d) Comply with relevant legislations?		
e) Any plan for reducing water consumption and pollution?		
Waste Management		
a) Any waste generation?		
b) Is the quantity of waste monitored?		
c) Any waste separation practice?		
d) Comply with relevant legislations?		
e) Any plan for reducing waste generation and increasing recycling rate?		
Noise Impact		
a) Any sources of noise emission?		
b) Is the emission controlled and monitored?		
c) Any process modification to reduce noise emission?		
d) Comply with relevant legislations?		
e) Any plan for reducing noise level?		
Hazardous Waste Management		
a) Any hazardous waste generation?		
b) Is the quantity of hazardous waste monitored?		
c) Any process modification to reduce hazardous waste generation?		
d) Comply with relevant legislation?		
e) Any plan for reducing hazardous waste generation?		
Energy Consumption		
a) Any regular check or audit on energy consumption?		
b) Any process modification to reduce energy consumption?		
c) Any energy efficiency programme in place?		

Please "✓" if there is environmental impact; "x" if there is no environmental impact; "?" if you are uncertain and further investigation is required.

STEP 2: Existing Activities and Operation Review - This review provides a quick and easy to understand approach for gaining an understanding of the current level of environmental performance and issues facing the organization.

Existing Activities and Operations Review For Printed Circuit Board Industry

Background of the Company

Company Name: _____

Tel.: _____ Fax no.: _____

Contact Person: _____ Email: _____

Address: _____

_____

Business Nature: _____

No. of Employee in HK: _____ No. of Employee in the Mainland: _____

Organization Structure of the Company

Please provide an organizational chart of your company in the space below. Please indicate the name and contact number of the relevant personnel.

Activities and Services of the company

	Existing		Future	
	Operational Activities	Services	Operational Activities	Services
1	e.g. Board cut			
2	Film preparation			
3	Lay up			
4	Pressing			
5	Drilling			
6	Plating			
7	Etching			
8	Surface grinding			
9				
10				
11				
12				
13				
14				
15				

Layout Plan of the company

Please provide layout plan of the above existing facilities and operational activities.

Existing Facilities of the company

Facility	Activity	No.	Remarks
e.g. Water pump			
Ventilation system			
Cooling tower			
Air scrubber			
Boiler			
Canteen			

If there will be any changes to the existing facilities in the near future, please provide details in the " **Remarks** " column.

Raw Material

Activity	Raw Materials	Quantities	Remarks
e.g. Film preparation	Chemicals		
Lay up	Trichloroethylene		
Pressing	Chemicals		
Plating	Chemicals		
Etching	Chemicals		

If there will be any changes to the existing facilities in the near future, please provide details in the " **Remarks** " column.

Waste Management

	Description	Source	Quantity
Solid Waste			
e.g. Dry film residue			
Plastic sheets			
Trim waste			
Aluminum sheet			
Chemical Waste			
e.g. Trichloroethylene			
Hydraulic oil			
Sodium carbonate			

Please attach a copy of license obtained as a chemical waste producer.

Waste disposal methods:

1. _____
_____
2. _____
_____
3. _____
_____
4. _____
_____

Water Pollution Control

Activity	Wastewater Quantity	Legislation / Regulation
e.g. Plating		
Etching		
Cleansing		

Please attach copies of wastewater licenses in active.

If your company monitors wastewater discharge and quality of adjacent water bodies regularly (i.e. surface, ground and marine water), please fill the table below:

Type of Wastewater Discharge	Water Bodies	Monitoring Methodology	Frequency
e.g. Metal contained wastewater			
High/low pH wastewater			

Is there any wastewater treatment facility on site? (Please attach the flow schematic and indicate the location of the facility if there is any.)

_____
_____
_____
_____

Air Pollution Control

Activity	Type of Emission	Legislation / Regulation
e.g. Plating		
Etching		
Use of emergency electricity generator		

Please attach copies of license in active.

If your company monitors air emissions regularly, please fill the table below:

Source of Emission	Monitoring Parameter	Frequency

Is there any air emission control facility on site? (Please attach the flow schematic and indicate the location of the facility if there is any.)

Waste Minimization Measures

Type of Waste / Material Usage Minimized	Type of Measure	Year of Adoption	Remarks
e.g. Chemicals			
Water			

If there will be any planned waste minimization techniques in the near future, please provide details in the "Remarks" column.

Legislative Compliance

Any identified non-compliance with legislation/codes of practice etc. of existing activities/services?

Any identified non-compliance with legislation/contractual requirements made by your suppliers or contractors?

Other Environmental Aspects

Any other identified environmental aspects as part of your company's operations?

Have you received any complaints from the public regarding your company's operations?

Have you experienced any environmental accident during your company's operations?

Suppliers and Contractors

Please indicate if there are any procedures to evaluate the service quality of the suppliers and contractors. (If "Yes", please provide the relevant procedure.)

Yes ☐

No ☐

STEP 3: Benchmarking with typical EMS - This is a benchmarking tool to determine the difference between the current state of the management system/procedures at your company and the requirements of ISO 14001 certification. The process allows the identification of difference so as to formulate actions required to achieve a structured EMS and the certification.

The contents in the tables below are presented as follows:

- the first column lists out the basic elements of the 14001 standard;
- the second column describes your company's existing EMS (from site audits, documentation reviews and management interviews) in relation to the standard; and
- the last column specifies further actions to be taken in order to satisfy requirements of the standard.
- the conformance assessment at the end of each ISO 14001 clause illustrates the extend to which YOUR COMPANY's existing EMS complies with the standard.

If all four circles are shaded, then the ISO 14001 clause has been satisfied. If no circles are shaded, then none of the requirements specified by the standard has been fulfilled by the existing management system. The details of the 4-circle coding system are explained in the following.

● ● ● ●	If all four circles are shaded, then the ISO 14001 clause has been totally satisfied, no further action or minimal action is required.
● ● ● ○	If three circles are shaded, then the required procedure(s) / documentation has been developed and implemented with relevant records maintained, and the requirements were almost satisfied (say over 70%). Your company may need to take little effort to fill the gap (say less then 2 weeks).
● ● ○ ○	If 2 circles are shaded, it can be any one of below: a) the required procedure(s)/documentation has been developed and implemented with relevant records, but the requirements were partly satisfied (say 40-70%) b) the required procedure(s)/documentation has been developed but not yet implemented and no records . c) some practices were being implemented with records, but there was no documented procedures/instructions to ensure sufficient information was provided to achieve consistency and appropriate work practices. Your company may need to take some time to fill the gap. (say at least one month)
● ○ ○ ○	If 1 circle is shaded, then the specified requirements has been partly considered (less than 40%), your company needs to pay much attention and plan the detail actions to fill the gap.
○ ○ ○ ○	If no circle is shaded, then none of the requirements specified by the standard has been fulfilled by the existing management system. Your company needs to pay most attention and plan the detail actions.

	ISO 14001 Clause Details	Status of YOUR COMPANY	Next Steps
4.1	**General requirements**		
	The organization shall establish, document, implement, maintain and continually improve an environmental management system in accordance with the requirements of this International Standard and determine how it will fulfil these requirements. The organization shall define and document the scope of its environmental management system.		
	Conformance Assessment ○ ○ ○ ○		
4.2	**Environmental policy**		
	Top management shall define the organization's environmental policy and ensure that, within the defined scope of its environmental management system, it a) is appropriate to the nature, scale and environmental impacts of its activities, products and services; b) includes a commitment to continual improvement and prevention of pollution; c) includes a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes which relate to its environmental aspects; d) provides the framework for setting and reviewing environmental objectives and targets; e) is documented, implemented and maintained; f) is communicated to all persons working for or on behalf of the organization; g) is available to the public.		
	Conformance Assessment ○ ○ ○ ○		
4.3	**Planning**		
4.3.1	**Environmental aspects**		
	The organization shall establish, implement and maintain a procedure(s) a) to identify the environmental aspects of its activities, products and services within the defined scope of the environment management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products and services; and b) to determine those aspects that have or can have significant impact (S) on the environment (i.e. significant environmental aspects). c) The organization shall document this information and keep it up to date. d) The organization shall ensure that the significant environment aspects are taken into account in establishing, implementing and maintaining its environmental management system.		
	Conformance Assessment ○ ○ ○ ○		

ISO 14001 Clause Details	Status of YOUR COMPANY	Next Steps
4.3.2 Legal and other requirements		
The organization shall establish, implement and maintain a procedure(s) a) to identify and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its environmental aspects; and b) to determine how these requirements apply to its environmental aspects. The organization shall ensure that these applicable legal requirements and other requirements to which the organization subscribes are taken into account in establishing, implementing and maintaining its environmental management system.		
	Conformance Assessment	○ ○ ○ ○
4.3.3 Objectives, targets and programme(s)		
The organization shall establish, implement and maintain documented environmental objectives and targets, at relevant functions and levels within the organization. The objectives and targets shall be measurable, where practicable, and consistent with the environmental policy, including the commitments to prevention of pollution, to compliance with applicable legal requirements and with other requirements to which the organization subscribes, and to continual improvement. When establishing and reviewing its objectives and targets, an organization shall take into account the legal requirements and other requirements to which the organization subscribes, and its significant environmental aspects. It shall also consider its technological options, its financial, operational and business requirements, and the views of interested parties. The organization shall establish, implement and maintain a programme(s) for achieving its objectives and targets. Programme(s) shall include a) designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization; and b) the means and time-frame by which they are to be achieved.		
	Conformance Assessment	○ ○ ○ ○
4.4 Implementation and operation		
4.4.1 Resources, roles, responsibility and authority		
Management shall ensure the availability of resources essential to establish, implement, maintain and improve the environmental management system. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources. Roles, responsibilities and authorities shall be defined, documented and communicated in order to facilitate effective environmental management. The organization's top management shall appoint a specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for a) ensuring that an environmental management system is established, implemented and maintained in accordance with the requirements of this International Standard; b) reporting to top management on the performance of the environmental management system for review, including recommendations for improvement.		
	Conformance Assessment	○ ○ ○ ○
4.4.2 Competence, training and awareness		
The organization shall ensure that any person(s) performing tasks for it or on its behalf that have the potential to cause a significant environmental impact(s) identified by the organization is (are) competent on the basis of appropriate education, training or experience, and shall retain associated records. The organization shall identify training needs associated with its environmental aspects and its environmental management system. It shall provide training or take other action to meet these needs, and shall retain associated records. The organization shall establish, implement and maintain a procedure(s) to make persons working for it or on its behalf aware of a) the importance of conformity with the environmental policy and procedures and with the requirements of the environmental management system; b) the significant environmental aspects and related actual or potential impacts associated with their work, and the environmental benefits of improved personal performance; c) their roles and responsibilities in achieving conformity with the requirements of the environmental management system; and d) the potential consequences of departure from specified procedures.		
	Conformance Assessment	○ ○ ○ ○
4.4.3 Communication		
With regard to its environmental aspects and environmental management system, the organization shall establish, implement and maintain procedure(s) for a) internal communication among the various levels and functions of the organization; b) receiving, documenting and responding to relevant communication from external interested parties. The organization shall decide whether to communicate externally about its significant environmental aspects, and shall document its decision. If the decision is to communicate, the organization shall establish and implement a method(s) for this external communication.		
	Conformance Assessment	○ ○ ○ ○

ISO 14001 Clause Details		Status of YOUR COMPANY	Next Steps
4.4.4	**Documentation**		
	The environmental management system documentation shall include a) the environmental policy, objectives and targets; b) description of the scope of the environmental management system; c) description of the main elements of the environmental management system and their interaction, and reference to related documents; d) documents, including records, required by this International Standard; and documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects. e) documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects.		
		Conformance Assessment	○ ○ ○ ○
4.4.5	**Control of documents**		
	Documents required by the environmental management system and by this International Standard shall be controlled. Records are a special type of document and shall be controlled in accordance with the requirements given in 4.5.4. The organization shall establish, implement and maintain a procedure(s) to a) approve documents for adequacy prior to issue; b) review and update as necessary and re-approve documents; c) ensure that changes and the current revision status of documents are identified; d) ensure that relevant versions of applicable documents are available at points of use; e) ensure that documents remain legible and readily identifiable; f) ensure that documents of external origin determined by the organization to be necessary for the planning and operation of the environmental management system are identified and their distribution controlled; and g) prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.		
		Conformance Assessment	○ ○ ○ ○
4.4.6	**Operational control**		
	The organization shall identify and plan those operations that are associated with the identified significant environmental aspects consistent with its environmental		

ISO 14001 Clause Details		Status of YOUR COMPANY	Next Steps
	policy, objectives and targets, in order to ensure that they are carried out under specified conditions, by a) establishing, implementing and maintaining a documented procedure(s) to control situations where their absence could lead to deviation from the environmental policy, objectives and targets; and b) stipulating the operating criteria in the procedure(s); and c) establishing, implementing and maintaining procedures related to the identified significant environmental aspects of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors.		
		Conformance Assessment	○ ○ ○ ○
4.4.7	**Emergency preparedness and response**		
	The organization shall establish, implement and maintain a procedure(s) to identify potential emergency situations and potential accidents that can have an impact(s) on the environment and how it will respond to them. The organization shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts. The organization shall periodically review and, where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations The organization shall also periodically test such procedures where practicable.		
		Conformance Assessment	○ ○ ○ ○
4.5	**Checking**		
4.5.1	**Monitoring and measurement**		
	The organization shall establish, implement and maintain a procedure(s) to monitor and measure, on a regular basis, the key characteristics of its operations that can have a significant environment impact. The procedure(s) shall include the documenting of information to monitor performance, applicable operational controls and conformity with the organization's environmental objectives and targets. The organization shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained and shall retain associated records.		
		Conformance Assessment	○ ○ ○ ○
4.5.2	**Evaluation of compliance**		
4.5.2.1	Consistent with its commitment to compliance, the organization shall establish, implement and maintain a procedure(s) for periodically evaluating compliance with applicable legal requirements. The organization shall keep records of the results of the periodic evaluations.		

	ISO 14001 Clause Details	Status of YOUR COMPANY	Next Steps
4.5.2.2	The organization shall evaluate compliance with other requirements to which it subscribes. The organization may wish to combine this evaluation with the evaluation of legal compliance referred to in 4.5.2.1 or to establish a separate procedure(s). The organization shall keep records of the results of the periodic evaluations.		
		Conformance Assessment	○ ○ ○ ○
4.5.3	**Nonconformity, corrective action and preventive action**		
	The organization shall establish, implement and maintain a procedure(s) for dealing with actual and potential nonconformity(ies) and for taking corrective action and preventive action. The procedure(s) shall define requirements for a) identifying and correcting nonconformity(ies) and taking action(s) to mitigate their environmental impacts; b) investigating nonconformity(ies), determining their cause(s) and taking actions in order to avoid their recurrence; c) evaluating the need for action(s) to prevent nonconformity(ies) and implementing appropriate actions designed to avoid their occurrence; d) recording the results of corrective action(s) and preventive action(s) taken; and e) reviewing the effectiveness of corrective action(s) and preventive action(s) taken. Action taken shall be appropriate to the magnitude of the problems and the environmental impacts encountered. The organization shall ensure that any necessary changes are made to environmental management system documentation.		
		Conformance Assessment	○ ○ ○ ○
4.5.4	**Control of records**		
	The organization shall establish and maintain records as necessary to demonstrate conformity to the requirements of its environmental management system and of this International Standard, and the results achieved. The organization shall establish, implement and maintain a procedure(s) for the identification, storage, protection, retrieval, retention and disposal of records. Records shall be and remain legible, identifiable and traceable.		
		Conformance Assessment	○ ○ ○ ○
4.5.5	**Internal audit**		
	The organization shall ensure that internal audits of the environmental management system are conducted at planned intervals to a) determine whether the environmental management system 1) conforms to planned arrangements for		

	ISO 14001 Clause Details	Status of YOUR COMPANY	Next Steps
	environmental management including the requirements of this International Standard; and 2) has been properly implemented and is maintained; and b) provide information on the results of audits to management Audit programme(s) shall be planned, established, implemented and maintained by the organization, taking into consideration the environmental importance of the operation(s) concerned and the results of previous audits. Audit procedure(s) shall be established, implemented and maintained that address • the responsibilities and requirements for planning and conducting audits, reporting results and retaining associated records; • the determination of audit criteria, scope, frequency and methods. Section of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.		
		Conformance Assessment	○ ○ ○ ○
4.6	**Management review**		
	Top management shall review the organization's environmental management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and the need for changes to the environmental management system, including the environmental policy and environmental objectives and targets. Records of the management reviews shall be retained. Input to management reviews shall include a) results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organization subscribes; b) communication(s) from external interested parties, including complaints; c) the environmental performance of the organization; d) the extent to which objectives and targets have been met; e) status of corrective and preventive actions; f) follow-up actions from previous management reviews; g) changing circumstances, including developments in legal and other requirements related to its environmental aspects; and h) recommendations for improvement. The outputs from management reviews shall include any decisions and actions related to possible changes to environmental policy, objectives, targets and other elements of the environmental management system, consistent with the commitment to continual improvement.		
		Conformance Assessment	○ ○ ○ ○

Appendix III 附錄 三 Environmental legislations, standards and guidelines of Hong Kong 香港的環境法律及條例 (只提供英文版本)

Environmental Laws and Regulations in Hong Kong

Attention

1. The framework presented in this legal register is for reference only; users shall include legal and other requirements applicable to the activities, services and products of their operations.
2. In general, the major environmental legislations in Hong Kong cover the following areas:
   - Air emission control
   - Noise control
   - Waste management
   - Water pollution control
   - Environmental impact assessment

   As a starting point, users may visit the website of the Environmental Protection Department for an overview of the environmental legislations, standards and guidelines of Hong Kong (www.epd.gov.hk).
3. For the purpose of providing more background information on the linkage between the relevant legislation and environmental aspects, the column of "Description" and "Area of Applicability" are listed as assisting tools.

A. Air Emission Control

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
A1.	Air Pollution Control Ordinance (Cap. 311)	Provides for the control of air pollution from stationary sources and motor vehicles. Also enables promulgation of regulations	Use of fuels for stationery combustion sources (e.g. boiler, motor vehicles).
A2.	Air Pollution Control (Dust and Grit Emission) Regulations	Stipulates the emission standards, assessment procedures and requirements for particulate emissions from stationary combustion sources.	See above.
A3.	Air Pollution Control (Fuel Restriction) Regulations	Prohibits the use of high sulphur content solid and liquid fuel for commercial and industrial appliances. (In Shatin, only gaseous fuel is allowed except for the appliances used in construction sites or for emergency purposes.)	See above.
A4.	Air Pollution Control (Furnaces, Oven and Chimneys) (Installation and Alteration) Regulation	Requires prior approval to ensure suitable design for the installation and alteration of furnaces, ovens and chimneys.	Air emission from the chimneys of boiler.
A5.	Air Pollution Control (Motor Vehicle Fuel) Regulation	Sets out the specifications of motor vehicle fuel to be used in motor vehicles and prohibits the sale of leaded petrol.	Use of fuel for registered vehicles.
A6.	Air Pollution Control (Emission Reduction Devices for Vehicles) Regulation	Requires pre-Euro light diesel vehicles up to 4 tonnes to have emission reduction devices for licence renewal.	Install emission reduction devices for pre-Euro light diesel vehicles up to 4 tonnes.
A7.	Air Pollution Control (Smoke) Regulation	Restricts emission of dark smoke from stationary combustion sources.	Air emission from the boiler.
A8.	Technical Memorandum for Issuing Air Pollution Abatement Notices to Control Air Pollution from Stationary Polluting Process	Specifies principles, methods, standards and guidelines for assessing air pollution from stationary polluting sources.	Air emission from the boiler, chemical fume from plating baths
A9.	Air Pollution Control (Volatile Organic Compounds) Regulation	Products required to be sold with a label detailing their VOC content. Maximum VOC limits of regulated products will take effect in stages, together with other requirements such as annual reporting of their sales data.	Use of VOC contained products.
A10.	Ozone Layer Protection Ordinance (Cap. 403)	To give effect to Hong Kong's international obligations under the 1985 Vienna Convention for the Protection of the Ozone Layer and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer; to provide for the prohibition of the manufacture of, and to control the importation and exportation of, and to conserve the resources of, substances that deplete the ozone layer and of products containing or made with those substances; and to provide for related matters.	Use of 'scheduled' refrigerants for building (R22) air-conditioning units.
A11.	Ozone Layer Protection (Controlled Refrigerants) Regulation	Requires the conservation of controlled refrigerants used in large from all countries, scale installations and motor vehicles.	Use of 'Controlled' refrigerants for air-conditioning systems for vehicles.
A12.	Road Traffic Ordinance (Cap. 374)	Regulates road traffic, vehicles and users of roads and related matters; includes provisions to limit pollution from vehicles.	Use of service vehicles.
A13.	Road Traffic (Construction and Maintenance of Vehicles) Regulations	Specifies smoke levels for in-service vehicles.	Use of service vehicles.

Other Requirements

2.1 Code of Practice

No.	Title	Descriptions	Area of Applicability
A14.	Code of Practice for the Prevention of Legionnaires' Disease in Hong Kong (Source : Electrical and Mechanical, Service Department)	Provides practical guidelines for the proper design, operation and maintenance of the related facilities to prevent the possible outbreak of Legionnaires' Disease.	Indoor area ventilation.

2.2 Professional Guidelines

No.	Title	Descriptions	Area of Applicability
A15.	ProPECC Practice Note PN 1/92 Impingement of Plumes from Boiler Chimneys on Adjacent Buildings	Chimneys serving boilers and furnaces can emit noxious and harmful polluting matters. These emissions may impinge directly onto buildings located up to 200m, from the chimney concerned and can give rise to severe nuisances or to adverse health effects. This factor must be taken into account when designing a new building that will be located near to existing chimneys or when installing a chimney on an existing building.	Use of VOC contained products.
A16.	ProPECC Practice Note PN 4/94 Air Conditioning Refrigerants – A Time for Change	To alert professionals involved with the air-conditioning of buildings to the impending shortage of conventional CFC-based refrigerants; To provide advice on the urgent measures which need to be taken to eliminate dependence on CFC-based refrigerants.	Install a chimney on existing building
A17.	A Guide to the Air Pollution Control (Volatile Orgainc Compounds) Regulation [Source: Environmental Protection Department]	To give the general introduction on the Air Pollution Control (Volatile Organic Compounds) Regulation (hereunder referred to as the "Regulation") which regulates the VOC contents in certain products/processes.	Use of ozone depleting refrigerants for air-conditioning units, vehicles

2.3 Technical Circular

No.	Title	Descriptions	Area of Applicability
A18.	Guidance notes for management of Indoor Air Quality in office and public places (Source : Environment, Transport and Works Bureau)	Guidelines for the total management of indoor air quality. It is designed to enable owner/management of premises/building to prevent and successfully manage most of the common indoor air quality problems encountered in buildings in Hong Kong, for the health and well-being of all.	Indoor area ventilation.

B. Noise Control

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
B1.	Noise Control Ordinance (Cap. 400); Noise Control (General) Regulations	To provide for the prevention, minimizing and abatement of noise; the appointment of a Noise Control Authority; the powers and duties of the Noise Control Authority relating to the control of noise; the creation of offences; and for connected purposes.	Noise from industrial premises (e.g. noise from pump and maintenance operation, etc). In the event of a complaint by the public in relation to noise from our premises.
B2.	Noise Control (Motor Vehicles) Regulation	Requires all motor vehicles, including buses, commercial vehicles, lorries and motorcycles, first registered in Hong Kong to meet with stringent noise emission standards.	Purchasing of registered vehicles.
B3.	Road Traffic (Construction and Maintenance of Vehicles) Regulation	The regulations prohibit the use of motor vehicles without silencers or with a modified or defective silencer.	Use of service vehicles.
B4.	Factories and Industrial Undertakings Ordinance (Cap. 59) Factories and Industrial Undertakings (Noise at Work) Regulations Occupational Safety and Health Ordinance (Cap. 509)	Controls noise generated inside a factory or other industrial undertaking which affects employees in the work place	Use of noisy plant and equipment (e.g. board drilling, cutting machine, air compressor etc.).

2. Other Requirements

2.1 Technical Memorandum

No.	Title	Descriptions	Area of Applicability
B5.	Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites	for the measurement and assessment of noise emanating from places other than domestic premises, public places or construction sites; for the issuing of Noise Abatement Notices; and for determining whether or not any Noise Abatement Notice is being complied with.	Noise from industrial premises (e.g. noise from pump and maintenance operation, etc). In the event of a complaint by the public in relation to noise from our premises.

C. Waste Management

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
C1.	Waste Disposal Ordinance (Cap. 354)	Provides for the licensing of collection services and disposal facilities for all types of waste, the prohibition of livestock keeping in urban areas, the control on livestock keeping in restriction areas, the control on discharge or deposit of livestock waste in designated control areas, the control scheme on chemical waste, the control on illegal dumping of waste, the control on import and export of waste and for the establishment of a system whereby specified wastes must be notified to the relevant authority who may give directions as to the method of disposal. Requires also the production of a comprehensive plan for the collection and disposal of wastes.	Production and disposal of general solid waste (e.g. general refuse, recyclable wastes, etc.) and chemical waste (e.g. spent plating bath, sludge, spent flux, etc.).
C2.	Waste Disposal (Chemical Waste) (General) Regulation	Provides for control of all aspects of chemical waste disposal, including storage, collection, transport, treatment and final disposal.	Production, storage and disposal of chemical waste (e.g. spent plating bath, acids, sludge, flux, etc.).
C3.	Waste Disposal (Charges for Disposal of Chemical Waste) Regulation	Requires payment of charges for disposal of chemical waste at the Chemical Waste Treatment Centre thus creating an economic incentive towards waste minimisation.	Charges for chemical wastes disposal.

2. Other Requirements

2.1 Code of Practices

No.	Title	Descriptions	Area of Applicability
C4.	Code of Practices on the Packaging, Labelling and Storage of Chemical Wastes	Provides guidance to chemical waste producer for arranging proper packaging, labelling and storage of chemical waste before they are transported off-site to disposal facilities; and also apply to temporary storage of chemical waste prior to on-site or in-house treatment	Storage and disposal of chemical waste (e.g. spent plating bath, acids, sludge, flux, etc.).

2.2 Professional Guidelines

No.	Title	Descriptions	Area of Applicability
C5.	A Guide to the Chemical Waste Control Scheme [Source: Environmental Protection Department]	To introduce and explain the legislative controls over the management of chemical waste in Hong Kong	Production, storage and disposal of chemical waste (e.g. spent plating bath, acids, sludge, flux, etc.).
C6.	A Guide to the Registration of Chemical Waste Producers [Source: Environmental Protection Department]	To introduce the registration provisions of the Waste Disposal (Chemical Waste) (General) Regulation and the procedure for identifying chemical waste generation.	Disposal of chemical waste (e.g. spent plating bath, acids, sludge, flux, etc.).

D. Water Pollution Control

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
D1.	Water Pollution Control Ordinance (Cap. 358)	Provides for the designation of water control zones within which discharge of effluent other than domestic sewage into a foul sewer must be licensed.	Relevant to all activities resulting in wastewater discharges (e.g. rinsing water after etching, plating, deburr, desmea, cleaning water etc.).
	Water Pollution Control (General) Regulations	Gives practical effect to the ordinance	
	Technical Memorandum Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (Cap. 358AK)	Specifies legal limits for quality (physical, chemical and microbial) of effluent discharged into foul sewers, storm water drains, inland and coastal waters.	
D2.	Sewage Services Ordinance (Cap. 463)	Provides for the imposition of sewage charges and trade effluent surcharges and other related matters.	Discharge of wastewater (e.g. rinsing water after etching, plating, deburr, desmea, cleaning water etc.).

E. Dangerous Goods Management

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
E1.	Dangerous Goods Ordinance (Cap. 295) Dangerous Goods (Application and Exemption) Regulations Dangerous Goods (General) Regulations	Defines dangerous goods by category. Controls storage and transport of dangerous goods.	Use and storage of DGs (e.g. sulphuric acid, ammonia, caustic soda, hydrogen peroxide, etc.)
E2.	Pesticides Ordinance (Cap. 133)	Controls the supply and use of agricultural pesticides.	Use of pesticides.
E3.	Radiation Ordinance (Cap. 303)	Controls the use and disposal of radioactive substances.	Use and dispose of radioactive substances (e.g. x-ray metal thickness testing machine, laser drilling machine, etc.).

2. Other Requirements

2.1 Professional Guidelines

No.	Title	Descriptions	Area of Applicability
E4.	ProPECC Practice Note PN 2/94 Potentially Hazardous Installations [Source: Environmental Protection Department]	To single out potentially hazardous installations which can give rise to major accidents and to impose on their special requirements.	Storage large quantity of DGs (e.g. sulphuric acid, ammonia, caustic soda, hydrogen peroxide, etc.)
E5.	Fire Protection Notice No.4 Dangerous Goods General [Source: Fire Services Department]	Provide general guide on the licensing system for manufacture, store, convey or use of any dangerous goods.	Storage of DGs (e.g. sulphuric acid, ammonia, caustic soda, hydrogen peroxide, etc.)

F. Others

1. Ordinances and Regulations

No.	Title	Descriptions	Area of Applicability
F1.	Control of Chemicals Ordinance (Chapter 145)	A licence is required to import, export, supply, procure, deal in or with, possess or manufacture controlled chemicals.	Controlled purchase of chemicals (e.g. potassium permanganate, cyanide, etc.).
F2.	Public Health and Municipal Services Ordinance (Cap. 132)	Makes provision for urban services and public health; including control of nuisance caused by emission of dust and fumes, discharges of hazardous materials to sewers and littering, and places restrictions on the storage of wastes in buildings.	Applicable to potential nuisance claims from our activities (e.g. improper disposal of general refuse, noise, odour, etc.).
F3.	Summary Offences Ordinance (Cap. 228)	Contains provisions relating to littering offences including marine littering.	Applicable to potential nuisance claims from our activities ((e.g. improper disposal of general refuse, noise, odour, etc.).
F4.	Fixed Penalty (Public Cleanliness Offences) Ordinance (Cap. 570)	Fixed penalty is set out opposite to the offence of marine littering, unlawful depositing of waste, depositing of litter in public places, country parks and special areas, etc.	Depositing of litter / waste in public places
F5.	Energy Efficiency (Labelling of Products) Ordinance (Cap. 598)	Energy labels must be shown on the selected products to inform consumers of their energy efficiency performance.	Use of room air conditioners, refrigerating appliances and compact fluorescent lamps.
F6.	Product Eco-responsibility Ordinance	Require manufacturers, importers, wholesalers, retailers, consumers or any other parties to share the responsibility for the reduction in the use, recovery, recycling and proper disposal on selected products.	Use of plastic shopping bags, vehicle tyres, electrical and electronic equipment, packaging materials, beverage containers and rechargeable batteries

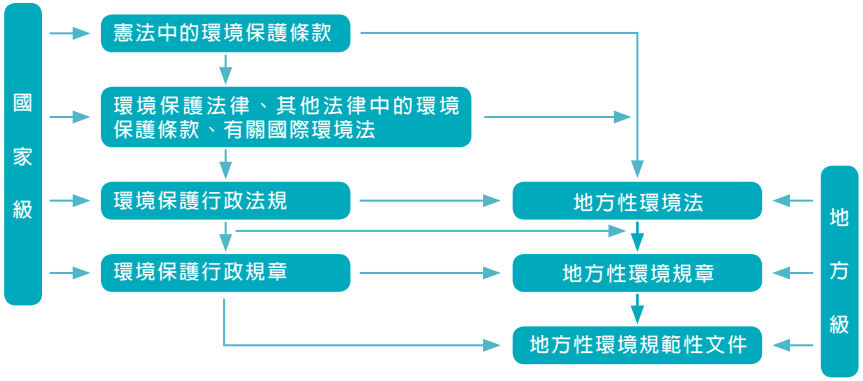
Appendix IV 附錄四 Mainland China legislative requirements relating to environmental protection 中國大陸的環境法例及規定 (Chinese Version Only)

中國法律法規和其他要求

重要事項

使用者請注意：

1. 中國法例來源於廣東省環境保護網站(http://www.gdepb.gov.cn)。
2. 為讓讀者瞭解與公司的環境因素有關的相關法例，特別於清單中加插「說明」，「適用性」的部份，加以解釋。詳情請參閱廣東省環境保護網站。
3. 地方性環境法必須以中央環境法為依據，國家環境法的效力高於地方性環境法的效力，國家參與和批準的國際環境法的效力高於國內環境法的效力，特別法的效力高於普通法的效力，新法的效力高於舊法的效力。其例外是：嚴於國家污染物排放標準的地方污染物排放標準的效力高於國家污染物排放標準。
4. 部份法例資料只有英文版本，故此該部份法例亦以英文版本列載。



A. 空氣污染物排放控制

國內法律法規 – 國家級

編號	法 例	說 明	適用範圍
A1	中華人民共和國大氣污染防治法	煙塵排放不得超過規定的排放標準；嚴格限制向大氣排放含有有毒物質的廢氣和粉塵；申報污染物排放設施、處理設施，污染物的種類、數量和濃度；禁止生產、銷售、使用嚴重污染大氣環境的工藝和設備；採取除塵措施控制粉塵排放；逐步減少含鉛汽油的使用；國家採取措施，有計劃地控制或才逐步消減各地方主要大氣污染物的排放總量申報登記排入設施、處理設施，污染物的種類、數量和濃度；繳納排污和超標準排污費；對污染嚴重的單位，要限期治理；對突發性事件，應有任何可引致空氣污染的活動(如：後備發電機的煙、前處理的酸性氣體排放等應急措施)。	任何可引致空氣污染的活動(如：後備發電機的煙、前處理的酸性氣體排放等)
A2	大氣污染防治法實施細則	大氣污染防治設施經驗收合格，建設專案方能投入生產或使用；環保部門進行現場檢查時，有權要求提供相關資料。	大氣污染防治設施(如：水濂式空氣清潔系統等)
A3	汽車排氣污染監督管理辦法	在用汽車排污染必須達到國家的排放標準；在用車輛必須通過交通部門的年檢。	已登記車輛的廢氣排放
A4	限期停止生產銷售使用車用含鉛汽油的通知	停止生產銷售和使用車用含鉛汽油，實施車用汽油無鉛化。	已登記車輛使用的燃油
A5	中國進出口受控消耗臭氧層物質目錄(第一批)	凡從事《名錄》中所列物質進出口業務的企業，必須於2000年1月31日前將本企業已簽訂的有關《名錄》中所列物質進出口業務合同報送消耗臭氧層物質進出口管理辦公室(設在國家環境保護總局)備案；從2000年4月1日起，對《名錄》中其他所列物質實行進出口配額許可管理制度。	冷氣使用的「受管制」的冷凍劑及消防系統使用的滅火器
A6	中國逐步淘汰消耗臭氧層物質國家方案	淘汰戰略：自2002年1月1日起哈龍的年生產和消費量凍結在1995年至1997三年的平均水平上；自2005年1月1日起哈龍的生產和消費量削減50%；自2010年1月1日起停止哈龍的生產和消費。	冷氣使用的「受管制」的冷凍劑及消防系統使用的滅火器
A7	中華人民共和國國家標準環境空氣質量標準	根據中華人民共和國環境保護法和中華人民共和國大氣污染防治法為改善環境空氣質量，防止生態破壞，創造清潔適宜的環境，保護人體健康特制訂本標準。	固定工序(如：烘爐熱氣排放、前處理及電鍍糟的氣體排放)
A8	中華人民共和國國家標準大氣污染物綜合排放標準	指處理設施後排氣筒中污染物任何1小時濃度平均值不得超過的限值；或指無處理設施排氣筒中污染物任何1小時濃度平均值不得超過的限值。	固定工序(如：烘爐熱氣排放、前處理及電鍍糟的氣體排放)
A9	室內空氣排放標準	為保護人體健康，預防和控制室內空氣污染，制定本標準。本標準規定了室內空氣質量參數及檢驗方法，並適用於住宅和辦公建築物，及其他室內環境可參照本標準執行。	室內空氣質素
A10	飲食行業油煙排放標準	本標準規定了飲食業單位油煙的最高允許排放濃度和油煙淨化設備的最低去除效率。本標準適用於現有飲食單位的油煙排放管理，以及新設立飲食業單位的設計，環境影響評價，環境保護設施竣工驗收及其經營期間的油煙排放管理；排放油煙的食品加工單位和非經營性單位內部職工食堂，參照本標準執行。	職工食堂油煙排放

國內法律法規 – 省級

編號	法 例	說 明	適用範圍
A11	廣東省大氣污染物排放標準	第一時段限值的要求執行。即二氧化硫≤1000mg/m³；煙塵≤150mg/m³；煙色黑度≤林格曼黑度1級。	固定工序(如：後備發電機的氣體排放)
A12	廣東省徵收超標準排污費實施辦法	辦法適用於在本省境內排放污染物的企業、事業單位、部隊、個體工商戶、合夥經營者和個人。水污染物、大氣污染物、固體廢棄物的排放標準，執行已經省批准的市級排放標準，市級排放標準未規定的執行省級排放標準，省級排放標準未規定的執行國家的排放標準。	排放污染物的活動(如：水污染物、大氣污染物、固體廢棄物的排放等)

B. 噪音控制

國內法律法規 – 國家級

編號	法 例	說 明	適用範圍
B1	中華人民共和國噪聲污染防治法	限期治理噪聲敏感建築物集中區域內的噪聲污染源；對噪聲污染嚴重的落後設備實行淘汰制度；排放工業噪聲應符合工業企業廠界環境噪聲標準；申報噪聲污染設備的種類、數量、噪聲值和防治措施；禁止在噪聲敏感區域內使用高音廣播喇叭產生環境噪聲污染的工業企業，應當採取有效措施，減輕噪聲對周圍生活環境的影響。	工業活動噪音（如：水泵、空調系統、後備發電機等）
B2	工業企業廠界噪聲標準	標準適用於工廠及有可能造成噪聲污染的企事業單位的邊界。	工業活動噪音（如：水泵、空調系統、後備發電機等）
B3	工業企業職工聽力保護規範	第二條：本規範適用於各類工業企業噪聲 作業場所職工的聽力保護。凡有職工每天工作日8小時暴露於等效聲級大於或等於85分貝的企業，都應當執行本規範。	工業噪聲作業場所職工的聽力保護（如：發電機、廠內維修工作等）

國內法律法規 – 省級

編號	法 例	說 明	適用範圍
B4	廣東省實施《中華人民共和國環境噪聲污染防治》辦法	根據《中華人民共和國環境噪聲污染防治法》等法律法規，結合廣東省實際情況，制定此辦法。在工業生產中因使用固定的設備造成環境噪聲污染的單位，必須向所在地的縣級以上環境保護行政主管部門申報擁有造成環境噪聲污染的設備的種類、數量以及在正常作業條件下所發出的噪聲值和防治環境噪聲污染的設施情況。	工業噪聲作業場所職工的聽力保護（如：發電機、廠內維修工作等）

C. 廢物管理

國內法律法規 – 國家級

編號	法 例	說 明	適用範圍
C1	中華人民共和國固體廢物污染環境防治法	鼓勵、支援開展清潔生產，減少固體廢棄物的產生量；執行固體廢棄物污染環境監測制度；在收集、貯存、運輸、利用、處理過程中，採取防擴散、流失、滲漏措施；採取易回收利用、易處理、易消納的包裝物；禁止關閉、閒置或拆除防治設設施、場所；禁止中國境外的固體廢物進境傾倒、堆放、處理；實行工業固體廢物申報登記制度；禁止將危險廢物混入非危險廢物中貯存；從事收集、儲存、處置危險廢物經營活動的單位必須申請經營許可證。	生產及處理固體廢物（如：生活垃圾、可回收廢料、紙皮、廢金屬、廢塑料等
C2	國家危險廢物名錄	為防止危險廢物對環境的污染，加強對危險廢物的管理，保護環境和保障人民身體健康，根據《中華人民共和國固體廢物污染環境防治法》，制定《國家危險廢物名錄》；國家制定《危險廢物鑒別標準》。凡《名錄》中所列廢物類別高於鑒別標準的屬危險廢物，列入國家危險廢物管理範圍；低於鑒別標準的，不列入國家危險廢物管理；對需要制定危險廢物鑒別標準的廢物類別，在其鑒別標準頒佈以前，僅作為危險廢物登記使用；危險廢物的管理按照《中華人民共和國固體廢物污染環境防治法》中有關危險廢物的管理條款執行；隨著經濟和科學技術的發展，《國家危險廢物名錄》將不定期修訂。	生產及處理危險廢物（如：電鍍廢溶液、鈍化鐳溶液、有機溶劑、有機樹脂類廢物等）
C3	危險廢物轉移聯單管理辦法	第四條：危險廢物產生單位在轉移危險廢物前，須按照國家有關規定報批危險廢物轉移計劃；經批准後，產生單位應當向移出地環境保護行政主管部門申請領取聯單； 第五條：危險廢物產生單位每轉移一車、船(次)同類危險廢物，應當填定一份聯單； 第十四條：聯單由國務院環境保護行政主管部門統一制定，由省、自治區、直轄市人民政府環境保護行政主管部門印製。聯單共分為五聯，並以不同顏色代表。	生產及處理危險廢物（如：電鍍廢溶液、鈍化鐳溶液、有機溶劑、有機樹脂類廢物等）
C4	危險廢物儲存污染控制標準	本標準規定了對危險廢物貯存的一般要求，對危險廢物包裝、貯存設施的選址、設計、運行、安全防護、監測和關閉等要求。	生產及處理危險廢物（如：電鍍廢溶液、鈍化鐳溶液、有機溶劑、有機樹脂類廢物等）

國內法律法規 – 省級

編號	法 例	說 明	適用範圍
C5	廣東省危險廢物轉移報告聯單管理暫行規定	禁止將危險廢物提供或委託給無《危險廢物經營許可證》的單位從事收集、貯存、處置的經營活動。	生產及處理危險廢物（如：電鍍廢溶液、鈍化鐳溶液、有機溶劑、有機樹脂類廢物等）
C6	廣東省徵收超標準排污費實施辦法	辦法適用於在本省境內排放污染物的企業、事業單位、部隊、個體工商戶、合夥經營者和個人。水污染物、大氣污染物、固體廢棄物的排放標準，執行已經省批准的市級排放標準，市級排放標準未規定的執行省級排放標準，省級排放標準未規定的執行國家的排放標準。	排放污染物的活動（如：水污染物、大氣污染物、固體廢棄物的排放等）

D. 水污染控制

國內法律法規 – 國家級

編號	法 例	說 明	適用範圍
D1	中華人民共和國水法	開發利用水資源和防治水害；保護和改善水質；任何單位和個人排水不得損害公共利益和他人權益；向供水單位繳納水費。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等
D2	中華人民共和國水污染防治法	禁止向水體排放油類、酸液、城類或者劇毒物質；禁止將含有汞、鎘、砷、氰化物、黃磷等可溶性毒物向水體排放；禁止向水體排放、傾倒工業廢渣、城市垃圾及其它廢物；對違反本法規定排放的企事業單位給予警告、罰款；對造成重大污染事故的責任人比照刑法115條或187條，追究刑事責任。超標排污單位必須制訂規劃進行治理(第15條)。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）
D3	中華人民共和國水污染防治法實施細則	提交《排污申報登記表》，發放排污許可證；超過國家或者地方污染物排放標準的單位，應登記寫明超標原因和限期治理措施；水污染事故發生四十八小時內必須報告；排污口搬遷和新建均應環保部門批准；對重點污染排放實施總量控制。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）
D4	污水處理設施環境保護監督管理辦法	經設施處理後的水質應達到國家或地方規定的排放標準或指標；設施處理水量不得低於相關生產系統應處理的水量；污水處理所產生的污泥，應妥善處理或處置；設施的管理應納入本單位管理體系，配備專門的操作人員及管理人員；不能擅自拆除或閒置處理設施。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）
D5	中華人民共和國國家污水綜合排放標準	本標準適用於現有單位水污染物的排放管理，以及建設專案的環境影響評價，建設專案環境保護設施設計，竣工驗收及其投放後的排放管理。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）

國內法律法規 – 省級

編號	法 例	說 明	適用範圍
D6	廣東省徵收超標準排污費實施辦法	辦法適用於在本省境內排放污染物的企業、事業單位、部隊、個體工商戶、合夥經營者和個人。水污染物、大氣污染物、固體廢棄物的排放標準，執行已經省批准的市級排放標準，市級排放標準未規定的執行省級排放標準，省級排放標準未規定的執行國家的排放標準。	排放污染物的活動（如：水污染物、大氣污染物、固體廢棄物的排放等）
D7	廣東省珠江三角洲水質保護條例	為保護珠江三角洲水質，防治水污染，保障飲用水安全，實現水資源的持續利用，促進現代化建設，根據《中華人民共和國水污染防治法》及有關法律法規、法規的規定，結合本地區的實際，制定本條例。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）
D8	廣東省水污染物排放標準	本標準適用於廣東省境內排放水污染物的一切企業事業單位。	排放任何廢水的活動（如：電鍍清洗廢水、前處理廢水等）

E. 危險品管理

國內法律法規 – 國家級

編號	法 例	說 明	適用範圍
E1	化學危險品安全管理條例	生產儲存、經營、運輸和使用化學危險品的單位，必須建立健全的化學危險品安全管理制度；危險化學品必須儲存在專用倉庫、專用場地或者專用儲存室內，並由專人管理。	使用及貯存危險物品（如：電鍍化學品、酸、鹼、氰化物等）
E2	關於加強化學危險品管理的通知	實施重點環境管理化學危險物品登記制度。化學危險物品的儲存，要配有固定的符合安全環保要求，具有防盜功能的儲存廠所；要建立嚴格的出入登記和銷售登記制度。在化學危險物品生產、儲存、使用、運輸中一旦發生事故，引發事故的單位和有關人員必須採取應急措施。廢棄、過期的化學危險物品及使用過的化學危險物品包裝容器必須妥善保管，不得隨意拋棄，依照危險廢物的處置標準進行處置。	使用及貯存危險物品（如：電鍍化學品、酸、鹼、氰化物等）
E3	工作場所安全使用化學品的規定	使用單位使用的化學品應有標識，危險化學品應有安全標籤，並向操作人員提供安全技術說明書。使用單位購進危險化學品時，必須核對包裝（或容器）上的安全標籤。安全標籤若脫落或損壞，經檢查確認後應補貼。使用單位在危險化學品工作場所應設有急救設施，並提供應急處理的方法。使用單位應對盛裝、輸送、儲存危險化學品設備，採用顏色、標牌、標籤等形成，標明其危險性。	使用及貯存危險物品（如：電鍍化學品、酸、鹼、氰化物等）
E4	化學工業毒物登記管理辦法	第七條:《毒物登記檔案》《毒物周知卡》	使用及貯存危險物品（如：氰化鋅鹽、氰化鉀等）

F．其他

國內法律法規 － 國家級

編號	法 例	說 明	適用範圍
F1	中華人民共和國憲法	保護和改善生活環境和生態環境防治污染和其他公害。保護自然資源的合理利用，禁止破壞自然資源；國家通過各種不同途經創造就業條件，加強勞動保護。	公司內所有污染環境的活動(如：排放污染物、損耗資源等)
F2	中華人民共和國新刑法	第6條第六節：破壞環境保護罪 向大地、水體、大氣排放處理有害廢物，造成重大環境污染事故的，對單位處以罰金，並對其直接負責的主管人員和其他責任人員進行刑事處罰。	排放處理有害廢物
F3	中華人民共和國環境保護法	有權檢舉和控告污染和破壞環境的單位和個人；建設專案環境影響報告書制度；建立環境保護責任制制度；執行「同時設計，同時施工，同時設產」制度；執行排放污染物申報登記；繳納超標排污費，並負責治理限期；治理嚴重污染專案；禁止引進不符合環保要求的技術和設備；接受環保部門污染事故調查處理；不能轉移嚴重污染的生產設備；違反本法規定，給予警告或處以罰款、責令停業、關閉未完成治理任務的企業單位；對直接受到污染危害的單位可個別賠償損失；對造成重大環境污染事故，導致嚴重後果的直接責任人員追究刑事責任；優先執行地方污染物排放標準；排污單位如實反映情況，提供資料，接受現場檢查；造成土地、森林、草原、水、礦業、漁業等資源破壞的，承擔法律法規責任。	公司內所有污染環境的活動（如：排放污染物、損耗資源等）
F4	污染源監測管理辦法	排污單位的環境監測機構負責對本單位排放污染物狀況和防治污染設施運行情況進行定期監測，建立污染源檔案，對污染源監測結果負責，並按規定向當地環境保護局報告排污情況。排污單位應將已安裝的污染源監測設施的維護管理納入本單位管理體系，遵守下列要求：污染源監測設施污染治理設施同時進行，同等維護和保養，同時參與考評；對污染源監測設施應建立健全崗位責任、操作規程及分析化驗制度。建立污染源監測設施日常運行情況和設備台帳，接受所在地環境保護局的監督檢查。	公司內所有污染環境的活動（如：後備發電機的煙、工業活動噪音、排放電鍍廢溶液等）
F5	中華人民共和國節約能源法	合理使用資源，對落後的耗能較高的用能產品、設備實行淘汰制；不得將淘汰的設備轉讓他人使用；禁止引進境外落後的用能技術、設備和材料；礦產資源勘查和開採審批。	使用資源的產品及設備（如：用電設備等）
F6	中華人民共和國清潔生產促進法	為了促進清潔生產，提高資源利用效率，減少和避免污染物的產生，保護和改善環境，保障人體健康，促進經濟與社會可持續發展，制定本法。	生產過程及設計
F7	中華人民共和國環境影響評價法	為了實施可持續發展戰略，預防因規劃和建設專案實施後對環境造成不良影響，促進經濟、社會和環境的協調發展，制定本法。	建設新廠房

國內法律法規 － 省級

編號	法 例	說 明	適用範圍
F8	廣東省建設專案環境保護管理條例	建設產生污染的建設專案，必須遵守污染物排放的國家標準和地方標準；在實施重點污染物排放總量控制的區域內，還必須符合重點污染物排放總量控制的要求。工業建設專案應當採用能耗物耗小、污染物產生量少的清潔生產工藝，合理利用自然資源，防止環境污染和生態破壞。改建、擴建專案和技術改造專案必須採取措施，治理與該專案有關的原有環境污染和生態破壞。	建設新廠房

G. 歐盟

編號	法 例	說 明	適用範圍
G1	Waste Electrical and Electronic Equipment (WEEE) Directive (Directive 2002/96/EC) （只提供英文版本）	Reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment.	Product design
G2	The Restriction of Hazardous Substances in Electrical and Electronic Equipment (ROHS) Directive (2002/95/EC) （只提供英文版本）	The directive restricts the use of the following substances in electrical and electronic equipment: • Lead • Mercury • Cadmium • Chromium VI • PBB (poly-bromine biphenyl) • PBDE (poly-bromine phenyl ether)	Product line
G3	Nickel Free Directive (Directive 94/27/EC) （只提供英文版本）	The directive restricts the use of nickel in products intended in direct and prolonged contact with the skin on the basis that such products may cause allergic reactions. The limit for the rate of nickel released must be less than 0.5 µg//week.	Product line
G4	Packaging and Packaging Waste Directive (Directive 94/62/EC) （只提供英文版本）	Reduce the impact of packaging and packaging waste on the environment, by introducing recovery and recycling targets for packaging waste	Packaging materials
G5	Requirements For Soldered Electrical And Electronic Assemblies (J-STD-001D) （只提供英文版本）	Covering soldering materials and processes requirements and includes support for lead free manufacturing. In addition to easier to understand criteria for materials, methods and verification for producing quality soldered interconnections and assemblies.	Production line
G6	Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders (IPC/EIA J-STD-006A)	鉛含量的識別標誌，包括無鉛焊料成分的分類和最高安全工作溫度等信息，為正確應用無鉛焊料、協調各種焊料和材料的兼容性，以及為採用合適工藝參數進行工藝生產提供了簡便而可靠的信息。	Production line
G7	電子資訊產品污染控制管理辦法（第二十七條）	該《管理辦法》共分為四章二十七條，從電子資訊產品生產時產品及包裝物的設計、材料和工藝的選擇、技術的採用，標注產品中有毒有害物質的名稱、含量和可否回收利用、電子資訊產品環保使用期限，以及電子資訊產品生產者、銷售者和進口者應負責任等方面作出了具體規定。《管理辦法》確定了對電子資訊產品中含有的鉛、汞、鎘、六價鉻和多溴聯苯(PBB)、多溴二苯醚(PBDE)6種有毒有害物質的控制採用目錄管理的方式，循序漸進地推進禁止或限制其使用。	Production line

H. 日本

編號	法 例	說 明	適用範圍
H1	Revised Recycling Law (Formally known as the Law for Promotion of Effective Utilization of Resources) （只提供英文版本）	• Computers, AC units, TV sets, microwave ovens, clothes dryers, washing machines and refrigerators are required i) to be smaller in size, ii) to use standardized parts, iii) to be more durable and easy to repair, iv) to use recycled materials and reusable parts in manufacturing, v) to use less kinds of materials and less plastics, vi) to allow easy disassembly and cleaning of parts, vii) with plastic parts labelled, and viii) packaging to be made of recycled materials. • Computers, AC units, TV sets, microwave ovens, clothes dryers, washing machines and refrigerators are required to have plastic components labelled to facilitate segregation and recycling. • Rechargeable batteries (including Ni-Cd, Ni-MH, Li-ion and small sealed lead batteries) are required to be labelled as recyclable.	Product design

Appendix V 附錄五 Useful Links 其他有用網站

Industries Related Links
行業有關網站

1. Advanced Printing Technology Centre (APTEC) 印刷科技研究中心
   > http://www.aptec.vtc.edu.hk
2. Bisenet.com 中國印刷出版門戶網站 – 必勝印刷網
   > http://www.bisenet.com
3. China Printing Materials Net 中國印刷物資網
   > http://www.cnpmc.com/
4. Chinese Graphic Arts Net 大中華印藝網
   > http://www.cgan.net
5. Clothing Industry Training Authority 製衣業訓練局
   >http://www.clothingtraining.org.hk
6. Clothing Technology Demonstration Centre Company Limited
   製衣工藝示範中心有限公司
   > http://www.ctdc.org
7. Graphic Arts Association of Hong Kong 香港印藝學會
   > http://www.gaahk.org.hk
8. Hong Kong Apparel Society Limited 香港製衣同業協進會
   > http://www.hkapparel.com.hk
9. Hong Kong Food and Beverage Related Associations 香港食品及飲品業有關的商會
   > http://info.hktdc.com/hksar/product_foodstuff.htm
10. Hong Kong Intimate Apparel Industries' Association 香港內衣業聯會
    > http://www.hkiaia.org
11. Hong Kong Printed Circuit Association 香港綫路板協會
    > http://www.hkpca.org
12. Hong Kong Printing Industry Workers Union 香港印刷業工會
    > http://www.hkpiwu.org.hk
13. Hong Kong Printing Resources Centre Ltd 香港印刷資源中心
    > http://www.hkprb.com
14. Hong Kong Toys Council 香港玩具協會
    > http://www.toyshk.org
15. Hong Kong Watch Manufacturers Association Ltd. 香港表廠商會
    > http://www.hkwma.org
16. Hong Kong Woollen and Synthetic Knitting Manufacturers' Association, Limited
    香港羊毛化纖針織業廠商會
    > http://www.hkwoollen.org.hk
17. Printing Industry Training Centre 印刷業訓練中心
    > http://www.vtc.edu.hk/vtc/web/template/about_the_centr.jsp?fldr_id=496&lang=en
18. Printing and Printing Equipment Industries Association of China
    中國印刷及設備器材工業協會
    > http://www.chinaprint.org.cn
19. Printing Technology Research Institute 印刷工業技術研究中心
    > http://www.ptri.org.tw
20. Textile Council of Hong Kong Limited 香港紡織業聯會
    > http://www.textilecouncil.com
21. Textile Manufacturing Technology Centre 紡織科技研發中心
    > http://www.clothingtraining.org.hk/tmtc/english/index_tmtc.htm
22. The Federation of Hong Kong Garment Manufacturers 香港製衣業總商會
    > http://www.garment.org.hk
23. The Federation of Hong Kong Watch Trades and Industries Ltd. 香港鐘表業總會
    > http://www.hkwatch.org
24. The HongKong General Chamber of Textiles Limited 香港紡織商會
    > http://www.textileschamber.org
25. The Hong Kong Printers Association 香港印刷業商會
    > http://www.hkprinters.org
25. The HongKong Printers Investment Association 香港印刷業投資協會
    > http://www.hkpia.com.hk

Hong Kong Government and Related Organizations Links
香港政府及有關機構的網站

1. Commerce and Economic Development Bureau 商務及經濟發展局
   > http://www.cedb.gov.hk
2. Environmental Protection Department 環境保護署
   > http://www.epd.gov.hk
3. Government Logistic Department 政府物流服務署
   > http://www.gld.gov.hk
4. GovHK - The One-Stop Portal of The Hong Kong Special Administrative Region Government 香港政府一站通
   > http://www.gov.hk
5. Hong Kong Economy 香港經濟近況
   > http://www.hkeconomy.gov.hk
6. Hong Kong Productivity Council 香港生產力促進局
   > http://www.hkpc.org
7. Hong Kong Trade Development Council 香港貿易發展局
   > http://www.hktdc.com
8. Intellectual Property Department 知識產權署
   > http://www.ipd.gov.hk
9. Invest Hong Kong 投資推廣署
   > http://www.investhk.gov.hk
10. Labour Department 勞工處
    > http://www.labour.gov.hk
11. Occupational Safety and Health Council 職業安全健康局
    > http://www.oshc.org.hk
12. Support and Consultation Centre for SMEs 工業貿易署中小企業支援與諮詢中心
    > http://www.success.tid.gov.hk
13. Trade and Industry Department 工業貿易署
    > http://www.tid.gov.hk
14. Vocational Training Council 職業訓練局
    > http://www.vtc.edu.hk

Other Useful Links
其他有用網站

1. Business Environment Council 商界環保協會
   > http://www.bec.org.hk
2. Cleaner Production Partnership Programme 清潔生產伙伴計劃
   > http://www.cleanerproduction.hk
3. ESD Life 生活易
   > http://www.esdlife.com
4. Federation of Hong Kong Industries 香港工業總會
   > http://www.industryhk.org
5. Hong Kong Green Manufacturing Alliance 香港綠色製造聯盟
   > http://www.gma.org.hk

中小企製造業環保資源指南

附錄

(g) IECQ QC 080000 禁用物質過程管理體系(HSPM)

IECQ QC 080000 HSPM 為一套國際認證系統，旨在對良好供應商給予合格證明。獲發認證的供應商，即表示其能夠落實及維持「禁用物質過程管理(HSPM)」，從而有效控制及管理其設計活動、供應鏈、物料管理及製造過程，藉此確保其電力及電子部件不含有害物質(HSF)，以及其裝配符合地方、國家及國際規定。

- 該標準由美國電子產業聯盟(EIA)制訂。
- 它讓機構得以向外宣示其營運符合「有害物質限用指令（RoHS）」以及「廢棄電器及電子設備（WEEE）」的規定，並且獲獨立第三方確認其符合規範。
- 該標準被視為一項盡職審查，證明機構致力把有害物質從產品及供應鏈中移除。

4.3 最佳實踐指南

你可以從以下網站找到有關行業的最佳實踐指南：

噪音有關的指南	來源
1. 工廠及工業經營(工作噪音)規例簡介	勞工處網站 www.labour.gov.hk
2. 工廠及工業經營(工作噪音)規例指引	
室內空氣質素有關的指南	**來源**
3. 改善樓宇的室內空氣質素	環境保護署網站 www.iaq.gov.hk
4. 辦公室及公衆場所室內空氣質素管理指引	
能源效益有關的指南	**來源**
5. Guidelines on Energy Audit(只提供英文版本)	機電工程署網站 www.emsd.gov.hk
6. 建築物能源效益及節約指南	
其他指南	**來源**
7. 環保中小企業指南	環境保護運動委員會網站 www.ecc.org.hk

有關上述外部資訊之任何更改或其擁有權之轉變，香港工業總會概不負責任。

5. 相關法例

5.1 香港的環境法律及條例

在香港，主要的環境法例涵蓋了以下範疇：

- 廢氣排放控制
- 噪音控制
- 廢物管理
- 水質污染控制
- 環境影響評估

如欲瞭解有助符合香港環保相關法規的資訊，請參閱附錄三(只提供英文版本)。

另外，你亦可瀏覽下列環境保護署網站(http://www.epd.gov.hk)，以瞭解香港環境法例、準則及指引的概要：

- 環境法例
- 環境準則及指引

5.2 中國大陸的環境法例及規定

在中國內地，主要的環境法例涵蓋了以下範疇：

- 廢氣排放控制
- 噪音控制
- 廢物管理
- 水質污染控制
- 有害物料管理
- 其他

如欲瞭解有助符合中國內地環保相關法規的資訊，請參閱附錄四。

另外，你亦可瀏覽下列廣東省環境保護局網站(http://www.gdepb.gov.cn/)，以瞭解中國內地的環境法例、準則及指引的概要。

(a) 品質管理系統 – ISO 9001

- 提供一個管理框架以控制風險，並可就業務表現進行監察及評估。
- 有助提升形象及聲譽。
- 能透過內部及外部溝通找出改善空間。
- 適用於任何機構類型、任何規模及任何產品供應。

此外，ISO 9001 能與其他管理系統標準及規格互相配合，例如 OHSAS 18001 職業安全衛生管理系統及 ISO 14001 環境管理系統等。它們均可透過綜合管理妥善融合。

(b) 食品安全管理系統 – ISO 22000

ISO 22000 為公認的國際標準，適用於整個食物鏈中的任何業務，其中包括互有關連的機構，例如設備、包裝物料、清潔劑、添加劑及材料等生產商。為確保整個食物鏈都符合食品安全，該標準結合了以下公認的主要元素：

- 互動式溝通
- 系統管理
- 透過必要的計劃以及危害分析和關鍵控制點（HACCP）規劃，控制食品安全風險
- 持續改進及更新食品安全管理系統

(c) 危害分析和關鍵控制點 – HACCP

HACCP 乃國際通用，是立法及良好製造程序的主要平台，適用於食品業中所有界別。HACCP 亦是許多認可規定標準的主要部分，並被公認為國際食物產品貿易中的重要元素。

- 透過有關危害分析的互動溝通，助你集中處理影響食品安全的風險。
- 於生產過程的關鍵工序建立關鍵控制限制。
- 適用於食品業所有界別，包括初級生產商、製造商、加工商及食品服務營運商等，讓這些公司能夠對外證明其運作符合國家或國際食品安全法規。

(d) 社會責任標準 – ISO 26000(快將推出)

ISO 26000 提供了一套嶄新的國際標準。該指引標準將以 ISO 26000 形式於2010年推出，機構可自願選擇奉行與否。它沒有包含任何規例，旨在就社會責任提供指引，故不屬於一種認證標準。

- 這標準旨在供所有類型機構採用，不論公共或私人界別、已發展或發展中國家均可應用。
- 社會日益要求企業履行社會責任，這指引有助使到機構營運符合社會大眾的期望。

(e) 社會責任管理系統 – SA 8000

SA 8000 為一個綜合式及全球化的可驗證標準，旨在就企業責任作出審查及給予合格認證。該標準由國際社會責任組織(SAI)發起，該非牟利機構一直致力發展、落實及監督自願性質之可驗證社會責任標準。

- 該標準適用於大小企業，讓其能夠向顧客及其他相關人士證明公司重視社會責任。
- 該標準的核心信念是所有工作場所的管理均應尊重基本人權，而且管理層樂意就此方面負上責任。

(f) 職業安全衛生管理系統 – OHSAS 18001

OHSAS 18001 是有關職業安全衛生管理系統之國際認可評估規範。OHSAS 18001 主要處理以下範疇：

- 就危害識別、風險評估及風險控制作出策劃
- OHSAS管理計劃
- 架構及責任
- 培訓、意識及能力
- 諮詢及溝通
- 營運管理
- 緊急應變方案及有關行動
- 表現評估、監察及改善

OHSAS 18001 可與 ISO 9001 及 ISO 14001 緊密配合，以助你的機構有效地達致健康及安全規範。

表2. 分階段執行環境管理體系的流程

步驟	工作	相關文件範本/例子	參考時間
初步環境管理體系計劃	基線評估	初始環境評審清單 差距分析報告	2個星期
取得管理層承諾		環境方針	2個星期
策劃	識別環境因素	環境因素登記表	2個星期至1個月
	識別及符合法律法規和其他要求	法律法規和其他要求登記表	2個星期
	評價環境因素重要性	環境因素的識別及評估程序	2個星期至1個月
	建立環境目標、指標及方案	目標、指標及方案清單	2個星期
實施	建立環境管理體系文件	環境管理體系手冊 環境管理體系程序	1個月
	建立運行控制程序	運行控制程序及工作指引	1至2個月
	執行環境管理體系	組織結構及職責	2至3個月
		培訓計劃	
		培訓教材	
		監控供應商指引	
		信息及交流記錄	
		執行程序所需的表格	
檢查	檢查及審核	監測計劃	1個月
		審核計劃	
		審核清單	
		審核報告	
		糾正措施及預防措施報告	
改進	評審表現	管理評審報告	2個星期
		合共	8-12個月

ISO 14001 認證 *或*
自我聲明公司已成功推行 ISO 14001 環境管理體系

4.1.3 環境審查之自我評估工具

為了找出公司需要施行環境管理系統的地方，你必須先進行基線評估，以確立當前狀況。以下的「環境審查之自我評估工具」可幫助貴公司進行基線評估。*（詳情請參閱附錄二）*

步驟 1： **環境審查之一般檢查清單** – 這個檢查清單旨在提供資料，以助你及貴公司認清工廠運作對環境所造成的潛在影響。這亦是建立環境管理系統前首要的步驟。

步驟 2： **現有活動及營運檢討** – 這項檢討可讓你輕易掌握目前的環境表現水平，以及公司正面對的環境問題。

步驟 3： **與典型的環境管理系統作基準評價** – 這個基準評價工具可顯示出公司管理系統/程序的現況與 ISO 14001 認證規定的差距。透過認清這差別，你可更有效制訂行動計劃，以達致結構良好的環境管理系統及符合認證規定。

4.2 其他管理系統

管理系統	食品及飲品行業	線路板行業	印刷及包裝業	紡織及製衣業	玩具業	錶業
ISO 9001	✓	✓	✓	✓	✓	✓
ISO 22000	✓					
HACCP	✓					
ISO 26000	✓	✓	✓	✓	✓	✓
SA 8000	✓	✓	✓	✓	✓	✓
OHSAS 18001	✓	✓	✓	✓	✓	✓
IECQ QC 080000		✓			✓	✓

4.1.2 ISO 14001 — 環境管理體系

使用指南

- 國際標準規定了對環境管理體系的要求。
- 一個適用於所有大小類型的機構的環境管理體系框架，見圖2。
- 系統的成功推行有賴於各個層次及職能的承諾，特別是最高管理層。
- 可供機構建立一套程序，用來設立環境方針和目標，實現對環境方針和目標的符合，並向外界展示這種符合性；同時這一體系還可用來評定程序的有效性。

圖2. 概覽 ISO 14001

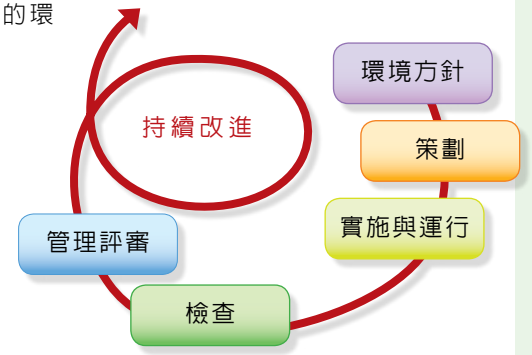


表1.「策劃、實施、檢查、改進」(PDCA)循環模式與 ISO 14001:2004 標準條文的對照

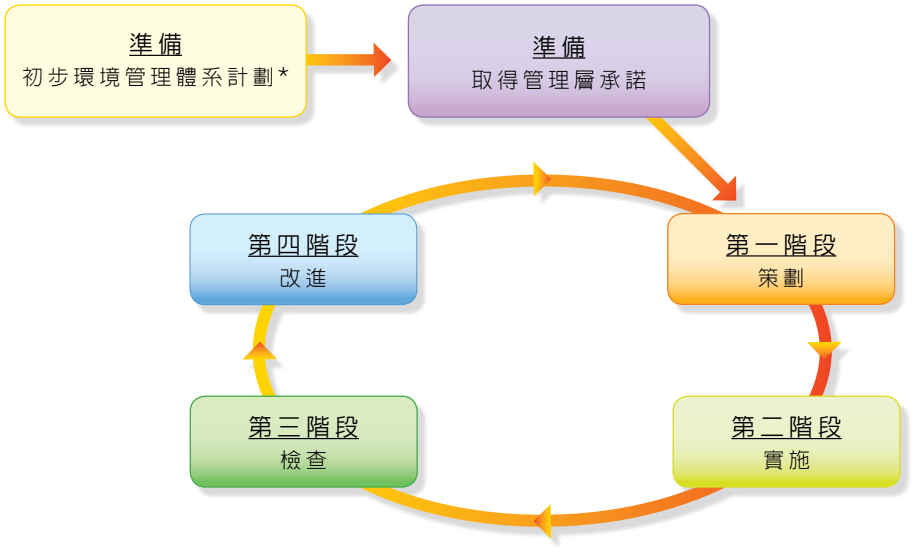
PDCA 循環模式	ISO 14001:2004 標準條文	
策劃	4.2	環境方針
	4.3	策劃
	4.3.1	環境因素
	4.3.2	法律法規和其他要求
	4.3.3	目標、指標和方案
實施	4.4	實施和運作
	4.4.1	資源、作用、職責和權限
	4.4.2	能力、培訓和意識
	4.4.3	信息交流
	4.4.4	文件
	4.4.5	文件控制
	4.4.6	運行控制
	4.4.7	應急準備和響應
檢查	4.5	檢查
	4.5.1	監測和測量
	4.5.2	合規性評價
	4.5.3	不符合、糾正措施和預防措施
	4.5.4	記錄控制
	4.5.5	內部審核
改進	4.6	管理評審

建立及執行環境管理體系的步驟

本支援套件採取「策劃、實施、檢查、改進」(PDCA)四個步驟來執行環境管理體系，而許多已獲取 ISO 14001 認證的公司都是採用「PDCA」方式。圖3亦指出在開始建立環境管理體系時應有的準備步驟(即初步計劃及取得管理層的承諾)。

雖然這些步驟不是ISO 14001強制性要求，但仍有助建立及執行環境管理體系。

圖3. 建立及執行環境管理體系的步驟



*初步環境管理體系計劃並不是 ISO 14001 的標準要求；但仍有助建立及執行 ISO 14001 環境管理體系。

表2列出建立環境管理體系時每個階段的不同作業及相關 ISO 14001 環境管理體系文件範本。此外，表2亦包括估計一般公司執行每個項目所需時間。本使用手冊的餘下部份會詳細描述建立環境管理體系各階段的工作。

3.3 超越 ISO 14001

由於 ISO 14001 提供了良好運作的基礎，使機構得以積極管理其對環境的影響，因此當你擁有一套獲 ISO 14001 認可的環境管理系統時，你的表現已不再是僅僅符合法規，而下一個目標將是做到持續改善。以下工作可助你達到這個目標：

- 碳中和
- 清潔生產
- 企業社會責任
- 環保設計
- 綠色採購
- 綠色產品設計
- 生命週期分析

下一步如何？

遵照上述建議，你應可為公司的環境表現帶來顯著改善。

如欲瞭解詳情，請參考第四章 — 實用工具一節。

現在該做什麼？

恭喜！來到這個環節，意味你已經更進一步，使貴公司的環境表現變得更加卓越。在這一節中，你將掌握數個實用工具，有助提升公司的環境表現。

4.1 環境管理系統 (EMS)

- 環境管理系統概覽
- ISO 14001 – 環境管理系統
- 環境審查之自我評估工具

不斷進步！

全球商業市場日益重視環保，假如想保持競爭力，你可跟隨使用手冊按部就班地建立一個環境管理系統(EMS)。環保署網站(http://www.epd.gov.hk)備有簡易又實用的提示，能就環境管理系統的建立及落實給予良好指引。

4.1.1 環境管理系統概覽

環境管理體系是一個業務管理的循環系統，透過策劃、實施、檢查及改進流程和活動，以實現公司對環境的責任和持續改進環境績效的目的。一個有效的環境管理體系應建基於「策劃、實施、檢查、改進」(PDCA)的持續改進概念。

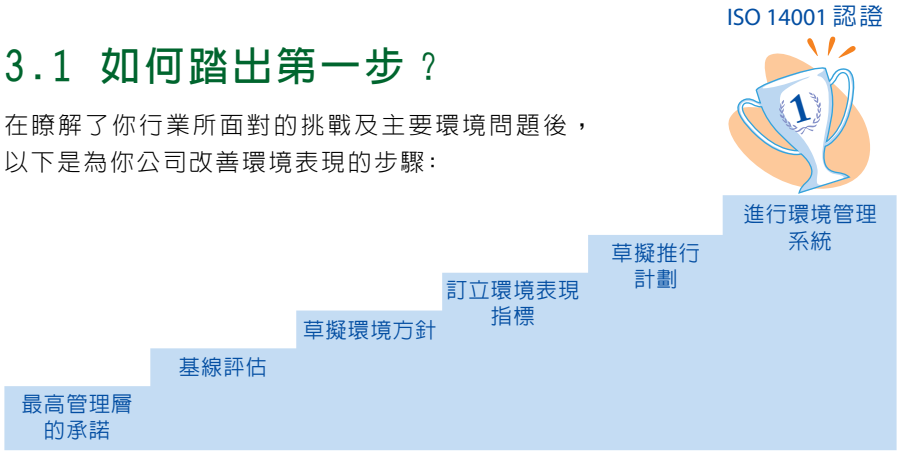
圖1.「策劃、實施、檢查、改進」的運行模式

3. 如何加強環境保護？

恭喜！進入到這個環節，你已經踏出提高你公司環境表現的第一步。並表明了你對環保的承諾及改善環境表現的興趣。

3.1 如何踏出第一步？

在瞭解了你行業所面對的挑戰及主要環境問題後，
以下是為你公司改善環境表現的步驟：



步驟 1：最高管理層的承諾

正如其他重大計劃一樣，獲得最高管理階層承諾是推行環境管理體系的基礎。這樣，計劃方會在機構內受到重視，並可獲批所需的資源及對公司所作的改變。

步驟 2：基線評估

要辨別推行環境管理體系的工作，首先必須瞭解機構的現有情況。基線評估提供快捷及容易理解的方法，以協助環境管理體系執行者清楚瞭解機構現有的環境表現及問題。*（請參考第四章 — 實用工具一節）*

步驟 3：草擬環境方針

環境方計是一個簡短的公開聲明，說明機構對改善環境表現的意向及承諾，更重要的是環境方針提供了建立及推行環境管理體系的重點。

步驟 4：訂立環境表現指標

「能量度的便能管理」：測量、分析、評估及檢討與機構環境表現有關的確實數據，有助建立有效的環境管理體系，以及達到既定的目標。除此，收集及使用環境表現參數，則有助編寫環境報告及機構內部（及機構對外）的溝

通。根據經驗，使用環境表現參數有助機構達成環境目標，並推動環境表現的持續改進。

步驟 5：草擬推行計劃

策劃推行環境管理體系有關的活動、權責、時間表、投入的資源、成本及效益，有助機構按著已確定的推行計劃時間表，有效管理體系的推行情況。除此，此階段亦提供一個有組織的計劃大綱，有助獲取最高管理階層以及其他各級員工的承諾。

步驟 6：推行環境管理系統

環境管理中最重要的一環是如何讓員工知道該怎樣執行各項有關環境方面的工作。例如：甚麼法例要求？如何協助改善機構的環境表現或減低成本？每位員工應認清計劃內容及其目的，並具備所需知識及技能，從而確保有關工作「第一次便做對」。機構員工越瞭解和掌握有關技術，機構便越可從推行環境管理體系中獲得預期的益處，而員工亦可從推行環境管理體系中獲益。

3.2 ISO 14001 環境管理系統認證

ISO 14001 是有關環境管理系統的國際標準，至今已有逾10年歷史，廣受全球認可及推崇。ISO 14001 建基於兩個理念，就是「持續改善」及「符合法規」。該準則透過「策劃→實施→檢查→改進」這有效的管理原則，提供一個清晰的管理架構。實施此標準的機構需要評估其營運對環境的影響，然後找出管理這些影響的方法，並制訂一套清晰的目標及指標，以持續改善其環境表現。這個標準亦要求機構清楚釐定各種流程及程序，以妥善管理員工及機構活動。

此外，ISO 14001亦要求機構清楚明白其適用的環境法規，以及其他有關企業及股東的義務。掌握這些規定後，有關機構便須作出有效管理，並定期檢查有否違反規定。

這個認證標準全球通用，適用於任何行業及機構，而且其設計與 ISO 9001 等國際管理系統完全配合，故機構可把此標準納入其現有管理系統及程序當中，發揮最佳效果。

主要環境問題

在手錶製造過程中，其生產運作有以下主要環境問題：

◎ 焊接時排放的廢氣 ◎ 有機溶劑/潤滑油的揮發 ◎ 切割機產生的金屬粉末 ◎ 機器釋放的塵埃 ◎ 氬氣焊接機所排放的有毒廢氣 ◎ 車輛的廢氣排放	**廢氣排放**
◎ 空氣洗滌器所排出之污水 ◎ 抽濕機排出之污水 ◎ 溢出的化學物	**水質污染**
◎ 所產生的潤滑廢油 ◎ 所產生的錫質廢料 ◎ 棄置的手套廢物 ◎ 棄置的修剪廢物 ◎ 棄置的部件廢料 ◎ 棄置的不合格產品 ◎ 棄置的包裝物料	**廢物棄置**
◎ 機器運作產生的噪音 ◎ 工場的噪音排放 ◎ 車輛的噪音排放	**噪音污染**
◎ 設備、冷氣及燈光所使用的電力 ◎ 不同機器所使用的潤滑油 ◎ 焊接處所使用之鎘複合物 ◎ 錫條所使用之鉛複合物 ◎ 耳塞及手套的使用 ◎ 化學物使用 ◎ 無鉛焊料的使用 ◎ 包裝物料使用 ◎ 車輛耗用的燃料	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

2.6 錶業

概覽

香港是世界首屈一指的鐘錶出口地。根據最新統計顯示，按2004年出口總值及數量計算，香港為世界第二大錶成品出口地。

錶業之大部分生產程序均是自動化，而且嚴格遵守「質量保證/質量控制（QA/QC）」步驟。

事實上，除了以下問題外，錶製造應不致成為違規嚴重的工業：

- 錶裝配時產生的廢油及潤滑廢油
- 焊接工序所產生的有毒氣體

(資料內容：香港貿易發展局及工業貿易署)

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾，特別是歐盟對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

此外，因為買家對產品品質的關注日益增加，越來越多生產商取得 ISO 9000 認證來提昇他們的品質管理系統。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

2.5 玩具業

概覽

於2005年9月，全港共有118間玩具製造工場，大部分均為中小企業。香港玩具製造商所生產的玩具種類繁多，當中尤以塑膠玩具最為出色。

玩具業用水不多，其環境特點包括：

- 有採用少量循環用水，以進行冷卻工序
- 使用溶劑或墨水作為染料或進行印花時，會釋放若干揮發性有機化合物
- 化學廢料主要來自注塑機之廢油及潤滑廢油，惟棄置此等廢料應不致違反法規。

因此，玩具製造業應不致成為違規嚴重的工業。

(資料內容：香港貿易發展局及工業貿易署)

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

主要環境問題

在玩具製造過程中，其生產運作有以下主要環境問題：

◎ 熱氣排放 ◎ 噴灑顏料時釋放的揮發性有機化合物 ◎ 焊接時排放的廢氣 ◎ 有機溶劑/潤滑油的揮發 ◎ 切割機產生的金屬粉末 ◎ 溶劑/黏合劑存貨所釋放的廢氣 ◎ 混合顏料時釋放的揮發性有機化合物 ◎ 車輛的廢氣排放	**廢氣排放**
◎ 沖洗顏料噴頭/噴槍 ◎ 空氣洗滌器所排出之污水 ◎ 溢出的化學物	**水質污染**
◎ 所產生的潤滑廢油 ◎ 裁剪所產生的廢物 ◎ 所產生的有毒廢料 ◎ 所產生的化學廢料 ◎ 棄置的容器廢物 ◎ 棄置的部件廢物 ◎ 棄置的不合格產品 ◎ 棄置的包裝物料	**廢物棄置**
◎ 機器運作所產生的噪音 ◎ 工場的噪音排放 ◎ 車輛的噪音排放	**噪音污染**
◎ 設備、冷氣及燈光所使用的電力 ◎ 不同機器所使用的潤滑油 ◎ 顏料使用 ◎ 原材料使用 ◎ 無鉛焊料的使用 ◎ 耳塞及手套的使用 ◎ 清潔表面的破布 ◎ 包裝物料的使用(如瓦通紙箱等) ◎ 車輛耗用的燃油	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

2.4 紡織及製衣業

概覽

紡織業涵蓋了紡紗、織造、針織及布料加工等範疇。於2006年9月，全港共有889間紡織相關製造工場；而紡織業亦是香港主要出口行業之一。

在紡織業中，漂染公司最常違返環境法規，主因如下：

- 需要處理大量排出物
- 許多公司位於多層式工業大廈，空間及樓層負重均受到限制。

一般而言，生化需氧量(BOD)及化學需氧量(COD)之數值變化，取決於生產程序及所應用之染料或化學物類型。

印花公司的環境特點包括：

- 清洗印花襯布及製成印花布料時，均會產生污水
- 如使用絲網印刷，清洗絲網所用的溶劑或會產生少量化學廢料
- 由於在布料上應用印花色漿時主要採用溶劑，所產生的揮發性有機化合物會有逃逸性排放現象；而在驅除溶劑之焙乾工序中亦會釋放此類污染物。

製衣業是香港主要製造業之一。於2006年6月，全港共有1,649間工場，而製衣業亦位列本地第二大製造行業。

製衣業的用水量通常不多。一般都是在最後清洗製衣成品時才會耗用清水，故不被視為行業中的主要污染者。

(資料內容：香港貿易發展局及工業貿易署)

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

主要環境問題

在紡織及製衣過程中，其生產運作有以下主要環境問題：

◎ 製造過程中產生的塵埃 ◎ 混合染料時釋放的揮發性有機化合物 ◎ 混合顏料時釋放的揮發性有機化合物 ◎ 溢出的化學物 ◎ 車輛排放的廢氣	**廢氣排放**
◎ 污水排放 ◎ 液態染料或化學物的滲漏 ◎ 溢出的化學物	**水質污染**
◎ 棄置的不合格棉花或紗線 ◎ 產生的潤滑廢油 ◎ 棄置的化學物容器 ◎ 棄置的附加襯料或壞掉的織針 ◎ 棄置的不合格產品 ◎ 棄置的包裝物料	**廢物棄置**
◎ 機器運作產生的噪音 ◎ 工場的噪音排放 ◎ 車輛的噪音排放	**噪音污染**
◎ 設備、冷氣及燈光所耗用的電力 ◎ 不同機器所使用之潤滑油 ◎ 漂白化學品的使用 ◎ 染料使用 ◎ 物料使用(絲線/襯料/織針等) ◎ 包裝物料的使用(如瓦通紙箱等) ◎ 車輛耗用的燃油	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

2.3 印刷及包裝業

概覽

在香港，按公司數量計算，印刷業是全港最大的製造行業。於2005年9月，全港共有4,262間印刷工場。大部分均是在港僱用少於10人的中小企業。

印刷業的環境特點包括：

- 在清潔程序後，產生大量溶劑廢液及破布
- 生產程序採用大量溶劑，會釋放揮發性有機化合物
- 耗用大量能源

另外，於2004年9月，香港共有304間包裝物料製造商。然而，許多港商都把生產廠房遷移內地，原因是營運成本較低及更靠近內地市場。

包裝業在製造過程中產生了大量紙張及塑料廢物，而使用黏合劑亦會釋放揮發性有機化合物。

(資料內容：香港貿易發展局及工業貿易署)

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

主要環境問題

在印刷及包裝的過程中，其生產運作有以下主要環境問題：

◎ 工場排放的揮發性有機化合物 ◎ 書本釘裝時產生的金屬粉末 ◎ 車輛排放的廢氣	**廢氣排放**
◎ 溢出的化學物質 ◎ 排出的污水	**水質污染**
◎ 棄置的化學廢料 ◎ 研磨機產生的淤渣 ◎ 棄置的廢紙 ◎ 棄置的不合格產品 ◎ 棄置的包裝物料	**廢物棄置**
◎ 設備產生的噪音 ◎ 車輛排放的噪音	**噪音污染**
◎ 設備、冷氣及燈光所耗用的電力 ◎ 化學物的使用 ◎ 紙張使用 ◎ 文具使用 ◎ 墨水使用 ◎ 耳塞及手套的使用 ◎ 包裝物料的使用 （如瓦通紙箱等） ◎ 車輛耗用的燃油	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

2.2 線路板行業

概覽

在香港，大部分線路板工廠均為中小型企業。

線路板製造業所面對的問題，與電鍍工業相若，原因是兩者有著相似的製造程序。其環境特點包括：

- 大量化學廢料，包括蝕刻廢液（含有高濃度銅質）、乾膜顯像液、抗蝕條及廢溶劑。
- 蝕刻液及溶劑的揮發氣體亦可能需要控制，以保障工人的健康及安全。
- 切割機發出的噪音可能在工廠範圍構成問題，但應不致影響環境噪音值。

（資料來源：工業貿易署）

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

主要環境問題

在線路板製造過程中，其生產運作有以下主要環境問題：

◎ 切割及修剪物料所產生的塵埃 ◎ 加熱所產生的蒸氣 ◎ 加熱及處理程序所排放的揮發性有機化合物(VOC) ◎ 處理程序所排放的酸性蒸氣 ◎ 處理程序所排放的腐蝕性蒸氣 ◎ 車輛所排放的廢氣	**廢氣排放**
◎ 傾倒的沖洗廢水 ◎ 化學物洩漏	**水質污染**
◎ 棄置舊滾筒及容器 ◎ 棄置包裝廢物 ◎ 棄置舊濾芯 ◎ 棄置切割及修剪所產生的廢料 ◎ 棄置報廢的過濾器 ◎ 棄置潤滑廢油及液壓廢油 ◎ 棄置化學廢物 ◎ 棄置重金屬廢物 ◎ 棄置貴金屬廢物 ◎ 棄置活性碳粉末 ◎ 棄置化學污泥	**廢物棄置**
◎ 水泵及氣泵的運作 ◎ 吹風機的運作 ◎ 抽氣扇的運作 ◎ 壓縮器的通風 ◎ 旋轉切割器的運作 ◎ 小型壓合機及烤爐的運作 ◎ 修剪機的運作	**噪音污染**
◎ 器材、冷氣及燈光所使用的電力 ◎ 用於清潔表面的酒精 ◎ 酸性及鹼性液體的使用 ◎ 化學物的使用 ◎ 車輛耗用的燃油	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

2. 行業概覽及主要環境問題

2.1 食品及飲品行業

概覽

於2006年6月，香港共有772間食品及飲品製造的工場。這個行業主要由中小企業組成，80%的工場均聘用不多於20名員工。

一般來說，食品及飲品業有數個共通的環境特點：

- 其污水含有油脂、懸浮固體及清潔劑等常見污染物，而且生化需氧量數值偏高。
- 由於曾使用清潔劑，污水或呈鹼性。
- 根據食物環境衛生署所發出之食物牌照規定，食肆必須安裝隔油池以降低污水中的油脂濃度及所排放的可沉降固體。
- 隔油池普遍設計不當及欠缺保養，小型食肆的情況尤其嚴重。

（資料來源：香港貿易發展局及工業貿易署）

中小企面對的挑戰

隨著環保法例日趨嚴謹，加上社會大眾對環保問題日益關注，世界各地的製造商均積極尋找及落實符合成本效益的方案，以妥善解決環保問題。

此外，例如食物衛生、原材料供應、生產成本及效率、競爭加劇等問題，亦對食品及飲品加工廠構成壓力，逼使它們必須提升其環境及經濟效益表現。

然而，中小企製造商即使希望改善營運，成為環保及負責任的工業家，但在改革過程中仍難免面對種種障礙。在改善環境表現的過程中，中小企主要面對以下障礙：

- 能否在生產過程中採用清潔生產技術
- 能否掌握足夠技術，設計環保產品
- 能否應用符合成本效益的防污染技術
- 能否充分瞭解地方與全球各地之環保法規
- 能否對全球環保供應鏈壓力作出恰當回應
- 能否制訂策略性計劃，長遠地改善環境
- 是否擁有足夠的資金及人力資源

主要環境問題

在食品及飲品的製造過程中，其生產運作有以下主要環境問題：

◎ 使用燃料煮食 ◎ 煮食時產生的油煙 ◎ 車輛的廢氣排放	**廢氣排放**
◎ 排放至污水道之油脂 ◎ 排放之洗濯污水	**水質污染**
◎ 棄置之廚餘 ◎ 棄置之廢油 ◎ 棄置之隔油池廢物 ◎ 棄置之包裝物料	**廢物棄置**
◎ 廢氣排放控制裝置所發出之噪音 ◎ 車輛發出的噪音	**噪音污染**
◎ 煮食用的燃料 ◎ 飲品、煮食及清潔之用水 ◎ 設備、冷氣及燈光所使用的電力 ◎ 防腐過程中使用的化學物 ◎ 包裝物料的使用 （如瓦通紙箱等） ◎ 車輛耗用的燃油	**資源耗用**

如欲瞭解有關詳情，請參閱附錄一第30頁(只提供英文版本)。

1. 序言

本指南提供一個一站式知識資料庫給業界，以協助中小企瞭解及應付環保問題，涵蓋的行業包括：

- 食品及飲品行業
- 印刷及包裝業
- 玩具業
- 線路板行業
- 紡織及製衣業
- 錶業

如欲瞭解有關行業的詳情，請根據目錄選擇你的行業，例如食品及飲品行業，你會找到：

- 主要環境問題 – 行業概覽
- 如何開始 – 環境管理系統
- 助你建立環境管理系統及持續提升公司的環境表現的工具
- 行業相關法例
- 常見問題及其他有用網站

本指南的主要目的，是為了減少及改善環境污染對香港及珠三角州居民的影響，協助中小企建立能夠應付來自內地政府及全球供應鏈對環境保護的要求，及向中小企及新一代工業家傳授環保技術。

目 標

- 協助中小企應付來自本地政府及全球供應鏈對環保的要求
- 建立一站式知識資料庫(OKD)
- 向新一代工業家傳授環保技術
- 在香港工業界開展一個長遠的環保文化

目 錄

中小企業發展支援基金之
「為促進香港及泛珠三角製造業中小企環保表現的營商支援與培訓中心」
項目

關於本指南

本計劃由香港特別行政區政府工業貿易署中小企業發展支援基金撥款資助。

此項目由香港工業總會主辦，商界環保協會為執行機構。

免責聲明

本指南(或由項目小組的成員)所表達之任何觀點、研究結果、結論或建議，並不反映香港特別行政區政府、工業貿易署或中小企業發展支援基金評審委員會的意見。

關於我們

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