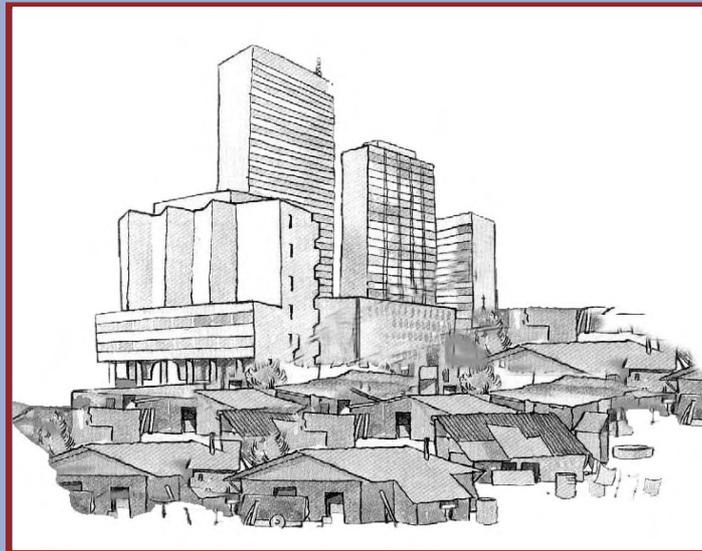


Environmental Management System

ISO 14001

In

URBAN LOCAL BODIES & TOWNSHIPS



CLEAN TECHNOLOGY INITIATIVE
USAID

 Development Alternatives

PREFACE

The 1992 Rio Declaration emphasised that human beings are the centre of sustainable development. There is widespread recognition that human beings are entitled to a healthy and productive life in harmony with nature. Though major efforts have been made along this line, today achieving this entitlement remains still a serious challenge. Nearly 38 percent of households in India do not have access to safe drinking water while nearly 70 percent have no access to adequate sanitation. With the rapid increase in urban population over the last 20 years, the percentage of people served with safe water supplies and adequate sanitation has declined.

Rapid urbanisation is expected to continue and as per a recent study, by the year 2020, about 50% of the total Indian population will live in urban areas. This 'hyper' urbanisation trend and the concentration of population in the big towns and cities bring not only the problem of resource limitations to the fore, but add many environmental impacts as well. Traditional risks to the population such as malnutrition, dysentery, water and sanitation related diseases are exacerbated by modern environmental risks such as, exposure to hazardous and toxic substances, industrial effluents, air emissions from industries and vehicles, noise, and stress due to lack of space and lifestyle.

The management of the urban environment is a complex and difficult task. The increasing momentum of urbanisation has both direct and indirect environmental impacts which need immediate attention. One approach of resolving these impacts in the urban local bodies is by adopting the Environmental Management System.

There are several benefits, which could be derived by implementation of EMS. From the experience of the Clean Technology Initiative (CTI), an United States Agency for International Development (USAID) project it has been observed that effective implementation of EMS in any urban local body will ensure:

- i. Establishment of a management system with a focus on conservation and protection of natural resources.
- ii. Establishment of a system to get regular warning signals of a deteriorating impact through periodic monitoring and measurement.
- iii. Preparedness for emergency situations.
- iv. Enhancement of awareness and participation among different stakeholders.
- v. Strengthening the decision-making capacities for optimised resource allocation and management.

This manual is a helpful tool to the administrator of any urban local body to design, implement and sustain an EMS. It illustrates practical examples, which helps the user to correlate with the routine functions of an urban local body. The examples discussed in this manual are based on the experiences of three industrial townships where, EMS was successfully implemented and certified as per the requirements of ISO 14001. The development of this manual is meant to serve the purpose of large-scale dissemination of this voluntary initiative, process and learning's.

March 2002
New Delhi

March 2002
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About Development Alternatives

Development Alternatives Group (DA) is a not-for-profit organisation established in 1983 to create large scale Sustainable Livelihoods. The DA group operates on the philosophy that sustainable development benefits not only the economy but also the environment and above all - people. The various thematic areas of DA is based on the people - nature, people – technology and people – people , which led to the formation of the functional units called the Environment System Branch (ESB), Technology System Branch (TSB) and Institutional System Branch (ISB).

The mandate of Urban Environment Systems Group of the ESB is to facilitate sustainable development among the urban sectors of the society. The team built on the strengths of interdisciplinary expertise available within the organisation.

Development Alternatives facilitated the design and implementation of EMS as per ISO 14001 for three industrial townships of India. These Industrial townships are:

1. Kasturinagar Industrial township, IFFCO, Kalol, Gujarat
2. Pirojshahnagar Industrial township, Godrej & Boyce, Mumbai
3. Tatachem Industrial township, Tata Chemicals, Mithapur, Gujarat.

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Sector Specific Manual for Developing and Implementing EMS in Urban Local Bodies & Townships

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LIST OF ABBREVIATIONS

ANSI	American National Standards Institution
BIS	Bureau of Indian Standards
CTI	Clean Technology Initiative
DA	Development Alternatives
EA	Environmental Auditing
EMAS	Environmental Management Assessment Scheme
EMP	Environmental Management Programme
EMS	Environmental Management Systems as per ISO 14001: 1996
EHS	Environment, Health and Safety
EPE	Environmental Performance Evaluation
H and S	Health and Safety
ICICI	Industrial Credit and Investment Corporation of India
IER	Initial Environmental Review
ISO	International Organisation of Standards
LCA	Life Cycle Assessment
MR	Management Representative
MTPA	Metric Tonnes Per Annum
NCR	Non-Conformance Report
O and T	Objectives and Targets
OCP	Operational Control Procedures
QMS	Quality Management Systems
R&D	Research and Development
SAGE	Strategic Advisory Group on Environment
SMART	Specific, Measurable, Achievable, Realistic and Time-bound
TEST	Trade in Environmental Services and Technologies (TEST) Programme
USAID	United States Agency for International Development

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EXECUTIVE SUMMARY

This sector specific manual has been developed and organised to assist urban local bodies of India to design and implement Environmental Management System (EMS) that is consistent with the ISO 14001. Keeping in view the size and the service provided by the urban local body, this document attempts to provide the tool to design and implement an EMS for an overall improvement in environmental performance.

The various sections of this manual describe each element of the ISO 14001 standard and provide step-by-step procedures along with examples and sample formats of the EMS documents. Guidance for designing and implementing an EMS that is appropriate to the urban local body is presented in this manual. This document is therefore not a rigid instruction manual. Some examples from the three industrial townships is also presented to make the user relate to a practical instance.

Who could use this manual?

This manual could be used by any individual who is interested in the design and implementation of EMS as per the ISO 14001 standard. However, the form and procedural contents of the EMS are very specific to the urban local bodies. This manual is organised in the same pattern as the ISO 14001 standard itself. There are five phases of the EMS called the Planning, Policy, Implementing, Checking and Corrective Actions which are expanded into the seventeen elements of the standard. For each of the seventeen elements, the reader will first find the requirement of the ISO 14001, followed by the suggested steps to imbibe the element into the system. These are then followed by the documentation procedure as applicable to an urban local body.

This manual could be utilised as a tool and a resource to design and implement an EMS whenever any urban local body need support to do so. However, expert advice for an effective implementation is required during the process.

1.0 INTRODUCTION

Summary of the Project

The aim of the CTI-USAID program was to promote voluntary initiative for attaining international standard and thereby reduce pollution per unit of product or service delivered by the Indian industry. EMS as per ISO 14001 is one of the voluntary standard introduced among fourteen Indian industrial sectors under the CTI project. The sectors are chosen based on some selected criteria that included pollution intensity, resource consumption, and growth potential of each sector.

The urban local body or the industrial township was selected as an important sector in this project because the CTI project focussed only on the production industries. This sector added the value of implementing EMS in a service sector. Moreover, it was observed from the experience of Development Alternatives and other project partners including USAID that with growing urbanisation, pressure has been mounting on local urban bodies for providing adequate civic services. While the multi-disciplinary functions of the urban local bodies begin with sanitation, water supply, maintenance of roads etc, civic amenities in the country are far from being satisfactory. There is a never ending demand from communities for improvement in the level and quality of services provided. The gap between the existing and the expected levels of most of the services has continued unabated, if not widened over the years. This dissatisfaction has been growing over time.

Looking at all these aspects, the project partners realised that it has become an imperative to implement a system to improve the environmental performance through allocation of responsibilities not only to the administrators but also to the community, the service users. To show case this rhetoric in to action urban local bodies were chosen from various parts of India. Industrial townships are one type of urban local bodies. These townships usually develop near a major industrial site to provide housing and other associated facilities to the large number of employees. The maintenance of these townships were controlled by the industry itself. The services and amenities provided to the residents are usually independent or in association with local municipalities and authorities with clear demarcation of responsibilities.

The CTI team selected industrial townships as a model of an urban local body because :

1. Majority of large scale industries of India are environmentally responsible. Whereas, the environmental performance of the industrial townships which supported the daily life of their employees were neglected. This project gave an opportunity to be environmentally responsible in a holistic way .
2. Above all, the industry invests a large amount of money annually to maintain the township. The CTI team understood that by implementing an EMS would not only lead to resource conservation but assist in financial savings.
3. The aim of the CTI project was to demonstrate success stories for further replication. Therefore, it was felt that while the project was entering a new sector, it was very important to be successful. In this case industrial township as a model of the urban local body looked to be promising.

The participatory designing and implementing process of EMS in the three industrial townships of India showed that the benefits reflected both at the administrator and the community end.

Objectives of the manual

This manual is designed to encourage and help the administrators of urban local bodies to establish and implement an environmental management system (EMS). The objectives of this manual is to:

- Create awareness in large number of urban local bodies of India on EMS and their potential benefits.
- Assist the urban local bodies to design and implement EMS.
- Provide a user-friendly manual which shares the experience and learning of implementing EMS in urban local bodies.

Structure of the manual

This manual consists of seven chapters.

Chapter 1: Provides background for development of this manual with an outline of the objectives of the manual and its main features.

Chapter 2: Provides an overview of urbanisation in India and its environmental consequences. This chapter also give an outline of the activities of urban local bodies.

Chapter 3: Provides the overview of environmental management systems and various steps involved in the design and implementation of EMS. It also provides a background on the International Organisation of Standards. A brief historical perspective on the ISO 14000 series of standard is addressed.

Chapter 4: Provides information on the need, benefits and barriers of implementing EMS in urban local bodies of India. The case studies of EMS implementation under the CTI project in three urban local bodies of India are elucidated.

Chapter 5: The planning and implementing phase of the EMS as per ISO 14001 is explained with examples of procedures and formats for each clause from the CTI project. Each clause is explained with definitions and suggestions and its applicability in the urban local body context.

Chapter 6: The checking and corrective action phase of the EMS as per ISO 14001 is explained with examples of procedures and formats for each clause from the CTI project. Each clause is explained with definitions and suggestions and its applicability in the urban local body context.

Chapter 7: The sustenance of the EMS after the first certification phase is explained with suggestions of do's and don'ts.

2.0 URBANISATION AND URBAN LOCAL BODIES IN INDIA

This section provides an overview of the trend in Indian urbanisation and its associated environmental impacts.

The growth trend of urbanisation in India

Historically, cities have been the driving force in economic and social development. At present approximately 305 million Indians live in nearly 3700 towns and cities spread across the country. This represents the 30.5% of its population, in contrast to only 15% who lived in urban areas in 1947. During the last fifty years the population of India has grown two and half times, and urban population by nearly five times. In numerical terms, India's urban population is second largest in the world after China, and is higher than the total urban population of all countries put together barring China, USA and Russia.

Table: 1 India: Urban Population 1901 – 2001

Year	Urban population (million)	Percentage of Urban to total population	Decadal growth rate (percent)
1901	29.9	10.8	-
1911	25.9	10.3	0.4
1921	28.1	11.2	18.3
1931	33.5	12.0	19.1
1941	44.2	13.9	32.0
1951	62.4	17.3	41.4
1961	78.9	18.0	26.4
1971	109.1	19.9	38.2
1981	159.5	23.3	46.1
1991	217.6	25.7	36.4
2001	306.9	30.5	41.0

Source: Ministry of Urban Affairs

In the 1991 census, two-third of the country's urban population lived in Class-I cities with more than 1,00,000 population. About one-third of urban India (71 million) lives in metropolitan cities. The number of such cities in India has increased from 1 in 1901 to 5 in 1951, to 23 in 1991 to, 40 in 2001.

Urban areas are the engines of productivity and growth in the country. This is manifested in the increasing contribution of urban sector to national income. According to the Ministry of Urban Affairs urban contribution to national income in 2001 is estimated to be around 60% as against 47% in 1981. Some of the chief forces driving urbanisation today are shifting of jobs from agriculture to industry and the concentration of economic opportunities in the urban areas. Urbanisation is associated with higher incomes, improved health, higher literacy, improved quality of life and other benefits. Yet along with the benefits of urbanisation come environmental and social ills.

The ills of urbanisation

Concerns about deteriorating urban environmental conditions and their long-range implications have become a critical component of Indian government policy initiatives. Cities are growing rapidly; the pace and scale of growth have outstripped the capacity to maintain acceptable standards of public health, environmental safety, and sustainable economic growth. Enormous burdens of ill health and reduced quality of life affect citizens in those cities. Further, those conditions exacerbate national environmental problems and pose real threats to the national interests.

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Growing national economies need expanding supplies of power and fuel, but inefficient, polluting power sectors, poor transportation policies, and wasteful use of energy pump needlessly high amounts of greenhouse gases into the atmosphere. The lack of basic urban environmental infrastructure in most cities contribute to untreated sewage and waste into rivers, lakes, and coastal zones, damaging ecosystems and threatening the productivity and safety of water bodies.

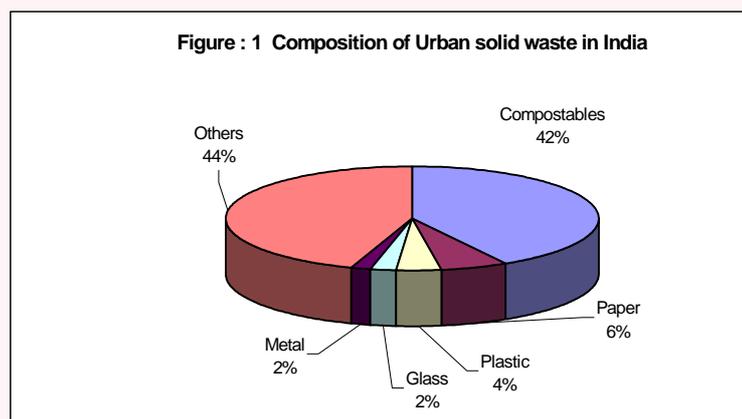
Urbanisation in India affects the environment in three major ways:

1. The prevailing pattern of increasing consumerism is material and energy intensive.
2. The continuous inflow of migratory population and thereby unplanned growth of urban squatters.
3. The inadequacy of financial, institutional, technological and infrastructure systems.

All of the above leads to the following:

Urban waste - Increasing urbanisation is resulting in the generation of increasing amounts of solid waste. It is estimated that 20-50 percent of the solid waste generated remains uncollected. In New Delhi, 3,880 tons of garbage is produced per day, yet only 2,420 tons is collected for disposal. Even if collected, municipal solid waste remains a problem in many cities.

As the living standards are rising the organic content in the waste is reducing and non-biodegradable wastes like metal, plastic and glass are on a rise (Figure: 1). Urbanisation and increasing trend of consumerism in cities are the main factors leading to generation of more waste.

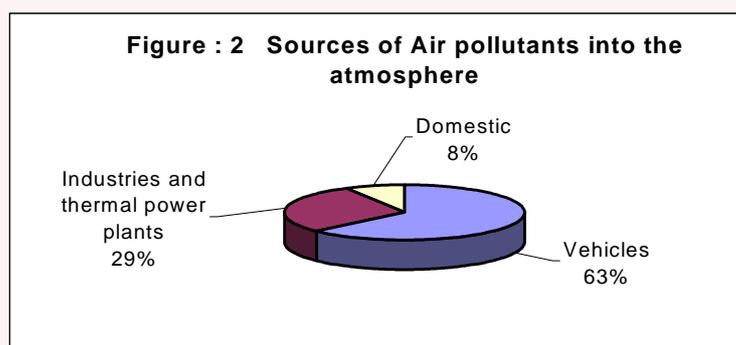


Source: World Bank Urban Development Sector Unit, Solid waste Management in Asia (1999)

Urban water quality - Ever increasing urbanisation and their growing amounts of waste have over taxed the natural recycling capabilities of local rivers and lakes. Of the many problems associated with urban effluents are nutrient loading or eutrophication of local water bodies. Poor management of water resource too contributes to water problems.

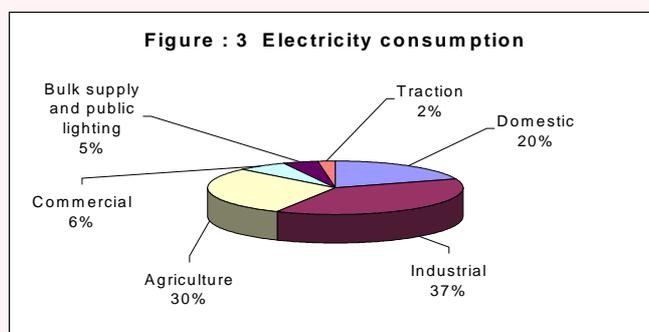
Urban transportation - Transportation systems are a major contributor to the deterioration of urban environment and reduced quality of life. Increasing vehicular pollution in major urban centres are becoming an area of growing concern which contribute to atmospheric emissions, noise and risk of accidents. Poor maintenance of vehicles and degraded condition of roads and uses of impure fuels primarily precipitate the problems of air and noise pollution.

Urban air quality - Urban air quality has deteriorated largely on account of growth in industrial activity, transportation needs and energy production. In India, ambient air quality status derived from a network of 90 towns and cities in recent years indicate that while suspended particulate matter (SPM) is consistently critical in many cities, the concentration of nitrogen oxides and sulphur dioxide is also increasing. As estimated, 2000 metric tones of air pollutants are emitted into the atmosphere everyday (Figure :2).



Source : TERI, 1996

Resource consumption - Urbanisation has profound effect on the amount and type of energy consumed. Along with population growth, economic development and industrialisation, urbanisation is one of the principal forces driving the increase in energy demand (Figure : 3). Although the traditional rural societies rely heavily upon the human and animal energy and on nearby wood or fuel, today urban societies are characterised by their reliance on fossil fuels and electricity. These patterns of energy use lead to different environmental impacts like climate change, air pollution, etc.



Source : World Bank 2000, World Development Indicators

Although India has enormous reserve of water, yet suffers from urban water supply problems. The growing demand of water, along with poor water resource management and mounting pollution levels contributes to water supply problems in and around cities. The total water demand is projected to double by 2025 in India with the existing uneven distribution of water resources and local water scarcity.

Urban Local Bodies

In India urban areas are broadly defined as settlements with a population of over 5000 persons, all statutory towns, a density of population of over 400 per sq. km. There are different kinds of urban local bodies. These include Corporations, Municipalities, Towns, Nagar Panchayats, Sanitary Boards, Notified Areas, etc. Urban local bodies in one form or the other have a long history of existence in our country. The Constitution of India recognises local government institutions as an essential part of the national government. As per the Census 1991, in India there are 96 Municipal Corporations, 1494 Municipalities and 2092 Nagar Panchayats. Total number of all Urban Local Bodies is 3682. (For details see Annex-I, Structure & size of urban local bodies in India).

The functions of the urban local bodies can be broadly classified under the following heads:

- Public safety.
- Sanitation and public health.
- Public conveniences and basic amenities.
- Primary education especially for the benefit of the weaker sections of the society.
- Maintenance of roads for safe and comfortable use by vehicles and pedestrians.
- Keeping city clean and in good order by providing necessary system to cope with drainage and sewerage.

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- Supply of adequate quantities of safe water for drinking and other household needs.
- Prevention of pollution, contamination and infection, especially in the supply of foods.
- Primary health and medical requirements, including both preventive and curative measures.
- Orderly development of markets.

With growing urbanisation, pressure has been mounting on local urban bodies for providing adequate civic services. Resources have, however not grown commensurate with their responsibilities. The level and quality of these services cannot be measured quantitatively. The administrators of local bodies are expected to work continuously for improvement in the quality of these services to the satisfaction of the people. The gap between the existing and expected levels of most of the services has continued unabated, if not widened over the years mainly due to:

- Fast expanding urban population.
- Growing expectations of the people.
- Paucity of funds at the disposal of municipal bodies.
- Ineffective management, practically at all levels.
- Inadequate civic sense among the people.
- Lack of sufficient autonomy within the municipal authorities.
- Inadequate implementation of policies due to interference from the local vested interests.

Most of these causes at times strengthen each other to the detriment of overall civic interest, leading to inefficient utilisation of funds and in turn, aggravating the financial problem of urban local bodies. As urbanisation in India continues steadily to be increasingly urbanised, the role of the urban local bodies comes under greater public scrutiny. To address the wide-ranging problems of these local bodies one approach is to adopt a continuous, sustaining management system. The different environmental issues and their cause and effects are tabulated in the following tables. A close observation of each of the issue, cause and effect shows that most of them occur due to lack of awareness both at the administrative and the community level. Along with this exist the problem of inadequate adoption of environment friendly techniques and irresponsible behaviour of the administrators and communities. The effects on the other hand have a multiplier pattern and cuts across ecological, economic and social dimensions.

Various environmental issues in urban areas : Cause and Effects

The various environmental issues with their effects and causes associated in an urban area are discussed below :

Table 2 : Environmental Issues

Issues	Causes	Effects
Ambient Air Pollution	<ul style="list-style-type: none"> • Industrialisation - emissions • Transportation – vehicular emissions 	<ul style="list-style-type: none"> • H lu in • E • P • A ai
Indoor Air Pollution	<ul style="list-style-type: none"> • Cooking (biomass and high sulphur coal) • Small scale industries • Poorly ventilated dwelling and workplaces • Passive smoking 	<ul style="list-style-type: none"> • H lu in • E ai

Table 3 : Environmental Issues:

Issues	Causes
Surface water pollution	<ul style="list-style-type: none"> • Municipal waste disposal • Industrial waste disposal • Urban runoff (detergents. etc) • Irrigation run off
Ground water pollution and depletion	<ul style="list-style-type: none"> • Unsustainable extraction • Municipal waste disposal • Industrial waste disposal • Poor demand management
Coastal/Lake Pollution	<ul style="list-style-type: none"> • Municipal waste disposal • Industrial waste disposal practices • Disposal of shipboard wastes • Urban run off

Table 4 : Environmental Issues

Issues	Causes
Land Pollution	<ul style="list-style-type: none"> • Unplanned land use • Uncontrolled urban growth • Mining and quarrying activities • Municipal waste disposal • Industrial waste disposal
Loss of Cultural and Historical Property	<ul style="list-style-type: none"> • Air pollution • Solid Waste Management practices • Poor drainage

Table 5 : Environmental Issues: Wastes

Issue	Causes
Municipal Solid waste	<ul style="list-style-type: none"> • Poor management (improper collection and disposal)
Hazardous waste	<ul style="list-style-type: none"> • Dispersed small-scale and cottage industries • Effluent discharge practices
Inadequate Sanitation	<ul style="list-style-type: none"> • Inappropriate technology • Poor management (lack of operations and maintenance, uncoordinated investments) • Inadequate hygiene awareness and education
Inadequate Drainage	<ul style="list-style-type: none"> • Inadequate hygiene education • Urban runoff • Unplanned urban growth

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To address the wide ranging environmental effects arising from the variety of activities and services of the urban local bodies, an environmental management system is required to reduce waste, resource use (water and energy) and health impacts, and thereby improve financial situation to protect the ecosystem.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) and ISO 14001

Overview of EMS

An EMS is a set of problem identification and problem-solving tools that can be implemented by the employees in an organisation in many different ways, depending on the organisation's activities and needs. EMS follows the Deming's well known Quality Management approach of "Plan, Do, Check and Act" which is a system methodology rather than a command and control approach. This section provides an overview of the various steps involved in establishing an EMS as listed below:

1. Commitment: formulation of an environmental policy - An environmental policy establishes a set of principles against which environmental performance is measured.
2. Initial environmental review: planning and preparation - The initial environmental review is to evaluate the current environmental status of the organisation. It lays the foundation for an effective EMS.
3. Initial environmental review: register of environmental aspects and impacts - This step involves identification of environmental aspects and impacts; evaluation of environmental aspects for their significance and prioritisation of significant aspects for action.
4. Initial environmental review: register of legal requirements - This register helps in documenting the legal requirements applicable to the organisation and updating the new legislation and requirements.
5. Setting objectives and targets - Objectives and targets help to translate the purpose into action. Objectives and targets should be set with the context of meeting the aims of the environment policy and should be monitored regularly to determine the progress.
6. Establishing responsibilities - Effective implementation of EMS and meeting the objectives and targets within the designated time frame require a properly defined structure and responsibility in the organisation. Roles and responsibilities for all personnel must be clearly defined and documented.
7. Environmental management manual and related documents - An environmental management manual acts as the principal source of reference and support document for EMS implementation. Documents demonstrate the compliance with the requirements of EMS and record the extent to which the planned objectives have been met.
8. Operational control and procedures - Operational control provides the mechanism by which the environmental policy, objectives and targets are converted into action for which it requires certain procedures to be laid down.
9. Monitoring and measurement - Monitoring and measurement provides documented evidence that an organisation's EMS is performing in accordance with its environmental policy and management programme.
10. Non-conformance and corrective action - An EMS provides transparency across the range of operation and activities in relation to certain environmental criteria so that the system will identify any deviation or problem, which could be identified and rectified accordingly.
11. Records - Records are evidence that the EMS is working according to the requirements of environmental policy and that environmental objectives and targets are being met.
12. Environmental management system audit - The purpose of an audit is to assess whether an EMS conforms to the requirements of the environmental policy and related environmental performance criteria.
13. Management review - The management review is an opportunity to assess the overall performance of an EMS, to consider whether or not the EMS is working effectively and whether it continues to fit the purpose for which it was designed.
14. Registration for an EMS - Registration for an EMS provides formal recognition of an organisation's commitment to continual improvement to its overall environmental performance where by external certifying agency confirms that an organisation is following or conforming to the standard after conducting periodic audits.

Sector Specific Manual for Developing and Implementing EMS in Urban Local Bodies & Townships

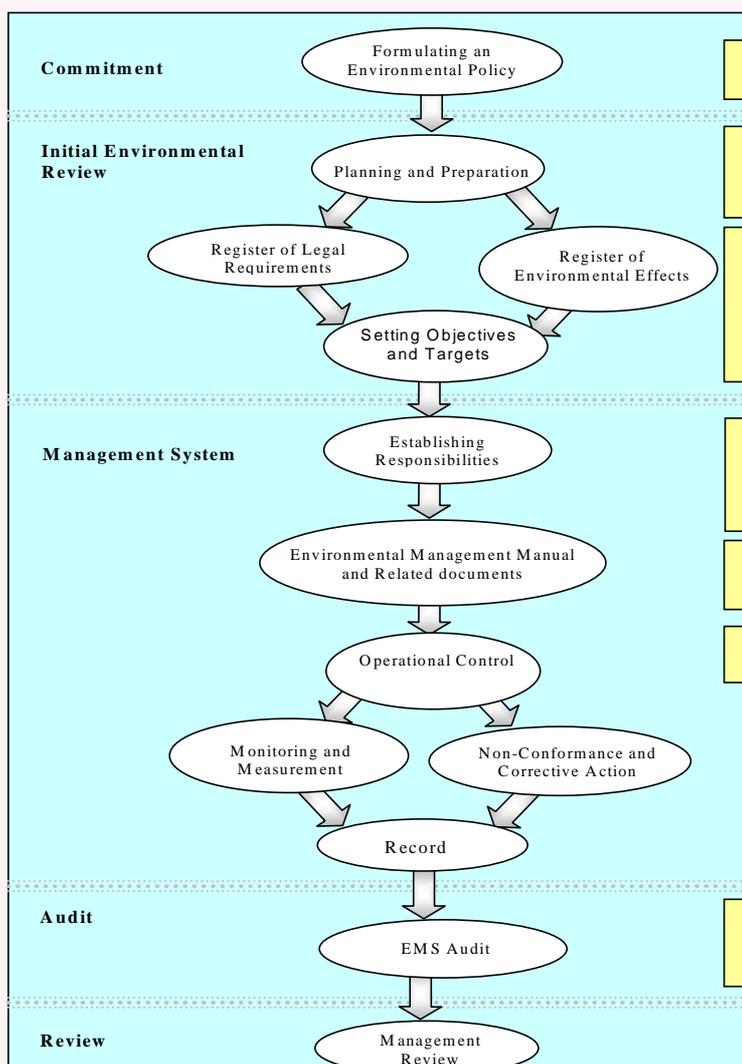


Figure 4 : Overivew of Environmental Management Review

Background of ISO 14000 standards

The International Organisation for Standardisation (ISO) is a world-wide federation founded in 1947 to promote the development of international manufacturing, trade and communication standards. ISO is composed of member bodies from 119 countries. The American National Standards Institute (ANSI) is the representative of ISO from the United States, while the Bureau of Indian Standards (BIS) is the representative from India

The ISO 14000 series of standards grew out of the commitment of ISO to support the objective of “sustainable development” discussed at the United Nations Conference on Environment and Development, in Rio de Janeiro, in 1992. Soon after the Rio summit, in 1993, ISO launched the new technical committee, ISO/TC 207 which developed a series of international environmental standards. Refer Fig 5. Its official scope is “standardisation in the field of environmental management tools and systems.” TC 207 held its first plenary session in Toronto, Canada, in June 1993 and meets annually to review the progress of its subcommittees in developing standards in the ISO 14000 series. ISO receives input from government, industry and other interested parties before developing a standard. All standards developed by ISO are voluntary. However, countries and industries often adopt ISO standards as requirements for doing business.

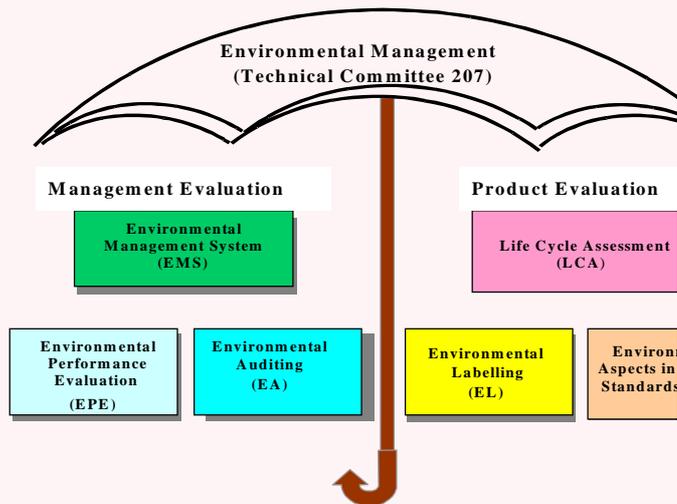


Figure 5 : Overview of Environmental Management (Technical Committee)

ISO 14000 is a series of voluntary generic standards developed/being developed by ISO that provides business management with the structure for managing environmental impacts. The standards include a broad range of environmental management disciplines including the basic management system, auditing, performance evaluation, labelling and life cycle assessment. The ISO 14000 family may be categorised into seven major groups as shown in the Table 6 below.

The standards are basically of two types: specification (normative) and guidance (informative). All the standards except ISO 14001 are guidance standards. This means that they are descriptive documents, rather than prescriptive requirements. Any type of organisation can register with ISO 14001, the specification standard which is a model for an environmental management system.

Extensive and comprehensive deliberations of the TC 207 resulted in the finalisation of a single, generic internationally recognised EMS specification standard, ISO 14001 in September 1996. Throughout the world EMS is implemented according to the normative standard of ISO 14001. This is mainly because of its established global credibility over the years.

Table 6: ISO 14001: Environmental Ma

Group	
Environmental Management Systems	ISO 14001, IS
Environmental Auditing	ISO 14010, IS ISO 14015, IS
Environmental labelling	ISO 14020, IS ISO/TR 1402
Environmental Performance Evaluation	ISO 14031, IS
Life Cycle Assessment	ISO 14040, IS ISO 14043, IS ISO/TR 1404
Environmental Management Vocabulary	ISO 14050
Environmental Aspects in Product Standards	ISO 14062, IS

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ISO 14001 is a management system standard. This is the only “normative” standard in the series. This means that ISO 14001 is the only standard against which certifiable audit is carried out. It is not a performance or product standard, although the framers developed it with the idea that the result of its implementation would be lead to better organisational environmental performance. The standard represents a shift towards holistic proactive management and total employee involvement. ISO 14001 urges employees to define their environmental roles from the bottom up and requires top management commitment, resources and visibility to support them. It is a comprehensive framework that contains core elements for managing a organisation’s processes and activities to identify significant environmental aspects the organisation can control and over which it can be expected to have an influence. Any company or facility or organisation of any size anywhere in the world can use the standard. ISO 14001 International Standard is applicable to any organisation that wishes to:

- Implement, maintain and improve an environmental management system
- Assure itself of its conformance with its stated environmental policy
- Demonstrate such conformance to others
- Seek certification/registration of its environmental management system by an external organisation
- Make a self-determination and self-declaration of conformance with this International Standard

While ISO 14001 is more likely to be used in manufacturing or processing industries, it can also be applied to service sector such as construction, architecture, health care, hospitality, transportation, telecommunication, local bodies, townships etc. ISO 14001 is not an environmental performance standard, it does not require a organisation to establish or disclose performance levels or disclose audit results. Therefore, the key features of ISO 14001 are:

- It is a voluntary standard
- It is a flexible management systems specification
- Based on the Deming’s Plan-Do-Check-Act model
- It focuses on continual improvement in environmental performance
- It has strong commitment to environmental legal compliance
- It enhances commitment to pollution prevention and resource conservation

Any organisation designing and implementing EMS as per the ISO 14001 standard should consult two important documents. They are:

1. ISO 14001: Specification document
2. ISO 14004: Guidance document

Both of these documents are published in 1996. The specification document consists of the definitions and the requirements of the standard. The guidance document gives the guidelines on principles, systems and supporting techniques for practical help to any organisation. If an organisation would like to go for auditing its system, then should consult the ISO 14010 series that contain general principles of auditing, principles of EMS auditing and also include qualification criteria for environmental auditors.

The Clauses of ISO 14001

The five main phases of the EMS are the following:

1. Environment policy
2. Planning
3. Implementation and operation
4. Checking and corrective action
5. Management review.

The five phases are based on the Deming Cycle of Plan-Do-Check-Act (Fig 7)

Environmental policy commits the top management to regulatory compliance, pollution prevention and continual improvement in environmental performance. The policy developed by an organisation should be appropriate to the nature, scale and impacts of the organisation’s activities, products and services. It should be communicated to all employees and made available to the public.

Planning requires the identification of all environmental aspects (activities, products and services that can interact with the environment) and their associated impacts (change the environment). Of the various environmental impacts, the significant ones are to be identified and will be the focus of the EMS. In the process of short-listing significant impacts, it is ensured that the legal requirements of the organisation are suitably considered. With the significant impacts and the environmental policy as the basis, objectives and targets are established in order to make improvements in the environmental performance. For each of the objectives and targets, a management programme is developed outlining the means and time frame within which the stated goal is to be achieved.

Implementation and operation is the element that will lead the organisation to achieve the environmental policy commitments. A suitable structure is to be designed and specific responsibilities to the employees across different levels need to be attached to achieve the policy commitments. The awareness levels have to be improved and competency to tackle the environmental impacts has to be built with an aid of appropriate training. Communication within the organisation as well as with external agencies/individuals is also to be structured. Good documentation and document control is to be designed for the effective functioning of the system. Operational control over all the significant impacts needs to be established to ensure that there is no slippage in environmental performance. And a suitable emergency preparedness and response mechanisms need to be in place to deal with unforeseen, environmentally harmful situations that may arise.

Checking and correcting requires the procedures to be in place for monitoring and measuring environmental parameters, performance and progress related to the objectives and targets. The organisation also needs to have procedures for taking corrective and preventive action to any non-conformances that may have been identified. ISO 14001 also emphasises on periodic audits to ensure that the system is effective and conforming to its requirements.

Management review is required by ISO 14001 on a periodic basis to assess whether any changes are needed in the policy which reflects the top management's commitment. It also reviews the improvement in environmental performance made through objectives and targets. Also, helps to address any major non-conformances identified through audit or otherwise. Management review is to ensure that the EMS designed and implemented is effective.

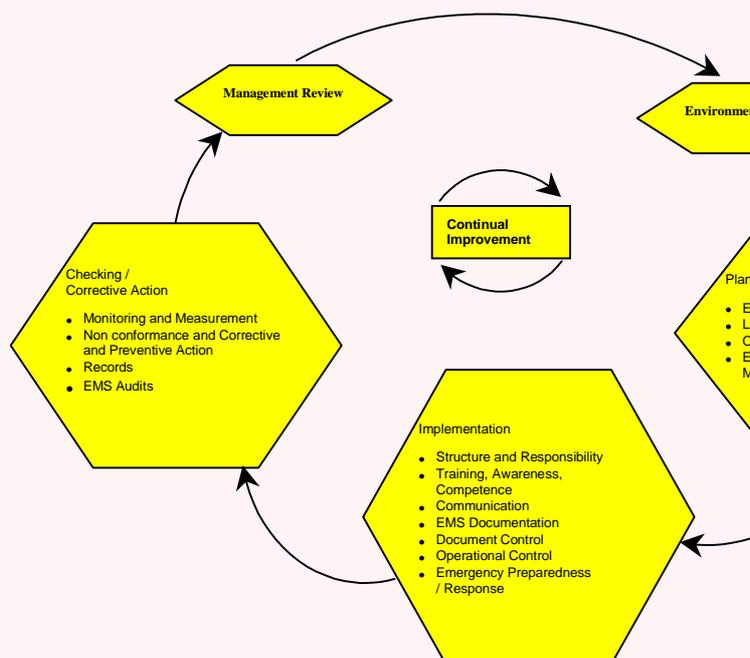


Figure 6: ISO 14001 Clauses in a Deming's model

4.0 EMS IN URBAN LOCAL BODIES

EMS is generally recognised by any organisation as a tool which help in building up a systematic procedure to address the environmental issues in a continuous manner. However, implementation of EMS in the urban local bodies is very different from implementing EMS in a factory or a process industry; primarily because the processes in factory are known and the same have controllable parameters measurable on a yard stick.

In the CTI project the top management of the three industrial townships realised that there was a need to improve the environmental performance. The commitment from the management was also secured from the three industrial townships, yet a sense of suspicion existed in the initial stages. The CTI team went through a number of iterative process with the management, operational unit heads and residents of the three industrial township to motivate them in implementing EMS. A series of participatory brain storming, awareness and training sessions on EMS to the top management, the operational heads and the communities of the three townships were conducted to arrive at some consensus. All stakeholders began to perceive EMS as a positive approach for a over all well being. However, the perception of benefits and needs differed according to the stakeholder group. Some of the perceived benefits of EMS and as to flows: EMS

- Integrates environment management and promotes the use of a systematic standard procedure in township administration.
- Assists in building a robust linkage between the community, the functional / operational unit and the administrators of the urban local body.
- Enhances the confidence level of the management to be assured that they were handling all operations in an environment friendly manner.
- Assists in building a systematic procedure to conserve resources and thereby achieve financial profitability.
- Improves regulatory relationship and better dealings with compliance issues.

There were many functional/ operational units of the three townships taken under the CTI project. For example, the hospitals and dispensaries, civil works, electrical supply, horticulture and parks, schools, markets, clubs, etc. Each of the functional/operational unit heads and his team realised that EMS procedures would:

- Establish a management system in their day to day operation of the facility to minimise the environmental impacts, optimise resource utilisation and manage the waste in a standardised and continual procedure.
- Provide an opportunity to play a strong role in leading and mentoring their communities in environmental stewardship.
- Provide a system to perform their daily function in a responsible manner.
- Provide an opportunity to build their public image.

The communities or the residents of the three townships got motivated because they realised that this system would give them an opportunity to:

- Involve all residents in a participatory manner for minimising the environmental impacts arising out of their use of the facilities.
- Involve residents in the process of designing, establishing, implementing and maintaining the management system in a continual manner
- Involve in some of the decision making process of civic amenities and services.
- Secure a better township to live in.

Benefits of implementing EMS in urban local bodies

An urban local body is not profit making organisation and, nor does it need any recommendation from and international standard to procure business. Yet, the experience of implementing EMS in the three townships under the CTI project shows that there are far reaching intangible benefits apart from realising financial profitability.

The benefits of an EMS in the three industrial townships was realised at different stages of the design and implementation. In some cases the benefits were reflected after the audit of the system took place. The CTI team, along with the township management understood these benefits over time. Some of the benefits are briefly described below:

- Continual improvement through pollution prevention initiatives - ISO 14001 required continual improvement in environmental performance through the implementation of pollution prevention initiatives. It required the organisation to identify and implement opportunities for reducing emissions and reducing waste. In the townships resource conservation like conservation of water, electricity was an immediate positive impact after the implementation.
- Better cost containment - EMS improved cost control by encouraging conservation of material inputs, reducing energy use, increasing productivity, lowering treatment/disposal costs, promoting resource savings. In addition, it led to the timely operations and maintenance of equipments and infrastructures which reduce environmental costs. In one township household waste disposal was a costly and cumbersome exercise. Composting of biodegradable waste at the household level decreased the costs of waste disposal. The household also got benefit from using bio compost and consequently stopped purchasing synthetic fertilisers.
- Assuring regulatory compliance- Implementing ISO 14001 improved the relationship with regulators. In addition, implementing an EMS also helped in building awareness among all staff on the requirement of compliance and the applicable legislation and regulations. This also enhanced the confidence level of the township administrators in terms of being a legally compliant township.
- Enhancing staff morale - One important benefit achieved was that the understanding of environmental issues by the staff helped them to take up responsibilities on their own. There was a realisation that every environment degrading activity of theirs has a direct or indirect impact on their own daily life. The staff was more happy and enthusiastic about their work and responsibilities. This moral boost led to improved efficiency.
- Reduced environmental risk - Environmental risk is considered as a single largest hidden risk for many organisations. Undertaking environmental risk assessment as part of the environmental management process reduced the risk of the occurrence of events that could have adverse environmental consequences.
- Improved public image and community relations – The townships received a lot of public applause after the implementation and certification of the EMS . The community relations with the administrators became more smooth. The administrators and staff received less criticisms from the public and enhanced participatory approach to resolving a problem.
- Ownership of the communities – The residents became more involved in any initiative taken up by the township administrators. Active participation led to more ownership. All the three townships under the CTI project felt that this was a very crucial change which led to the overall well being of the township.

Barriers to implementing EMS in urban local bodies

There are some barriers to designing and implementing an EMS. The more important ones and their associated enabling measures have been listed in this section.

- Lack of top management commitment and visibility - The importance of top management commitment cannot be under-emphasised. In many organisations, the top management pays only lip service to the EMS and this weakens the EMS considerably. As top management time is always difficult, efforts were made by the CTI team to obtain their attention to the EMS by organising occasional meetings. The top management was made aware of the EMS progress after every step.
- Frequent changes of personnel and top management- This problem was a major obstacle to proceed with the design and implementation of EMS at every stage. The replacement of new member with the previously trained member slowed the process to certain extent.
- Common perception that the costs outweigh the benefits – Sometimes the management thought that the costs to implement the EMS and the costs in terms of professional time investment was much more than the total benefits. But all the townships found that the return-on-investment for developing and implementing the EMS is sometimes less than a year.

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- Resources – Budgets and Manpower constraint - One of the main impediments of developing an EMS is the provision of inadequate budgets. Top management needs to address the EMS as a further development of the institutional infrastructure of the organisation. Lack of financial resources results in sub-standard training, consulting and auditing inputs that may delay EMS development and also make difficult the maintenance of an effective EMS. It is important to allocate sufficient budgets.
- Insufficient training at all levels - In order to motivate about EMS, it is most important to provide training at all levels of the workforce and the community. Passive and unenthusiastic training are often barriers to an ineffective EMS.
- EMS not recognised as the responsibility of the whole organisation – This was a major barrier in the initial stages of the process. The responsibility assigned was restricted to the core team. But later in the process integration was achieved through involvement of all departments and the communities. The roles and responsibilities were allocated by the management. However, the roles of communities were more or less voluntary in nature. But these examples of proactive initiative by a few community members triggered the others to join in to the process later.

Benefits of EMS in urban local bodies: Experiences from the CTI Project

As already mentioned in the previous sections that three industrial townships of India were selected to implement EMS under the CTI project. The following paragraphs give a brief note on background of each township and the benefits achieved.

1. “Kasturinagar Township – IFFCO, Kalol unit.

Kasturinagar is the residential colony of Indian Farmers Fertilisers Co-operative (IFFCO), Kalol unit. This compact township with 315 residential quarters meets the housing need of the factory complex for essential production, maintenance and supporting service staff. The township is situated on Ahmedabad - Mehsana highway, having distance of 25 kms from Ahmedabad, 17 kms from State Capital Gandhinagar and 50 kms from Mehsana. Factory is 5 kms down towards Mehsana from township. The township has a wholesome establishment having full-fledged infrastructure such as bank, post office, drinking water supplies (Reverse Osmosis treated), electricity supply, sewage treatment, solid waste management, estate section (for maintenance & repair jobs), horticulture, recreation club (for indoor - outdoor games, swimming pool, reading room and multipurpose hall) and a temple complex.

Kasturinagar residents (especially IFFCO staff) were well aware of the environmental issues threatening life existence, as they had exposure to Environmental Management System while IFFCO plant was going for ISO 14001 certification. But the EMS implementation separately for township was considered much useful in formalising a system, which was having a scientific approach for solving environment issues with the community participation.

The perceived benefits from the implementation of EMS were:

- Commitment on the issues and programmes from all the levels,
- Categorization of environmental issues and understanding their short term / long term impacts on environment,
- Determining the gap between the desired performance and operational practices and improving upon the same.
- Setting an example, first of its kind in implementing EMS as role model.

The issues, which attracted attention for improving the environmental performance were:

- Conservation of resources with focus on electricity and water consumption.
- Eco friendly management of solid / liquid waste.
- Environmental improvement through enhancement of green coverage.

Though the cost involved was huge in establishing EMS, the pay back period for all the above measure was in between six months to eighteen months, including the huge investment spent for wastewater treatment. Rain water harvesting was also implemented as part of the EMS. Smaller initiatives such as campaign for saying no to plastics and promoting the usage of biodegradable materials, bio medical waste management in the dispensary according to the Bio-Medical Waste Management law of 2000, establishment of safety requirements for the LPG godown in the township as per “The LPG Regulation and supply and distribution Order, 1993”, etc was also an achievement.

2. Tatachem Township – Tata Chemicals, Mithapur unit

Tatachem Township is an Industrial Township privately owned by Tata Chemicals Ltd. located 10 Kms south of Okha Port and Bet Dwarka and 20 Kms north of the holy city of Dwarka, along the coast of Arabian Sea. Area of the Township is around 9 Sq. Km with a population of about 18000. Township was developed into a self-sufficient green and modern inhabitant with its own municipal services, such as lighting, water supply, roads, sanitation, medical services and family planning facilities. EMS was implemented in all the facilities of the township but the experience of implementing EMS in the 52 year old 150 bed hospital is noteworthy.

Tatachem hospital is a 52-year-old 150 bedded hospital owned and managed by Tata Chemicals Ltd. It acts as referral centre for 1.5 Lakhs population of Okhamandal Taluka. Facilities in the hospital can be broadly classified as:

- Infrastructure resources – Out patient department and In patient department
- Staff Resources – 9 doctors, 15 paramedical staff, 26 nursing staff and 50 support staff
- Treatment Facilities – General, specialised medical care facilities, operation theatre and investigation facilities (laboratory, X-ray and ECG section etc.)
- Hospitality Services – Full fledged kitchen, laundry facilities
- Bio waste management and treatment facilities – needle shredder, autoclave, sterilisation equipments and bio-waste incinerator etc.
- Community Services - family planning to community, mobile clinic for surrounding villages near with Okhamandal Taluka and
- Administration Facilities – to support hospital functioning

Considerable amount of environmental pollution was caused by the hospital and large quantity of waste was generated for treatment. There was also high resource consumption by hospitals such as energy, water, chemicals (disinfecting agents) and detergents. The link between environment and health has lead to environmental protection becoming a main concern for the healthcare community. However, healthcare facilities, especially hospitals, have ironically been identified as major sources of pollution.

This made the management team here at Tata Chemicals recognise the need for an environmental management system (EMS) to be adopted under the scope of Tatachem township. When developing the EMS procedures, the detail environmental aspects and impacts for all the departments in the hospital were identified to check out its adverse environmental impacts caused by the operation. Each department was assessed on their consistency, frequency of environmental problems and the degree of control existing for mitigating such problems. This is organised into a comprehensive environmental management system document in the form of initial environmental review assessment.

Benefits and challenges faced in implementing EMS....

- Team building and training
- Core group members for the entire implementation of EMS included three doctors, out of which one acted as a Waste Management Officer. But staffs at various levels were trained regarding EMS and bio medical waste management, who in turn trained the other hospital staff members.
- Transfer of the knowledge on management of bio medical waste to the lower levels was the biggest challenge.

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Bio medical waste management:

- Detailed operational control procedure on segregation, transportation, storage, weighing of waste, pre disposal treatment handling, spillage of waste and treatment of waste at on site was formulated as per the bio medical waste management and handling rules, 2000 and detail training was given to all concerned staff.
- Weighing of bio waste gave an idea to understand the quantity and the origin of waste generation, which helped later on to develop environment management plan to minimise the waste generation. All the staff members were made responsible for the effective implementation of the same.
- Installation of needle shredder, colour coded bags and bins at various bio waste generation sources in hospital.
- Establishment of a system for periodic waste audits and reports to Senior Manager Medical services for necessary action.
- Emergency preparedness and response (EPR) - A detailed EPR plan was developed for the hospital emergency situations, such as fire, spread of epidemics, storage of pressurised cylinders and inflammable materials. Periodic mock drills are also conducted to test the effectiveness of the EPR plan developed.
- All the hazardous chemicals used in the hospital were identified and the Material Safety Data Sheets for the same was prepared in English and Gujarati and training was given to the concerned staff handling the chemicals.

3. Pirojshahnagar Township – Godrej Boyce, Vikhroli unit

Pirojshahnagar is the residential colony for the employees of Godrej & Boyce, Mumbai. The township consists of 3 colonies viz. Hillside, Station side & Creekside. The Hillside colony is located on the LBS Marg and consists of about 1,300 flats of various dimensions and different categories for the Management Staff of Godrej Group Companies. This is the home for approximately 12,000 people. The Station side & Creekside Colony are located on either side of Eastern Express Highway and has approximately 1,000 flats each, which are reserved for the workmen of Godrej Group Companies.

The facilities of the townships are the following :

- Udayachal Primary & High School
- Colony Dispensary
- Consumer Stores
- Pragati Kendra for welfare activities
- Water and Electricity Department
- Safety Department looks after the safety aspects of all the residential areas & sections
- Garden Department for meeting the green cover requirement of the colonies
- Housekeeping Department
- Housing Department

Although EMS was implemented in all the above facilities of the township, yet the role of Pre-primary, Primary and High School is worth mentioning.

The schools worked as one family towards the common goal of setting the wheels of the Environmental Management System (EMS) in motion. The Principals, teaching and non-teaching staff and the students, formed core groups and sub-groups to work together in a co-operative manner. Took up the following initiatives:

- Made a conscious effort to conserve paper, water and other resources. Re-used drawing paper from the High School, used computer sheets from the company, waste material and household scrap is used in the Creative Hall. Waste materials were also used to make musical instruments, which the children used in the Music hall. Organic waste from the school canteen was segregated into wet and dry waste and sent to the Vermicompost Centre. This practice was also propagated through the children to the parents.

- As part of the Vanmahotsav celebrations, the budding blossoms of the Primary School put up interesting songs on nature, including a song on Earthworms and how they help the farmer. The exhibits had an interesting display of visual-aids on burning issues of environmental problems. On the occasion of Vanmahotsav, the scouts, guides and colony residents participated in a tree plantation drive.
- Students visited the township, put up posters, enacted street plays and sang songs and discourage people from cutting down trees. 'Save the Trees' campaign is a part of Holi celebrations.
- World Forestry Day was also celebrated with great enthusiasm. A week long campaign on Anti-Noise Pollution was held to sensitise the children about the hazards of noise pollution.
- Mangrove conservation is undertaken by the Godrej Group of Companies and the schools highlight the importance of preserving our mangroves. The Nature Club celebrated the World Wetlands Day. The students visited the mangroves at Vikhroli and were encouraged to participate in a drawing and creative writing competition at the site.
- Projects for creating awareness had a four-thronged approach. Initially teachers gathered information through workshops and resource personnel related to the various fields of environment. This information was shared with the children through a collective sharing process. Later the learning-sharing process extended to the parents and other residents.
- A fire fighting demonstration was conducted as part of the On-Site Emergency Plan at Pirojshanagar for teachers and non-teaching staff. The Dos and Don'ts of safety rules were discussed. It was indeed a learning experience for students and teachers. A mock evacuation drill was conducted at Udayachal Primary School to educate the children on how to carry out an evacuation safely during a crisis. The Safety Department also conducted a session on First Aid for the Primary School children.

The major benefit and challenge of implementing EMS in the school was to :

- Attain the goal of developing environmentally sensitive individuals. 'Catch 'em Young' was the approach at the Pirojshanagar Township. The budding and blooming minds of the young generation was moulded to conserve and preserve the environment so that they could become sensitive adults.
- Co-ordinating in harmony with the ISO 14001 team was indeed a great learning experience for the schools. Experience of working as internal auditors and attending Management Review meetings by some of the teachers were an ideal setting for new learning experiences.
- The Pirojshanagar Township became a landmark in the city of Mumbai and has gained international importance due to its pioneering efforts to achieve ISO 14001 Certification.

5.0 PLANNING AND IMPLEMENTING EMS AS PER ISO 14001 IN URBAN LOCAL BODIES

This chapter starts with an outline of the various stages in the designing of EMS as per ISO 14001. While there are several methodologies for designing and implementing an EMS, this section describes the methodology adopted by many of certified ISO 14001 organisations in India. This methodology is confirmed to be effective and used by this project.

Defining Scope for Environmental Management System:

First and foremost important thing before initiating the EMS in urban local bodies is to very clearly define the scope or, the fence line of the EMS. This decision is usually taken by the top management in consultation with few key members on whether all or part of the functional units of the urban local body is covered under the EMS.

EMS designing and implementation in any organisation as per ISO 14001 gives flexibility of defining the scope. The scope can be later extended for the second certification. The different services/functionaries provided by the local bodies can be classified as direct and indirect service/functionaries. The classification of direct and indirect is done based on the criteria of ' extent of control ' on the particular functionary by the urban local body.

Direct Service/functionaries of an urban local body :

- Health: Dispensary / Hospital
- Civil construction and maintenance: Roads, bridges, culverts & buildings, garbage management & general Hygiene
- Water Supply: Drinking water treatment and supply, storm water drainage, sewerage & sanitation
- Electrical: Street lighting and power supply to complete township.
- Administration: Office administration including markets, schools, etc.
- Horticulture: Development & Maintenance of garden and greenery in and around the local bodies.
- Others: Co-operatives , community halls and clubs.

Indirect Service/functionaries :

- Post Office
- Railway Station
- Bank
- Private schools
- Telephone Exchange
- Private markets etc.
- Others, such as in and around industries

Initiating the EMS

An appreciation-cum-commitment on EMS awareness programme is perhaps the best way to flag-off the EMS / ISO 14001 journey within the organisation. This is ideally a two-day programme for the top and senior management of the organisation. The thrust of this programme is to inform the top and senior management about what the benefits of EMS /ISO 14001 would be for their organisation, to describe the main elements of ISO 14001 and to decide on the most suitable methodology. Following this programme, the top and senior management have to decide on one or more management representatives for the EMS and establish a core team, who would work actively in developing the EMS for the organisation. As the management representative holds the responsibility for the EMS, he or she is chosen keeping in view the person's standing within the organisation. Abilities to co-ordinate, report and effectively liase with the rest of the team are the important traits that a management representative (MR) should possess. Once the MR/s appointment is done, the core group is to be

established. While formulating the core group, it is important to keep in mind the variety of skills and the knowledge base that is required, for example:

- Understanding of environmental issues
- Appreciation of the organisation culture
- Knowledge on the processes / operations
- Management Systems experience
- Auditing experience
- Training expertise
- Health and safety background
- Ability to get things done within the organisation

Although all the above qualifications might not be present in all the team members but the core group should be competent in majority of the above areas. Following the appointment of the management representative and the core group, it is important to have the core group training. A two-day awareness programme on environmental issues and EMS as per ISO 14001 is to be organised. This programme should also focus on the road map for designing and implementing the EMS. Refer Fig 7.

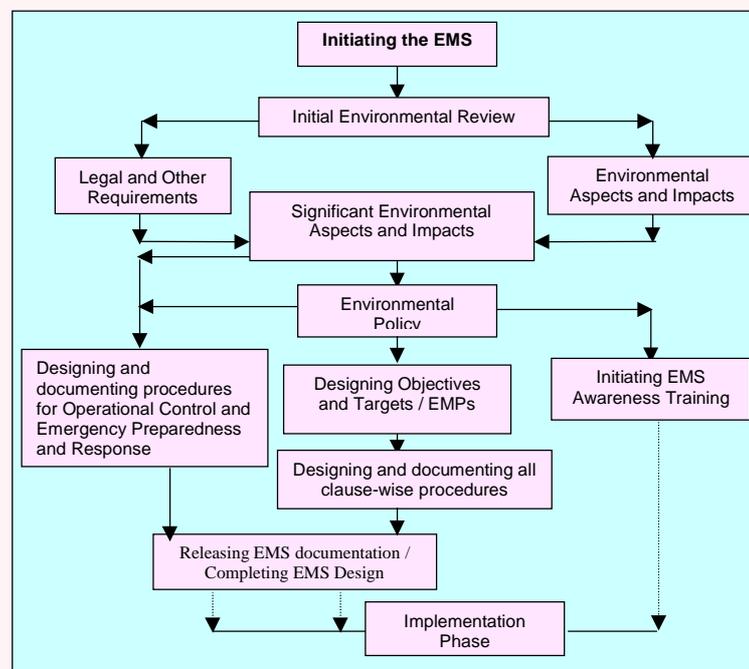


Figure 7: Stages in Initiating and Designing the EMS

Initial Environmental Review

After imparting the initial training on the EMS within the company, the first step is to undertake the Initial Environmental Review (IER). Broadly, there are two components to the IER – review of legal and other requirements, and review of aspects and impacts vis-à-vis its activities, products and services that may interact with the environment. The output of the IER is an understanding of the legal and other requirements applicable to the organisation, and the formulation of a list of significant environmental aspects and impacts that need to be addressed within the EMS.

The initial environmental review (IER) sets the parameters of the environmental management system. It defines what needs to be managed, measured and recorded and also brings out gaps in the existing management system. The scope of the initial environmental review should be defined according to the scope of the EMS. The organisational activities, and the areas to be investigated include the following:

- Environmental aspects and impacts
- Current policies and procedures for managing environmental responsibilities

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- Legal and other requirements
- Abnormal operations, accidents and incidents

Categorisation of activities, processes and services into functional / operational areas is an important step. There are different methods used to compile these information. These methods are best developed through group discussions. There is no “right” way to build this list. The process adopted by the organisation, however, should be documented. Some of the common methods are the following:

Flow diagrams - The process flow diagrams are first depicted to understand how the input raw materials which are converted into the final products. The various inputs and outputs in the different steps in the process flow are superimposed on the flow diagrams. Once again, as in the case of input-output diagrams, environmental aspects and impacts are captured.

Input-output diagram - These are box diagrams used to depict the inputs and outputs to different unit processes within the local bodies. As the normal use of these inputs is required for the process, these are generally not captured as environmental aspects. The excessive use of inputs and the generation of outputs are then captured as environmental aspects. Then the impact against each aspect is determined.

Questionnaire administering - This questionnaire gives the fair idea of the different services and functionaries available in the urban local bodies. This will also help in understanding the various activities, products and services of the urban local bodies in the day-to-day basis. After filling the questionnaire a specific section or function or service related detail questionnaire can be prepared to understand the activity / product / service in detail. A sample questionnaire is enclosed as Annexe II

Historical analysis - Studying the historical records also provides information on the aspects and impacts. This method is particularly required for identifying emergency situations and abnormal occurrences (past accidents).

Current EMS - The environmental issues that the current EMS addresses are usually captured in the aspects and impacts format.

Legal review - With the review of legal and other requirements, a clear idea is attained about the environmental issues which need to be controlled. These issues are brought into the aspects and impacts compilation list.

Site inspection - This method is best employed after a first compilation using other methods. A site inspection is taken along with the first compilation. Walk-through inside local bodies to understand the various activities taking place. The coverage of the aspects and impacts in the first compilation is verified, and then improved to form the final compilation.

Environmental Aspects and Impacts

Environmental aspect is defined as an element of an organisation’s activities, products or services that can interact with the environment. As given in the definition, it covers not only the organisation’s activities, but also its products and services. The definition also uses the word ‘can’, which implies that both existing and potential needs to be considered. The following may be considered while identifying the aspects of a process, service or product. Any activity leading to :

- Air emissions,
- Releases to water (lake, river, pond, sea, surface water etc.)
- Generation of solid waste (Hazardous or non-hazardous)
- Contamination of land.
- Use of resources like water, electricity etc.
- Creation of noise
- Hazard to safety and health
- Potential emergency situations
- Past accidents / incidents

Environmental impact is defined as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s activities, products or services.

For each service/functional units of the urban local bodies, an exhaustive list is used to include relevant activities and operations, and their associated environmental aspects and impacts under normal, abnormal and emergency situations. The definition of the above situations is as follows:

- Normal Situation (N) refers to normal operation.
- Abnormal Situation (A) refers to operational activities other than normal operation including equipment start up and shut down operation and planned maintenance.
- Emergency Situation (E) refers to accidents and all other emergency cases.

It is important to note the relationship between aspects and impacts. This is similar to a cause-effect relationship. It is also noted that each activity or product or service can have more than one environmental aspect and each aspect can have more than one environmental impact.

Box 1 provides some examples of activities, products and services along with their environmental aspects and impacts in the local bodies.

Box 1. Examples of environmental aspects and impacts	
Activity-1: Supply of drinking water	
Environmental Aspect	Environmental Impact
1. Possibility of leakage of treated water	Resource depletion
2. Possibility of overflow of water	Resource depletion
3. Possibility of excess residual chlorine	Safety & health
Activity-2: Maintenance of Garden/lawn	
Environmental Aspect	Environmental Impact
1. Possibility of excess application of pesticide/fertiliser	Resource depletion
2. Generation of horticulture waste	Land Pollution
3. Consumption of water, manure etc	Resource consumption
4. Usage of lawn mover to maintain garden	Noise pollution

Some tips to Identify Aspects and Impacts - Determining an organisation's aspects and impacts is carried out as a part of the IER. The following might be of help:

- It is important to recognise that both direct (over which the organisation has control) and indirect (over which the organisation has no control) needs to be covered while compiling the aspect impact list. For example in the industrial townships the management had direct control over the water supply but did not have control on the operation of post office, railway station, bank etc. But the management did have a power to influence.
- It is to be recognised that normal (existing during regular operation), abnormal (during start-up, shutdown or other specific conditions) and emergency conditions need to be considered while compiling the aspects and impacts.
- Identify areas with the greatest visible effect on the environment and classify them according to their extent of impact.
- Look at activities not controlled by applicable laws and regulations.
- Involve as many people as possible in the process of identifying environmental impacts. Including top management, employees, and staff from different departments/sections, adds to the richness of the information collected. Scheduling brainstorming sessions may be rewarding to gain staff input from different areas.
- Consider accessing information from other interested external parties, which can add value to the search.

Evaluating aspects and impacts for significance - The final compilation of aspects and impacts is generally fairly comprehensive. It will be impossible for any urban local body to address all the environmental aspects and impacts in this list. In fact, as per the requirement of ISO 14001, the EMS needs to address only the significant environmental aspects and impacts. By significant, it is meant to include the most important or prioritised critical environmental impacts only. ISO 14001 also requires that these significant environmental aspects and impacts form the basis for the improvements in

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environmental performance that is to be achieved through implementing objectives and targets. Therefore, the evaluation of aspects and impacts for their significance is an important step to be carried on by any urban local body.

There are no prescriptive methods for evaluating significance provided by ISO 14001. In fact, the standard leaves it to the organisation to decide on an evaluation or rating method. But the standard expects the organisation to uniformly employ the evaluation method on all aspects and impacts that have been identified. Some guidelines have been proposed in ISO 14004 for use as criteria in the evaluation method. Many organisations have adopted these criteria while selecting the evaluation method for their organisation’s aspects and impacts.

A method for evaluation of significant environmental aspect adopted by one urban local body under the CTI project on implementing ISO 14001 is explained below:

All the identified aspects were categorised in two main groups:

- Business concern
- Environmental concern.

The following parameters were considered under the Business Concern :

- Legal Concern (LC): If the activity attracts any legal concern (environmental legislation) then YES is to be filled in the format, it becomes a significant aspect.
- Internal Party Concern (IPC): If more than ‘X’ % of the population (value for ‘X’ was decided by the urban local body) are concerned with the impacts, then YES is to be filled in the format, it becomes a significant aspect. The township defined the residents to be the internal party.
- External Party Concern (EPC): If more than ‘X’ % of the external parties) are concerned with the impacts, then YES is to be filled in the format, it becomes a significant aspect. The township defined the neighbouring communities to be the external party.
- Resource Conservation Potential (RCP): If the aspects (oil leakage / material wastage, water leakage etc.,) amounts to substantial saving, then YES is to be filled in the format, it becomes a significant aspect.

If ‘YES’ was the answer for any of the four questions in Business concern then it became a significant aspect. It should be noted that if there is one YES in Business concern then there is no need to go for the environmental concern, as it is a significant aspect by virtue of the above procedure.

When all the four Business concerns are “No” then the next step is to consider Environmental Concerns.

The environmental concern has four parameters which was developed by this particular urban local body. The point value of each parameter was chosen by the township according to the degree of each. The four parameters are explained below:

SCALE: Extent or area over which the impact is experienced due to the aspect.

SEVERITY: Magnitude of impact felt by people due to this environmental aspect.

PROBABILITY: Frequency of occurrence of the impact

DURATION: Indicates the extent of time during which the aspect is felt or experienced.

Evaluation methods that have been used for significance assessment are subjective in nature. But quantitative tools are used in order to reduce the level of subjectivity. Table 7 presents a format for evaluation of significant aspects. This evaluation method and the simple format adopted by the urban local bodies gave an easy approach to quantify the evaluation criteria and priorities the significant aspects and impacts.

Writing a procedure - ISO 14001 requires establishment and maintenance of a procedure to identify and evaluate the significance of environmental aspects of the organisations' activities, products and services. It is preferable to document this procedure although ISO 14001 does not explicitly require the same. Refer Annex – III

Essentially, this procedure needs to explain how the following are undertaken within the urban local body:

- i. Identification of aspects and impacts
- ii. Evaluation of aspects and impacts
- iii. Updation of the aspects and impacts
- iv. Consideration of significant aspects and impacts for setting objectives and targets.

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Table 7 : Significant Aspect Evaluation format

Activity / Product / Service	Envt. Aspects	Status	Envt. Impacts	Business Concern				Environmental Concern				Total Weigh tage	Sig / Non- sig
				LC	IPC	EPC	RCP	SCA	SEV	PRO	DUR		
		N/A/E	LP/AP/NP /FF/WP/ SH/RCP	Y/N	Y/N	Y/N	Y/N	1-5	1-3	1-5	1-4		

Legal and Other Requirements

Awareness on legal and regulatory requirements is a fundamental requirement of an EMS. The ISO 14001 Standard requires environmental legal requirements to be identified and accessible. A practical approach to do this is by developing a register.

Environment legislations of the country need to be abide by any organisation. Therefore, while designing an EMS, it is necessary to incorporate all the applicable legislative requirements. For this purpose, any urban local body needs to access all concerned legal information, assess the same for its applicability and review whether the compliance status. Generally these include the national requirements, state requirements, permit conditions, etc.

Moreover, organisations are now choosing to abide with a number of voluntary agreements in order to gain competitive advantage in the markets. Broadly, these include company specific codes, affiliated association requirements and international agreements. If an urban local body is subscribing to any such other requirements, then they should review these requirements while designing the EMS.

Tips for identification of legal requirements - The process of identifying applicable regulations, interpreting them and determining their impacts on the operations can be a time consuming task. However, there are many ways of obtaining information about the applicable regulations, which includes:

- Regulatory agencies (central pollution control board and state pollution control board)
- Industrial associations/trade group public libraries
- Seminars and workshops; Publications
- Newsletters/magazines
- Consultants/commercial services
- Ministry of Environment & Forests

It is helpful to start by identifying regulatory requirements by preparing a list of the known regulations.

Developing a register of regulations and other requirements - A register is developed while undertaking a review of legal and other requirements in order to evidence the process of such a review. This also helps to keep a periodic track of these requirements. Ideally, the organisation's Environment department undertakes this compilation along with the support of the Legal department.

This Register needs to be comprehensive and has to be written in simple language. Broadly, this Register needs to cover the procedural

Box 2: Legal Register Format

Name of the regulations / Act / other requirements:
 Obligations under the act / other requirement:
 Responsibilities:
 Rights:
 Area of applicability to the urban local bodies:
 Reference documents

requirements and prescribed standards pertaining to each legal and other requirement. This Register also provide the guidance to maintain evidence for compliance. The Register should focus on the consent conditions that are site-specific, rather than the generic requirements given in the Acts / Rules. The register is a working document, which should be reviewed regularly to take account of new regulations and change in activities, products and services Box 2 provides a sample format for legal register and Box 3 provides sample contents of the legal register.

Box 3: Environment Legislative Register: Contents

Table of Contents:

Revision of History:

Authorisation:

Distribution List:

Water (Prevention and Control of Pollution) Act, 1974: Obligations, Responsibilities, Rights:

Water (Prevention and Control of Pollution) Cess Act, 1977: Obligations, Responsibilities, Rights

Air (Prevention and Control of Pollution) Act, 1981: Obligations, Responsibilities, Rights:

Environmental (Protection) Act 1986: Obligations, Responsibilities, Rights:

Bio Medical Waste (Management & Handling) Rules, 2000:

Municipal solid waste (Management & Handling Rules), 2000:

Emission Limits Set by Pollution Control Board:

Emission and Discharge Consents, Effluent and Air Monitoring Reports and Explosive: Licenses for installations:

Annexure (if any)

Writing a procedure - ISO 14001 does not explicitly state that there is a requirement of a documented procedure for establishing and maintaining access to information on legal and other requirements. However, the benefit of documenting the procedure helps to periodically contact agencies for new information and their applicability.

Environmental Policy

An environmental policy is the declaration of commitment to the environment. The policy serves as the foundation for EMS and provides a unifying vision of environmental principles which guide the actions of employees and management. Being signed by the top management, it sends a strong signal within the rank-and-file of the urban local body that the top management supports the implementation of the policy.

Tips for developing an Environmental Policy - While developing an environmental policy the following should be considered:

- ISO 14001 requirements
- Legal and regulatory requirements
- Results of the IER
- Existing environmental statements and principles
- Existing policies
- Values and beliefs of the local bodies
- Business strategy and strategic plans
- Stakeholder views
- Policy should be related to organisational products and services
- Policy can be a stand alone document or an integrated document with other organisational policies

The policy development is preferably undertaken after completing the IER. It is first drafted by the core EMS team and then circulated to the workforce to seek involvement / ownership at all levels. In

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parallel, the organisation's senior and top management also whet it. Feedback received is incorporated into the policy by the core EMS team and then put forward to the top management for endorsement.

The urban local bodies under the CTI project had sent the policy to a graphics designer to get some creative input on layout and presentation. They also translated the policy into all local languages. The policy was then preferably released on an important day, such as the World Environment Day or the Earth Day, through an event that was specifically organised for this purpose. This helped them to spread awareness among the mass.

Characteristics of a good, well-written policy - A good policy should be simple, direct, short, concise and realistic. It should be influential to motivate the staff, workers and other stakeholders. It should clearly communicate the direction of the EMS. The environmental policy should include a commitment to continual improvement in overall environmental performance. Setting objectives and targets is a way of quantifying and qualifying such commitments. Objectives and targets help to translate purpose into action.

Figure 8, 9, and 10 includes the environmental policy of the three townships that participated in the CTI-USAID project.

Figure 8 : Environmental Policy IFFCO - Kasturinagar Township

THE RESIDENTS OF "KASTURINAGAR" (THE TOWNSHIP OF M/S INDIAN FARMERS FERTILISERS CO-OPERATIVE LIMITED (IFFCO), KALOL UNIT) WITH THE ACTIVE SUPPORT OF MANAGEMENT OF IFFCO KALOL UNIT ARE COMMITTED TO PRESERVE THEIR ENVIRONMENT BY:

- Farming and Implementing Environmental Management System (EMS) for achieving continual performance improvement.
- Complying with legislative and other relevant requirements related to township.
- Achieving optimum utility value of resources used with minimum wastage.
- Making the residents and contractors, working at site, aware and conscious about related environmental issues.
- Improving harmony with nature by maintaining and developing green surrounding.

First Resident – Kasturinagar
Chief Executive Officer – IFFCO – Kalol Unit

Figure 9 : Environmental Policy Tatachem Township – Mithapur

WE are residents of TATACHEM Township at Mithapur, commit ourselves to :

- Conserve resources like Water and Electricity
- Minimise Waste and Maximise Recycle
- Encourage use of Eco-friendly materials
- Maintain and increases Green Cover
- Impart awareness to all residents and associates on Environmental Issues
- Continually improve our Environmental Management System

We shall constantly endeavor to achieve our environmental goals by setting, assessing and improving the objectives and targets.

&

We shall communicate the policy to all interested and make it public and comply with the regulatory requirements.

(A.M. Vaidya)
Chief Operating Officer
Tata Chemicals Limited Mithapur

April 5, 2001

Figure 10 : Environmental Policy Pirojshanagar Township, Godrej & Boyce, Mumbai

We, at Pirojshanagar Garden Township, Vikhroli are committed to sustainable development and continual improvement in our environmental performance. We shall strive to :

- Conserve water and electricity
- Segregate and recycle solid waste
- Dispose waste in an environmentally responsible manner
- Conserve and enhance the green cover
- Create environmental awareness amongst our residents and suppliers
- Encourage use of eco-friendly materials

We will comply with local and national environmental legislations and regulations.

Our environmental policy will be communicated to all residents in the housing colonies, interested parties and made available to the public.

Place : Mumbai
Date : 6th, June 2001

E. J. Kalwachia
Executive Director

Objectives and Targets

Improvements in environmental performance within the EMS are achieved through objectives and targets. As defined in ISO 14001, an environmental objective is an overall environmental goal, arising from the environmental policy, that an organisation sets itself to achieve and which is quantified where practicable. An environmental target is a detailed performance requirement, quantified where practicable, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.

Box 4: Examples of objective and targets

Horticulture department:

Objective : To enhance green cover in the township

Target : To set up additional 1000sq.m, by Dec 2002

Electrical department:

Objective : Reduction in electricity consumption of street lighting

Target : 25,000-kWh/ annum reduction in electricity consumption by street lighting

While ISO 14001 distinguishes between an objective and target in its definition, it does not specify how it is to be used. Many organisations use the term “objective and target” in a combined sense for improvement initiatives always. Other organisations distinguish between the two terms in the EMS while developing the improvement initiatives. And, other organisations view objectives as company-wide while targets are at a departmental, sectional level. All the different ways of using the term “objective and target” are acceptable. Some sample examples of objectives and targets developed by urban local bodies of the CTI project are given in the Box 4.

Box 5: Objectives and Targets Approval format

Activity, Product or Service:

Significant Environmental Aspect:

Significant Environmental Impact:

Possibility of improvement in environmental performance:

Viability – Technical and Financial – Comments:

Investment required:

Payback, if any:

Proposed Objective:

Proposed Target:

Proposed by:

Approval:

Remarks:

improvement initiatives always. Other organisations distinguish between the two terms in the EMS while developing the improvement initiatives. And, other organisations view objectives as company-wide while targets are at a departmental, sectional level. All the different ways of using the term “objective and target” are acceptable. Some sample examples of objectives and targets developed by urban local bodies of the CTI project are given in the Box 4.

Formulating objectives and targets -

Objectives and targets are formulated in a SMART manner – S-specific, M-measurable, A-achievable, R-realistic

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and T-time bound. It is also important to get a good balance within the portfolio of objectives and targets. It should address liability issues as well as opportunities. It should involve both the management and employees as well. It should have both short-term and long-term objectives and targets. Clearance from the top/senior management is required after formulating objectives and targets. Approval format for objectives and targets are mentioned in Box 5.

Prioritisation of objectives and targets - The significant environmental aspects form the basis for objectives and targets. Generally, prioritisation criteria is developed to decide on which of these significant environmental aspects need to be focussed for establishing objectives and targets. ISO 14001 requires the prioritisation be based on a consideration of legal and other requirements, its significant environmental aspects, its technological options and its financial, operational and business requirements and the views of interested parties. Some organisations classify as urgent/vital importance, high priority, medium priority and low priority by qualitatively assessing the above, while the others adopt a more structured approach towards prioritisation. The approval of objectives and targets is usually done in a participatory manner.

Writing a procedure - Although not an explicit requirement of the standard, it is preferable to have a documented procedure for formulating objectives and targets. Essentially, this procedure will document the process for developing new objectives and targets, checking the consistency with the environmental policy and approval of the top management. The procedure should also document and completion of these objectives and targets.

Environmental Management Programmes (EMPs) - EMPs are essentially detailed action plans for the implementation of approved objectives and targets. It specifies the different intermediate stages in the implementation, and includes the timeline and responsibility against each stage. An EMP answer the question arising from the needs of what is to be done, when it has to be done and, who needs to do what. Usually captured in a standard format, an EMP also answers the question regarding the means for achieving the action plan and often includes the resource requirements as well. Table 8 provides the format for EMPs.

Whenever there is a new development, the aspects and impacts during construction and operation of the activities involved are determined. If there are significant impacts, these are addressed through operational control. These could also be addressed through objectives and targets if required.

Table 8 : EMP Example in Local Body

Objective and Target	Target Period / Date	Responsibilities	Environmental Management Implementation Program
<p>Objective</p> <p>Reduction in electricity consumption by street lighting</p> <p>Target</p> <p>10% reduction in electricity consumption i.e., 25,000 kWh / annum</p>	31/12/2002	<p>Electricity Department</p> <p>Over all responsible for the implementation of the EMP 1</p>	<p>EMP1: Installing auto sensors</p> <ol style="list-style-type: none"> 1. Gather information about the efficient sensor available in market 2. Obtain Quotation 3. Approve the quotation from management 4. Install the sensor and start monitoring <p>EMP1: Installing energy efficient bulbs</p> <ol style="list-style-type: none"> 1. Start collecting the base line electricity consumption in the previous years 2. Gather information about the efficient high voltage bulbs out feasibility plan. 3. Call for the quotation and identify the suppliers 4. Approve the quotation from management 5. Start installing and monitoring

Tips for developing Environment Management Program - Involve the employees in establishing and carrying out the program

- Clearly communicate the expectations and responsibilities defined in the program to those who need to know
- Re-evaluate the action plan while considering changes to products, processes, facilities or materials
- Keep it simple and focus on continual improvement of the program over time.

To ensure its effectiveness, EMPs should define:

- The responsibilities for achieving goals (who will do it?)
- The means for achieving goals (how will they do it?)
- The time frame for achieving those goals (when?)

Writing the Procedure - ISO 14001 does not require a procedure for developing an EMP. While some organisations have adopted a procedure, there is really no need. What is important is that the EMPs include the designation of responsibility at each function, the means and the timeframe by which they are to be achieved. These are best included in the EMP format itself so as to ensure that all ISO 14001 requirements are met in each of the EMPs.

Structure and responsibility

For an EMS to be effective, organisational structure and responsibilities must be clearly defined and communicated. The commitment of all employees is needed for an EMS to live up to its full potential.

Appointing Management Representative (MR) - The appointment of the MR is the main requirement of this clause on structure and responsibility. An MR should possess decision-making skills, has the ability to co-ordinate and get things done. A MR can be at any level within the organisation. Some prefer having their chief executive as the MR, others prefer having the Manager and still others prefer having the Environment Health & Safety department head to be the MR. Each of these options has their relative merits and demerits. All of these are acceptable within ISO 14001, and there is no prescriptive procedure for this. More than one MR can be appointed based on the scale of operation of the urban local body and the requirement of skills/ expertise. Deputy MRs or Assistant MRs can also be appointed by the MR to assist in specific activities within the EMS. This has also been successfully adopted in a number of townships.

Defining roles, responsibilities and authorities - A good EMS clearly define roles, responsibilities and authorities. Role defines who undertakes solely the direct action, while responsibility defines who is accountable. Authority defines who undertakes the decision-making. These could be done by one employee/position or by several employees/positions. This is dependent on the nature and type of task involved. All these definitions should be documented and then communicated to the respective employees within the EMS.

While developing the roles, responsibility and authorities, urban local bodies should note that ISO 14001 encourages environmental management to become more of a line function rather than remaining as a staff function. Therefore, it is critical to place the responsibility for implementing EMS on the line managers as well. A good EMS also assigns roles and responsibilities to the operational managers/executives. In fact, broad and successful definitions can be provided in a centralised manner and this can be supported with assigning roles, responsibilities and authorities in the various policies, procedures and programmes of the EMS.

Organisation also adheres to its hierarchy especially when assigning responsibilities and authorities for the EMS. Having a separate hierarchy for the EMS results in no integration into the organisation's overall management systems and hence is considered to be a bad practice. It is preferable to use the organisational chart while assigning responsibilities and authorities for the EMS.

Allocating resources - Resources can be classified as direct & indirect. Time of the employee and finance are the direct and indirect resources respectively. A company needs to provide human resources, specialised skills, technology and financial resources for a successful, effective EMS implementation. Top management of organisations is to review resource requirements in their periodic management review meeting. It is best to include the allocation of financial resources as a part of the annual budgets and to incorporate EMS integrally into the organisation's business plans.

Writing a procedure - A two to three-page statement should be documented to evidence that they are meeting the ISO 14001 requirements and this statement/procedure forms a part of the organisation's EMS Apex Manual. This statement/procedure covers the following:

- The appointment of MR
- Definitions of overall roles and responsibilities
- Provision of resources required for the EMS.

Specific roles, responsibilities and authorities are preferably referred in the respective procedures and programmes.

Training, Awareness and Competence

Training is necessary to bring about a basic, fundamental change in the rank and file of the organisation. Attitudinal changes, behaviour pattern changes and modifications in thinking processes are required in an effective EMS. To convey the environmental message across the organisations and provide new skills, training is the important vehicle. While the EMS may involve a number of communication and documentation, it is important to support the team with training sessions. This also helps the workforce to imbibe new concepts in relation to the organisation's functioning.

Assessment of training needs - Training needs assessment is critical to understand the focus of the training programmes. Ideally, it is done once in six months or once in a year. It is important to undertake this assessment in a decentralised way. The outputs of this assessment form the basis of the training calendar.

Tips for developing a training calendar - Assess training needs and requirements

- Define training objectives
- Select suitable methods and materials
- Prepare training plan to identify who, what, when, where, how
- Track training records
- Evaluate training effectiveness
- Improve training program as and when needed

A training calendar is generally categorised into awareness and competence training. To execute awareness training, a module comprising general environmental awareness, environmental policy, EMS/ISO 14001 awareness and do's and don'ts within the organisation is formulated. Awareness modules are preferably translated into the local language for the trainer to connect better with the operational workforce. Awareness modules are delivered by the organising own specialist trainers or from other organisations as well. While the needs assessment covers who participates in these awareness sessions, it is a good practice to periodically cover top/senior/middle management, supervisors, employees, contractors and suppliers.

The characteristics of a good training are the following:

- Provides with information
- Increases awareness
- Builds knowledge
- Improves understanding
- Motivates action
- Enhances skills
- Interactive process with healthy audience participation
- Combines different training methods
- Collects feedback – immediate and after-a-while

The portfolio of competence training needs vary from time to time and it is important to keep this dynamic. To execute competence training, the urban local body needs to assesses whether the capacity to render the training exists within them or not. If not, then the employees should be sent for inter- organisation training programmes or invite external faculty to conduct such training. Refer Box 6 for suggested topics of training in an urban local body.

All the three urban local bodies under the CTI project designed different training programmes for its management, staff, residents including house wives and children.

Box 6: Suggested topics of Training

1. General Environmental awareness
2. EMS and ISO 14001
3. Emergency Preparedness Plan
4. Environmental laws
5. House hold waste management
6. Water conservation
7. Hospital waste management
8. Paper recycling

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Refer Table 9 & 10 or the training related formats.

Apart from conducting the regular training programs, occasional sessions have to be conducted when the following occurs:

- New employee is hired
- Individual doesn't follow procedure / instruction
- Procedures are altered
- New process, material or equipment is introduced
- Objectives and/or targets are altered
- New regulation is introduced in the organization's activities

Table 9 : Environmental Training Plan for the Year _____

Type of training	Programme details	Target audience	Training mode	Date / month	Remarks

Table 10 : EMS Training Need Identification Form

FOR PERIOD _____ DATE _____

Sl. No	Name	Designation / Section	Department Need Identified	Training Language In Which Training Required (Hindi / English)	Remarks

Writing a procedure - ISO 14001 requires a procedure (s) for undertaking awareness and competence sessions. There are different ways of writing this procedure: one could be to have a separate procedure for awareness training and another for competence training. These procedures could be centralised or decentralised across various departments. In all, the training procedure should cover the process of training needs assessment, the methodology of formulation of training modules and methods, process of selection of trainers, execution of training and feedback. Records which maintain the schedule and acts as evidence of conducted programmes are formatted. For instance, attendance-cum-feedback record of any training programme contains type, name, date, duration, feedback, and some specific questions.

Communication

Effective environmental management requires effective communications, both internally and externally.

For an EMS to be healthy and efficient there has to be a constant exchange of information within the organisation to keep the employees aware and, between the organisation and its stakeholders to keep itself abreast of the latest developments/happenings that have a bearing on the EMS. Sustaining effective communication is important for a vibrant and effective EMS. Refer Box 7.

Box 7: Effective communications will help:

- Motivate the workforce
- Gain acceptance for plans and efforts
- Explain environmental policy and EMS
- Ensure understanding of roles
- Demonstrate management commitment
- Monitor and evaluate performance
- Identify potential system improvements

Types of communication - Communication can be classified as internal and external. And, within internal and external, communication can be further classified as proactive and reactive. Each of these different types of communication is briefly described in this section.

Internal Proactive: MR and EMS Core Group undertake proactive communication on EMS achievements, both directly related to the system and on improvements in environmental performance, on a periodic basis to keep the enthusiasm for the EMS alive within the organisation. Declaring regular awards and rewards for employee suggestions and actions also boost the interest in the EMS. As internal proactive communication, all key, important issues are regularly disseminated throughout the organisation.

Internal Reactive: All employees need to be able to communicate their views, opinions and suggestions based on what they witness within the organisation. While the senior and middle management generally have meetings/discussion sessions, the operators and the rest of the work force are often without such a forum. It is important and useful to create such forums to establish a good criss-cross communication channel within the organisation. Poor housekeeping lapses in operational control and weaknesses in emergency preparedness are some of the environmental issues that have been repeatedly addressed through effective internal reactive communication channels. Refer Box 8.

Box 8: Internal Methods of Communication

- Newsletters
- Intranet
- Staff meetings
- Employee meetings
- Bulletin boards
- Brown bag lunches
- Training

External Proactive: Proactive external communication can be achieved through policy, annual reports, information bulletins and discussions with external groups. ISO 14001 requires the organisation to consider external communication only related to significant environmental aspects. Here again, it is not mandatory to communicate to external interested parties regarding all significant environmental aspects. It is only required to consider the processes. Many organisations communicate proactively to the neighbouring community only issues pertaining to the emergency situations as that they may have a bearing on them.

External Reactive: Whenever an external stakeholder complains or seeks a clarification, the EMS needs to respond with an explanation within a reasonable time frame. This is the ISO 14001 requirement as well. The organisation needs to be responsive to external stakeholder issues and address them effectively. Refer Box 9.

Box 9: External Methods of Communication

- Open houses
- Focus or advisory groups
- Web site or e-mail list
- Press releases
- Annual reports
- Advertising
- Informal discussions

Writing a procedure - ISO 14001 requires the establishment and maintenance of a procedure for internal and external communication. The procedure can cover different types of communication. Under each part, it can document the information flows, methods adopted, process of decision making and responsibility disbursement. ISO 14001 requires that any external communication received and responded is documented, and all significant aspects are considered for proactive external communication.

EMS Documentation

EMS documentation is to support EMS implementation. It is to be used by the employees as a reference source that can be consulted whenever required. EMS documentation also serves to demonstrate to an external stakeholder about the organisation's initiatives in environmental management. For instance, external agency auditors use EMS documentation extensively for auditing the EMS. In some organisations where the EMS implementation is slack, this happens and is indicative of an ineffective EMS

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Characteristics of good EMS documentation - Some good characteristics of EMS documentation are as follows:

- Worded in a simple and direct style. Unnecessary wordy texts are to be strictly avoided.
- Elaborate documentation is not a sign of good documentation. It is important that organisations strive to keep the documentation manageable and effective.
- Should be available only where it is required. Distributing manuals to locations where they are not used is unnecessary and should not be undertaken. It is important to keep the structure slim and trim.
- Provides direction to related documentation and does not re-document. Needs to provide linkages and connectivity with existing and new documents.

Constituents and Tiers of EMS documentation - EMS documentation comprises of policies programmes procedures, forms/formats and statements that are relevant to environmental management within the organisation. Generally, EMS documentation is captured in one or many manuals, and there are a number of ways in which an organisation can develop its documents.

In the past, a tiered structure of documentation was preferred. In this structure, Tier 1 is the EMS Apex Manual, which makes broad clause-wise references on how the organisation meets the

Box 10: Structure of EMS Documentation and Records

Level I	:	EMS Apex Manual
Level II	:	EMS Department Manual
Level III	:	EMS Records

requirements of ISO 14001. This Tier 1 manual was often visualised as a document that can be given to external agencies upon request. Tier 2 is the EMS Common Procedures Manual, wherein the functional details of the clause-wise ISO 14001 requirements are included. Tier 3 is the EMS Departmental Procedures Manual, which includes the operational control procedures, EMPs and other procedures that are relevant only at the departmental level. Tier 4 is

the Work Instructions to support the Department Procedures. Tier 5 is the EMS Forms and Formats that are used in by procedures and programmes in any of the Manuals. Refer Box 10.

More recently, a flat documentation structure has been preferred with only one manual for each Department. This manual contains all the policies, programmes, procedures and forms and formats that are relevant to that Department. The concept of a broad, general EMS Apex Manual has been omitted as its use was found to be limited. In fact, many organisations are referring to the functional, clause-wise procedures as the EMS Apex Manual in current times.

There is no prescriptive choice of using a tiered or flat structure. An urban local body needs to consider its existing management systems to take the final decision on the structure. One urban local body under the CTI project decided to follow their QMS documentation structure, while another decided to overhaul their QMS documentation after adopting a new, improved approach in their EMS documentation. Box 11 gives a sample for the documentation of a procedure.

Box 11 : Documentation of ISO 14001 Procedures Format

Name of the Local Body			
Environmental Procedure Manual			
Document No.	ISSUE NO. : 1	ISSUE DATE :	
	REV. No. : 0	REV. DATE. :'	PAGE 1 OF

- 1.0 Purpose
- 2.0 Scope
- 3.0 Responsibility
- 4.0 Description of the Activities
- 5.0 Relevant Records and Reference Materials
 - 5.1 Reference
 - 5.2 Enclosures
 - 5.3 Formats

NAME	DESIGNATION	SIGNATURE
Issued By	Management Representative	
Approved By	Head of the Department	

Developing the EMS documentation should be at pace with the EMS initiation. It is important to remember that developing EMS documentation is not the most important part of the process. Therefore, it is not advisable to start on the EMS documentation until the completion of the planning stage. The burden of documentation can be lessened by a participatory approach among the staff under the supervision of the MR.

Document control - Document control is required to maintain the EMS documentation that is in place to support EMS implementation. Proper document control ensures that the EMS documentation is streamlined and little or no time is spent on addressing difficulties with the EMS documentation. Poor document control may result in a lot of employee time and effort consuming to interpret documentation for the purpose of EMS implementation.

Writing a procedure - ISO 14001 requires the organisation to establish and maintain a procedure for document control. This procedure covers how it is ensured that the documents can be located, the documents can be periodically reviewed/ revised as necessary, the documents can be approved for adequacy by authorised personnel, the current versions of all documents should be available at various locations, the obsolete documents have to be promptly removed and the obsolete documents must be retained for legal/knowledge purposes. The procedure also ensures that the documentation is legible, dated (with revision dates), readily identifiable, maintained in an orderly manner and retained for a specified period. Refer Box 12.

It is important to keep the procedure simple and straightforward. It carries three parts: how the various documents are created, how they are transmitted within the organisation and how they are modified. Documents could be of different types and, within the two parts, it is necessary to include how each different type of document is tackled. For instance, the clause-wise procedures may follow a particular document control mechanism while the department procedures may follow another mechanism.

This is often done because the overall responsibility for the clause-wise procedures is normally with the MR while the overall responsibility for the department procedures is with the Department Head.

Box 12: Purpose of Documentation Control

- Location of EMS documents for accessibility
- Periodic review of documents
- Update the documents with the new versions
- Remove obsolete documents

Operational Control

Operational control maintains the baseline of environmental performance within the organisation as opposed to objectives and targets that improves the environmental performance. It is easy to understand that without operational control there could be a chance that organisation improves through objectives and targets in some areas and deteriorates in other areas. Operational control is required to prevent this deterioration in environmental performance and maintain a baseline from where continual improvement in environmental performance can be planned through objectives and targets.

Operational control procedures are similar to standard operating practices in a quality management system setting. In an EMS, each significant environmental aspect needs to be addressed through operational control procedures.

In the section on environmental aspects, it was stressed that the organisation needs to identify environmental aspects, which it controls and it can influence. Operational control is required for all of these aspects that have turned out to be significant. Those, which it controls, will be through operational control procedures, while those, which it influences, will be addressed through guidelines developed for suppliers or contractors as the case may be.

Writing a procedure - ISO 14001 requires documentation of operational control procedures related to significant environmental aspects. All significant environmental aspects over which the organisation has control are first listed. The number and description of the separate operational control procedure is then determined. Many significant environment aspects may be addressed through one operational control procedure. For instance, if several departments do hazardous waste handling, there could be one common operational control procedure to prevent spillage and all departments can use the same. On the other hand, one significant environmental aspect may require more than one operational control procedure. For instance, if different departments do operation and maintenance, then a particular activity may require one operational control procedure for the operating department and another for the maintenance department.

Once the description of the operational control procedure is written, care needs to be taken to cover issues related to operations/maintenance, checking and action if deviation occurs in the text of the operational control. The text should necessarily include operating criteria for the activity, which can be determined from a variety of sources – legal standards or equipment standards or previous year's performance. The procedure should flow in a logical and sequential manner. Organisation tends to use standard formats for their operational control procedures. Box 13 provides the format for documenting the operational control procedure. While written text is most commonly used in operational control procedures, flow diagrams and pictorial presentations can also be used.

Work instructions can be seen to be a part of the description of the operational control procedure itself or can be treated separately as well.

For those significant environmental aspects over which the company has no control and only has an influence, guidelines need to be prepared for dissemination by the appropriate department (E.g., suppliers and contractors). These guidelines are generally similar in content to an operational control procedure but more generic as the operations are controlled by an external agency whose equipment/operational details may not be available with the organisation.

Box 13: Operational Control Procedure Format

Purpose
Scope
Responsibility
Operating Criteria
Description of activity
Cross References
Records

Although writing of the procedure is not a ISO 14001 requirement, but often included in the EMS manual for completeness along with the other procedures.

Emergency Preparedness and Response

Box 14: Effective emergency preparedness and response program :

- Assessing the potential for accidents and emergencies
- Preventing incidents and their associated environmental impacts
- Plans / procedures for responding to incidents
- Periodic testing of emergency plans / procedures
- Mitigating impacts associated with these incidents

Compilation and prioritisation of aspects and impacts helps the organisation to identify emergency situations. It is through this identification in the early stage of designing the planning clause that the EMS recognises the existence of emergencies. A response plan helps prevent mishaps which might occur during emergency situations. Any organisation needs to have a preparedness plan to respond to such situations. Therefore, an effective EMS addresses emergency preparedness and response as well. Refer Box 14 for the characteristics of an effective emergency preparedness plan.

Emergencies are addressed within the EMS because:

- Safety management has people as its focus, while environmental management has environment as its focus. There may be some environmental emergencies that have no safety repercussions. For instance, a sudden excessive discharge of coloured effluent into the river may not be treated as an emergency under safety but these are definitely emergency situations under the EMS.
- Many emergencies identified under safety management have environmental repercussions as well. In fact, the impact on people is also considered to be an environmental impact as humans are a part of the environment. There is clearly an overlap between the two subject areas and hence, it is deemed necessary to address emergencies under the EMS.

Issues addressed in the Emergency Preparedness and Response plan are the following:

- Areas covered under legal regulations like LPG Act, Petroleum Act
- Fire, explosive and spill prone areas
- Requirement under the factory act / others

Emergencies can be broadly classified as major and minor:

Major emergencies - It generally includes those incidents, which leads to the evacuation of the whole or part of the urban local bodies premises. This needs to cover the three phases of an emergency, i.e. prior, during and after the incident. The coverage includes what kind of preparedness measures are to be undertaken, the sequence of actions as response if the emergency occurs, post-incident reviews and specifies who is responsible at the different stages. Many local bodies/townships have on-site emergency plans, which need to be reviewed to see whether they are sufficient.

Minor emergencies - It generally includes those incidents, which are localised to a particular section of the urban local body premises and can be sorted out in relatively short timeframe and with little effort. Here again, this covers the three phases of an emergency, i.e. prior, during and after the incident. The coverage includes what kind of preparedness measures are being undertaken (training and maintenance of equipment), the sequence of actions as response such as the use of the appropriate fire extinguisher, post-incident reviews and specifies who is responsible at the different stages. Refer Annex – V for examples of emergency preparedness & response plan in an urban local body.

Testing the emergency procedure is done by conducting mock drills and other procedures. Revising the procedure addresses the outcome of either the testing or the actual occurrence which has led to the improvement of the procedures and strategies to prevent and mitigate the environmental impacts that it causes.

Writing a procedure - ISO 14001 requires establishment and maintenance of procedures to identify potential for and response plans to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. ISO 14001 also requires that the procedures are tested, reviewed and revised periodically.

6.0 CHECKING AND CORRECTIVE ACTIONS OF EMS AS PER ISO 14001

Monitoring and Measurement

Monitoring is required to gauge as to whether the management system is performing in line with the expectations. Monitoring and measurement enables an organization to:

- Evaluate environmental performance
- Analyze root causes of problems
- Assess compliance with legal requirements
- Identify areas requiring corrective action
- Improve performance and increase efficiency (or) productivity

Monitoring helps to track important operational control procedures that are important for the urban local body. The established objectives and targets also monitored periodically. While some organisations use a format for a progress report for objectives and targets, others review the progress in the periodic meetings. If the monitoring outputs indicate delay, then the organisation organises a top management discussion or management review meeting, to take necessary actions. A good EMS has a periodic legal compliance monitoring procedure. This monitoring is best done proactively on a periodic basis. This monitoring is also done reactively when complaints are obtained from external interested parties, especially neighbours or the regulatory authorities. The provision for such monitoring needs to be made on an ongoing basis. This monitoring is generally undertaken through a combination of centralised and decentralised responsibilities keeping in view the way the organisation is structured. There is no specific requirement on the frequency of monitoring and this needs to be decided on a case-to-case basis based on the issue or parameter under question.

Examples of some key technical parameters identified for monitoring are as follows:

- Water effluent: pH, COD, BOD and TSS of final effluent
- Stack emissions: SPM, SO₂, H₂S and NO_x
- Ambient air quality: SPM, SO₂, NO_x
- Consumption of power, water & other fuels

Calibrating equipment - Almost all equipment's used for environmental data measurements are to be calibrated periodically. In most organisation, some of the measurements are done using their own instruments while the others are done using instruments of contracted monitoring agencies. The urban local body needs to establish a calibration schedule for the environmental data measuring devices and a procedure for checking the instruments used by outside agencies are calibrated by well-established and recognised laboratories.

Townships with QMS generally have a well-developed calibration procedure. It is only required to check that all the environmental data measuring devices are also included in that calibration procedure. In general, it is not wise to have a separate calibration procedure for EMS and another for QMS.

Writing a procedure - ISO 14001 requires that the organisation establishes and maintains documented procedures for monitoring and measuring. This procedure needs should cover:

- Tracking of organisation-wide environmental parameters
- Tracking of operational control
- Monitoring progress of objectives and targets
- Calibration of environmental data measuring devices
- Monitoring of legal compliance.

Non-conformance and Corrective and Preventive Action

Although ISO 14001 does not explicitly give any formal definitions, it is useful to have some definitions for these three terms:

Non-conformance: It is a deviation of any size or magnitude from the EMS requirements and from ISO 14001 requirements upon which the EMS is based. A non-conformance can be identified through EMS audits or through day-to-day observations. It is a common misconception that a non-conformance can be identified only through an EMS audit. In fact, having a check, only through EMS audits is a limiting approach of keeping an EMS healthy and effective. Although ISO 14001 is not prescriptive on this matter, organisations are strongly encouraged to adopt an approach of raising non-conformances both through EMS audits and through day-to-day observations.

In relation to non-conformance and corrective and preventive action, organisations must carefully define the responsibilities and authorities for handling, investigation, mitigation of impacts caused, completing corrective and preventive action, verifying its appropriateness vis-à-vis its elimination, magnitude and commensurateness. It is important to specify these responsibilities and authorities with due care and consideration.

Corrective and Preventive action: Action that is taken to rectify a non-conformance is termed as corrective action, while action that is taken to ensure the non-recurrence of the non-conformance is termed as preventive action. It is important to distinguish between corrective and preventive action in an EMS. Corrective action amends the non-conformance, need not tackle the root cause of the problem and is generally in the immediate-term. On the other hand, the preventive action ensures non-recurrence of the non-conformance and necessarily tackles the root cause of the problem and is generally undertaken in the short-to-medium term.

Classifying Non-conformances - Historically, non-conformances tend to be classified based on its importance and criticality. Clear definitions are laid out for the classification. Each non-conformance is studied vis-à-vis these definitions.

Certification agencies and other external auditing agencies still continue to classify non-conformances into critical, major and minor. They communicate the importance of the non-conformance as per the external auditing guidelines to the organisation. As this manual focuses on the intra- organisations, the classification of non-conformances is not further elaborated. Organisations are encouraged not to classify non-conformances and address all deviations within the EMS, irrespective of their importance (i.e, critical, minor, major).

Deciding on a NCR format - A non-conformance report (NCR) format needs to be simple and easy-to-use. It is important to separate corrective and preventive action in the case of the EMS, as these are often distinct from each other. For instance, consider an oil spillage as a significant environmental aspect and its operational control has failed. The non-conformance will be the failure of operational control, the corrective action will be to clean the area in an environmentally responsible manner and the preventive action will be to rectify the problem that resulted in an oil spillage. Table 11 provides a sample NCR format.

Table 11: NCR Format	
Non-conformance / Suggestion	
Auditor Signature	

Corrective Action	
Closing Date	Signature

Preventive Action	
Closing Date	Signature

MR Comments:	
MR Signature	

Writing a procedure - ISO 14001 requires that the organisation establishes and maintains procedures related to non-conformances, corrective and preventive action. This procedure should address both non-conformances raised through EMS audits as well as through day-to-day observations. The procedure should also define the responsibilities, authorities and a logical sequence for handling, investigation,

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mitigation of impacts caused, completing corrective and preventive action, verifying its appropriateness vis-à-vis its elimination, magnitude and commensurateness, and making the necessary changes in the documented procedures. And, finally the procedure should provide a mechanism for tracking open non-conformances and ensuring that suitable action is taken in a reasonable time frame.

Records

As emphasised in the case of EMS documentation, records are also required to support and evidence EMS implementation, and not vice versa. Sometimes, updating of records is undertaken for the sole purpose of evidencing EMS implementation. It is a clear indication of a non-functioning EMS and steps need to be undertaken to thoroughly overhaul the system if that happens. Salient characteristics of records are as follows:

- Legible
- Identifiable
- Traceable
- Properly stored
- Retrievable
- Protected against damage
- Retention times

Box 15: Types of Records

- Legal, regulatory and other code requirements
- Results of environmental aspects identification
- Reports of progress towards meeting objectives and targets
- Job descriptions and performance evaluations
- Training records
- EMS audit and regulatory compliance audit reports
- Communications with customers, suppliers, contractors and other external parties
- Sampling and monitoring data
- Equipment calibration records
- Results of management reviews

Records store data/information related to all facets of environmental management – training, audit, communication, operational control and management reviews. This data/information can be viewed as the contemporary history books of the organisation. It has been proven that analysing past data/information with the current levels results in better monitoring, evaluation, control and overall management. Refer Box 15.

Tips on EMS records

- Do not create new records when existing records can be modified
- If there are common types of records within each department, then adopt similar numbering for them
- If electronic records are possible, do not keep hard manual records
- Take back-ups religiously if electronic records are being maintained
- Keep the number of records to a minimum

Writing a procedure - ISO 14001 requires the establishment and maintenance of procedures related to: identification, maintenance and disposition of environmental records. Under identification, it is necessary to include how records are numbered, are traceable to the activity, product or service, and are readily retrievable. Under maintenance, a organisation's procedure addresses how records are kept up-to-date and by whom. Under disposition, it is required to address the legibility, storage and retention times pertaining to records. This procedure is generally no more than one page in length.

EMS Audit

EMS audit is a systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organisation's EMS confirms to the EMS audit criteria set by the organisation, and for communication of the results of this process to the management. The emphasis lies in the EMS audit being an objective verification process to collect evidence against EMS audit criteria. In the case of an EMS designed as per ISO 14001, the EMS audit criteria will be the ISO 14001 requirements as well as the designed EMS specifications. By systematically undertaking EMS audits and reporting its results to the management its findings, information pertaining to the health and effectiveness of the EMS becomes periodically available for review and further action.

Training EMS auditors - Trained EMS auditors are required to undertake EMS audits. Under the CTI project, urban local bodies, used their QMS auditors to undertake the EMS audits. But these auditors were not trained on the EMS and lacked expertise on environmental issues, therefore, resulted in sub-optimal outputs of the audit. Organisations therefore, need to train some of their employees on EMS auditing. The number of EMS auditors varies based on the size of the organisation. It is advisable to use the EMS core group members as EMS auditors as their knowledge level on the EMS is relatively higher than that of the other employees.

Organisation must chose trainers who have an environmental background and the importance of this choice cannot be under-estimated. The orientation towards getting the EMS audits to provide outputs to improve environmental performance is important and a trainer with an environmental background is most appropriate for such a training delivery.

There are two types of training available in India currently – internal EMS auditor training and an inter-organisation EMS auditor training programme. It is useful to have all the proposed internal EMS auditors trained in the former, and some of the EMS auditors trained in the latter course as well. Being an inter-organisation programme, the range of inputs provided in the latter course is wider and learning from other organisations will also be possible.

Audit programme, scope and frequency - Some organisations adopt a monthly audit programme wherein each month certain departments are audited, while other organisations adopt one audit for each half-year wherein they will cover all the departments. By opting for one or the other or a combination, the organisation decides on the frequency and scope of the individual audits. Usually, certification agencies in India conduct a surveillance audit on an annual basis, covering all the departments twice every year. However, in the early stages of the EMS, organisations tend to have audits more frequently to help the EMS establish itself.

Organisations do not always carry out these audits across all clauses of ISO 14001. Some audits are restricted to certain clauses and procedures. For instance, in one EMS audit, the focus can be on the Clause 4.4.6 Operational Control Procedures. The organisation decides whether it wants all the audits across all the clauses or otherwise.

Audit Instruments - Organisations use the following as the audit instruments:

- Examination of documents
- Interviewing staff
- Physical site verification

Although using a particular instrument might vary but preference is given to the physical site verification. Organisations are also strongly encouraged to develop audit checklists that the EMS auditors can administer. These checklists are generally developed by the EMS auditors and updated periodically with the increasing level of maturity in the EMS.

Undertaking an internal EMS audit - Generally, after about one or two months of implementing the EMS, the organisation needs to organise an internal EMS audit. Although called an internal EMS audit, it is best to have an expert external auditors steer this process along with the trained internal auditors. By adopting this approach, the internal EMS auditors observe audit experts and learn out of their observations for their own audits. The choice of the external auditors is important, as they should have a strong environmental orientation, stress on physical implementation and not solely on documentation.

This audit is initiated with an opening meeting, which is followed by a series of audit meetings covering the MR, relevant Department Heads and the top management. The coverage of this audit is to be comprehensive, covering all the departments. The external auditors conduct each audit meeting along with two other internal auditors, and the number of audit days must be decided on this basis. This audit adopts the methodology of examining documents, undertaking physical site observations and interviewing personnel. The EMS audit procedure is followed for raising audit findings pertaining to

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these audit meetings. This audit is closed with a formal closing meeting in which the top management is requested to attend. While the internal auditors are following their procedures for raising the audit findings, it is preferable to request the external auditors to also produce a full-fledged audit report for purpose of comparison and reference.

Reporting audit findings - Organisations are required to decide how the audit findings are classified, communicated and addressed within the EMS.

Writing an audit procedure - ISO 14001 requires the organisation to establish and maintain programmes and procedures for periodic EMS audits. In the audit procedure, the organisation covers the audit training, scope, frequency, methodologies, responsibilities and reporting. Refer Box 16. Audit programme can be attached to the audit procedure as an annex. This audit programme specifies the schedule, which is based on the environmental importance of the activity and results of the previous audits.

Box 16: Audit Procedures Format

- Audit planning
- Audit scope (areas and activities covered)
- Audit frequency
- Audit methods
- Key responsibilities
- Reporting mechanisms
- Record keeping

Management Review

The top management needs to be continually involved in and committed to the EMS. While in some organisations, this involvement/commitment is naturally forthcoming, this is not the case in all organisations. This is ensured through the management review process, which provides the required EMS-related information to the management for periodic analysis and decision-making.

Planning the agenda of the review - While the scope of the management review should be comprehensive, it need not address all the clauses of the EMS in every review meeting. In fact, this approach will render the management review meeting too structured and might make the process uninteresting. The coverage can be obtained in a different manner and can be achieved over a period of time, as it is not necessary that every item be addressed in every meeting. See the box, which provides a list of possible agenda items.

Many organisations convert the management review meeting to an audit results review meeting. This is an erroneous practice as the non-conformance and corrective and preventive action mechanism addresses the audit findings, and only important points emerging from the audit needs to be carried to the management review meeting.

Experience indicates that it is rather difficult to cover all the items put forward in the agenda during the conduct of the meeting. Therefore it is important to prioritise the agenda items and put forward the more important ones first.

Box 17: Agenda items for management review

Specific

- Completed objectives and targets
- Suggestions for new objectives and targets
- Financial allocations for new objectives and targets
- Instances of legal non-compliance if any
- Analysis of environmental performance data
- Salient points from the previous audit
- List of repeated and overdue open non-conformances
- Specific concerns raised by stakeholders
- Incidents of environmental emergencies
- Instances of major operational control failures
- Manpower and other resources required
- Other financial resources / budgets required

General

- Suitability, adequacy and effectiveness of the EMS to the changing business
- Confirming that continual improvement is being achieved by the EMS
- Need for modifying the environmental policy.

Preparing for the management review - Organisation needs to plan for every management review meeting. The background work is related to each of the agenda items and, involves information compilation, analysis and presentation. All that is presented in the management review should enable top management decision-making. It is important to remember that top management time for the review is limited and the best use of their time and should be planned for the management review meeting.

Conducting the first management review - Following the first internal audit and with an idea of how the EMS has performed, the first management review meeting is to be conducted. This meeting should have an agenda in line with what was suggested for inclusion in the procedure. The coverage should include the following:

- Review of objectives and targets
- Analysis of environmental performance data
- Instances of legal non-compliance (if any)
- Salient points from the first audit
- Specific concerns raised by stakeholders (if any)
- Incidents of environmental emergencies (if any)
- Instances of major operational control failures
- Additional manpower and other resources required based on the first few months of implementation experience.

The readiness of the EMS to approach a certification agency is ascertained during the meeting. The observations, conclusions and recommendations of this management review are recorded as minutes.

Writing a procedure - ISO 14001 does not require a procedure for undertaking a management review but it is preferable to have one as it serves as a useful guideline. The coverage of this procedure includes membership, frequency, a list of possible agenda items, preparation of minutes and reporting mechanisms for follow-up actions. The list of agenda items broadly addresses the continuing suitability, adequacy and effectiveness.

ISO 14001 requires that the review be documented. Organisation maintains the agenda and minutes of the management review as records. In these records, observations, conclusions and recommendations are noted for suitable follow-up action.

Certification of EMS

Approaching certification agencies - Urban local bodies need to approach the different certification agencies and inform them that they would like to obtain certification for their EMS. Some of the certification agencies that are active in India include the following: Aspects Certification Services, Bureau of Indian Standards, BVQI, DNV, IRQS, KPMG, TUV, Underwriters Laboratory. In response, the certification agencies send their brochures and forms to be completed. Based on the information furnished by the urban local body, the chosen certification agency provides their quotations along with a brief description of their auditing expertise. Often organisations decide on the certification agency based solely on the lowest quote. But, this may not result in an effective certification and surveillance audits for the urban local bodies. What is most important is the expertise of the auditor's vis-à-vis environmental issues pertaining to the urban Local bodies. Selection of the certifying agency should consider their auditing procedures/guidelines and technical expertise that would be used to support their audits. While an urban local body cannot insist on a particular auditor for the certification surveillance audits, it can make a decision based on an assessment of the agency's auditing expertise.

Once the decision is taken, the urban local body need to enter into a contract with the chosen certification agency. This contract is usually for undertaking one pre-assessment, one main assessment audit and five surveillance audits. Surveillance audits are conducted at six months interval to maintain the EMS. The ISO 14001 certificated normally issued are valid for three years.

Pre-audit by the Certification agency - The urban local body invites the certification agency to undertake a pre-assessment audit after the contract is finalised. This audit is generally for a short duration – one or two days – wherein the certification auditors examine the EMS manuals and also take a cursory visit around the site. The auditors can raise the major issues which needs to be addressed by prior to the certification audit and also provide advice on other matters pertaining to the EMS.

Some certification agencies do not undertake a pre-audit but adopt a two-stage assessment audit. In such cases, the local body needs to invite the certification audit for the first stage audit. This audit is undertaken like a full-fledged certification audit and prepares the urban local body for the final certification audit. The findings of this first stage audit needs to be addressed by the urban local body and the more important ones need to be necessarily closed prior to second assessment audit.

Undertaking second internal EMS Audits - After two to six weeks following the first EMS audit, the second EMS audit is organised. This second internal EMS audit is to be performed preferably only by the internal EMS auditors. The expert external EMS auditors may be invited to give their expert opinion as observers but not to conduct the audit. The focus of this second audit is to ensure that all the audit findings of the first internal EMS audit and the pre-assessment/first stage audit has been closed or is being addressed adequately. Apart from addressing the previous audit findings, this audit also covers other areas. It is best to make this audit as comprehensive as possible, cover all departments and all the clauses of ISO 14001. This audit adopts the methodology of examining documents, undertaking physical site observations and interviewing personnel. The EMS audit procedure is adopted for raising audit findings and follow-up is initiated soon after the audit.

Main assessment audit by the Certification agency - Once the urban local body is confident on their readiness for the main assessment of the EMS, invitation is sent to the certification agency. This audit is generally thorough and comprehensive and often includes technical experts (sector specific expert and/or issue specific expert) to provide the necessary support to the certification agency team. The certification agency conducts this audit as per their procedures/guidelines and, at the end of this audit, the auditors recommend the urban local body for ISO 14001 certification. It is important to note that the auditors can only make recommendations to the certification agency's board and it is the board, which decides whether to grant certification following their review. However, if an organisation's EMS is recommended, it is rather unlikely that the board will conclude differently.

Surveillance and re-certification Audits - The certification agency undertakes annual surveillance audits, which are in line with the certification audit, but its coverage need not be as comprehensive as a certification audit. The surveillance audit is also conducted as per the audit agency's procedures/guidelines.

Every three years the urban local bodies need to go for re-certification. At this point of time, the organisation reviews its relationship with the existing certification agency. Based on the review the urban local body can renew its contract and proceed for ISO 14001 re-certification with the same agency.

7.0 SUSTAINING ENVIRONMENTAL MANAGEMENT SYSTEM

Sustaining EMS

Most organisations invest substantial manpower time and effort in planning and documenting in the initial stages of implementing the EMS. This makes the system ready for certification. After the first recommendation for certification arrives, it is important to sustain the EMS. Of course sustaining the system means requirement of manpower time and effort. Top management must ensure that there is a core manpower commitment to maintain the EMS on an ongoing basis. This section contains some EMS maintenance tips that are useful to any urban local body in maintaining the EMS.

Environmental Policy

- Use opportunities to disseminate the policy among external stakeholders as this may facilitate awareness generation among residents, neighbouring communities and other civic authorities.
- Include an environmental policy tag along with any pamphlets or information distributed among the residents.
- Remember that re-distribution of the policy internally is alone not sufficient for all employees, especially the operators, to understand the company's commitment
- Review the policy for its appropriateness whenever major changes within the organization or premises of the urban local body has occurred.

Environmental Aspects

- Include aspects and impacts of new development, process changes, infrastructure additions and construction projects.
- Update evaluation of aspects and impacts after the completion of objectives and targets
- Lower evaluation cut-off scores with time to address a larger number of environmental issues within the EMS
- Review the appropriateness of the evaluation criteria periodically
- Assess the combined impacts of several non-significant impacts to see whether the combined impacts will be significant

Legal and Other Requirements

- Maintain newspaper clippings on new legislation's announced or proposed
- Incorporate draft legislation's into the Legal Register and start tracking compliance even though it is not yet in force
- Attend training programs on legislation to keep the company information up-to-date
- Develop simple-to-understand notes on environmental legislation for the benefit of all the employees
- Subscribe to magazines or information service companies on environmental legislation

Objectives and Targets

- Update your current objectives and targets periodically to account for any delays in implementation
- Keep abreast of technological developments to propose new objectives and targets
- Make sure at least one objective and target is implemented across all departments in a 3-year period to ensure participation across the urban local body
- Maintain a balanced mix of objectives and targets (O&T)
- Weigh the pros and cons from a financial viewpoint before putting forward a new O&T.

Environmental Management Programmes

- Update your current EMPs periodically to account for any delays in implementation
- Ensure that the last step in an EMP is checking whether the objective and target is accomplished
- Develop EMPs only from approved objectives and targets
- Keep track of the performance indicator related to the EMP if applicable
- Provide the detailed action plan in the EMP with intermediate times every two months

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Structure and Responsibility

- Review the effectiveness of the MR and other key personnel in maintaining the EMS
- Ensure that all the departments continue to play a role in the EMS
- Ensure the roles, responsibilities and authorities are communicated to any new recruits or after promotions
- Assess the resources required for maintaining the EMS not only in terms of money but also in terms of time
- Update the organisational chart in the EMS Manuals whenever there is a change in the organisational structure.

Training, Awareness and Competence

- Awareness and training should be given one of the top most priority for motivating the communities of an urban local body.
- Ensure that training is done on an ongoing basis and not sporadically among all stakeholders of the urban local body
- Make sure that new recruits in the core team receive awareness training and relevant competence training
- Send core team for inter-community exchange programs periodically to bring fresh inputs
- Encourage detailed training feedback and assess them seriously

Communication

- Devise new types of communication to keep the environmental focus alive – audios, videos and interactive compact discs
- Make sure complaints are addressed within a reasonable time frame
- Invite known personalities to lecture on environmental management
- Ensure that good suggestions received are suitably publicised and rewarded
- Investigate whether the communications have reached all levels in the various departments and residents

EMS Documentation

- Strive to minimise EMS documentation all the time
- Move towards electronic documentation wherever possible
- Strengthen linkages between EMS documentation and other management systems within the organisation
- Review the relevance of the EMS documentation structure with the changing organisational structures

Document control

- Be systematic and structured about document control
- Make no exceptions while administering document control as it may create problems at a later date
- Understand the role of the document controller. Create and revise documents in line with the document controller's requirements
- Ensure that the appropriate stamps "Obsolete" or "Master" or "Controlled" are placed in appropriate documents. Make sure that there is only one set of such stamps

Operational Control

- Improve the content of operational control procedure with more implementation experience and whenever new / fresh information is forthcoming
- Ensure that the respective operators know their operational control and do not have to refer to the EMS manual
- Introduce new operational control procedures if they are going to be useful although it may not be related to a significant environmental aspect
- Undertake checks with the suppliers and contractors on their perception and implementation of the company guidelines
- Update the guidelines sent to the supplier and contractors on an annual basis

Emergency Preparedness and Response

- Ensure that the emergency services equipment are properly maintained
- Test procedures based on their relative importance
- Record and analyse the performance during these tests
- Make sure that emergency procedures are suitably amended based on the findings of tests or reports of emergency incidents
- Keep the response plan up-to-date by checking for changes in telephone numbers and other contact details.

Monitoring and Measurement

- Do not solely measure; always evaluate the measurements as well
- Make the monitoring about progress of objectives and targets to be less paperwork oriented
- Maintain the calibration of equipments which are used for environmental measurements
- Assess the key environmental data and present it in the top management reviews
- Undertake monitoring campaigns to reduce resource (water and energy) use

Non-conformance and Corrective and Preventive Action

- Ensure that the person responsible for a non-conformance writes both the corrective and preventive action in the report
- Make sure that the corrective and preventive action is commensurate with the nature of the conformance at the time of closing non-conformances
- Use positive language while raising non-conformances
- Highlight repeated non-conformances and bring them for discussion at the management review meetings
- Change procedures, if required, prior to closing non-conformances

Records

- Strive to reduce the number of records (as these tend to grow continuously) by combining records and by questioning its utility.
- Maintain shop floor records with suitable protection as the chance for damage is high
- Reflect on the need for the designed retention time based on the implementation experience
- Discard sheets which are dated beyond the retention time
- Avoid all duplication / photocopying for the sake of records; provide cross-references

EMS Audits

- Bring about a healthy auditor-auditee atmosphere during all audits
- Do not orient the EMS audits towards documentation
- Do not make EMS audits as a frivolous exercise; maintain the seriousness, move away from being fault-finding and strive for value addition
- Send different employees on external auditor training for new inputs / ideas
- Engage an external environmental-cum-audit expert outside of your certification agency to audit the EMS to provide some fresh insights

Management Review

- Conduct management review when all the key, decision-making members are available
- Use the management review as a forum for decision-making
- Use time wisely in the management review as it is always in short-supply
- Prepare the minutes to reflect the important points
- Do not use the management review meetings as an audit review.

Sector Specific Manual for Developing and Implementing EMS in Urban Local Bodies & Townships

ANNEX – I

Structure and Size of Urban Local Bodies in India

Sl. No.	State	Urban		Levels of urban local bodies	Number
		Population	Area (Sq.kms.)		
		(As per 1991 census)			
1	Andhra Pradesh	17887126	5171.36	Municipal Corporations Municipalities Nagar Panchayats Total	7 94 15 116
2	Arunachal Pradesh	110628	0.00	ULBs do not exist	
3	Assam	2487795	828.41	Municipal Corporations Municipalities Town Panchayats Total	1 28 50 79
4	Bihar	11353012	3743.55	Municipal Corporations Municipalities Notified Area Committees Total	6 70 94 170
5	Goa	479752	384.67	Municipalities	14
6	Gujarat	14246061	5137.36	Municipal Corporations Municipalities Nagar Panchayats Total	6 85 58 149
7	Haryana	4054744	966.73	Municipal Corporations Municipalities Total	1 81 82
8	Himachal Pradesh	449196	269.82	Municipal Corporations Municipal Councils Nagar Panchayats Total	1 19 28 48
9	Jammu & Kashmir #	1839400	877.00	Municipalities Town Area Committees Total	2 67 69
10	Karnataka	13907788	4270.15	Municipal Corporations City & Town Municipal Councils Town Panchayats Total	6 121 88 215

Sl. No.	State	Urban		Levels of urban local bodies	Number
		Population	Area (Sq.kms.)		
		(As per 1991 census)			
11	Kerala	7680294	3364.80	Municipal Corporations Municipalities Total	3 55 58
12	Madhya Pradesh	15338837	7907.67	Municipal Corporations Municipalities Nagar Panchayats Total	18 103 283 404
13	Maharashtra	30541586	6227.91	Municipal Corporations Municipal Councils Total	15 229 244
14	Manipur	505645	145.33	Municipal Councils Nagar Panchayats Total	7 21 28
15	Meghalaya	330047	153.82	Municipalities	6
16	Mizoram	317946	493.00	Municipal Councils* Town Panchayats*	2 4
17	Nagaland	208223	147.24	Town Committees*	9
18	Orissa	4234983	2544.22	Municipal Corporations Municipalities Notified Area Councils Total	2 30 70 102
19	Punjab	5993225	1440.80	Municipal Corporations Municipal Councils Nagar Panchayats Total	4 96 37 137
20	Rajasthan	10067113	4864.25	Municipal Corporations Municipal Councils Municipal Boards Total	3 11 169 183
21	Sikkim	37006	0.00	ULBs do not exist	
22	Tamil Nadu	19077592	6175.59	Municipal Corporations Municipalities Town Panchayats Total	6 102 636 744

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Sl. No.	State	Urban		Levels of urban local bodies	Number
		Population (As per 1991 census)	Area (Sq.kms.)		
23	Tripura	421721	146.81	Municipality Nagar Panchayats Total	1 12 13
24	Uttar Pradesh	27605915	5603.10	Municipal Corporations Municipalities Nagar Panchayats Total	11 226 447 684
25	West Bengal	18707601	3077.61	Municipal Corporations Municipalities Notified Area Authorities Total	6 112 4 122
	Total	207883236	63941.20	Total No. of Minicipal Corporations	96
				Total No. of Municipalities	1494
				Total No. of Nagar Panchayats	2092
				Total No. of All ULBs	3682

Source: State Governments, SFC Reports and Census 1991.

* Proposed to be set-up.

The area and population figures of Jammu and Kashmir for 1991 have been projected on the basis of growth rate of population from the 1971 Census to 1981 Census and exclude the areas under unlawful occupation of Pakistan and China.

ANNEX – II

Details from Local Bodies / Township (Questionnaire)

- 1.0 Name of the Local body
- 2.0 Area of the Local body in Km²
- 3.0 Lay out Plan of Local body
- 4.0 Population and employee of Local body
- 5.0 Mode of transportation in the Local body
- 6.0 **Facilities Available**
 - 6.1 Local body Offices

Department incharge for the township

Employee's activities	Total No. of employees
1.	
2.	
3.	
 - 6.2 **Water Supply**
 - Department incharge for the supply
 - Source of drinking water
 - Type of water treatment
 - Consumption of drinking water per day in m³
 - Consumption of raw water per day in m³
 - Water charge if collected
 - Type & capacity of water pump station
 - Pumping cost
 - 6.3 **Sewage Treatment**
 - Department incharge for treatment
 - Capacity of treatment plant in m³
 - Type of treatment plant
 - Usage/disposal of the treated water
 - Cost of the O & M of treatment plant
 - 6.4 **Solid Waste Management**
 - Department incharge
 - Quantum of waste in kg
 - Current method for Collection and Disposal
 - 6.5 **Power Supply**
 - Department incharge
 - Source and capacity of power
 - Consumption pattern in Local body
 - Rate (Slab) of charge for user
 - 6.6 **Hospital and Dispensary details**
 - Department incharge
 - No. of beds
 - Facilities in the hospital
 - Current method of medical waste management
 - If Incinerator available, chimney height

6.7 Shopping Complex

- Type of shops
- No. of shops
- Waste management from the shops

6.8 Details of Recreational Clubs

6.9 Schools available inside the Local body

Name of the School	Standard available	Strength of school
1.		
2.		

6.10 Quarters available mention the capacity

6.11 Parks

Name of the park	Area in Km ²
1.	
2.	

6.12 Road

Width of the road	Length
1.	
2.	
3.	

6.13 Storm water

Details of Storm water drainage available with its length

6.14 Indirect Support Details

Post office, Banks, Railway station, markets etc.

6.15 Any existing clubs or associations who are doing or could be involved in environmental programmes?

ANNEX – III

Sample Procedure - 1 Operational Control Procedure for Storage of Diesel

NAME OF THE LOCAL BODY			
ISO 14001 CLAUSE	OPERATIONAL CONTROL PROCEDURE FOR STORAGE OF DIESEL	Doc. No. :	
		Issue No. : 1	Date :
		Revision No. : 0	Date :
		Page No. 1	

- Purpose:**
1. For safe handling of Diesel.
 2. To promote environment awareness so as to minimise the adverse environmental impacts.

Scope: To store diesel in a proper manner during Occasions and festivals.

Responsibilities: All staff members of Town civil department are responsible for following the established diesel storage practices in the department

Town Civil Engineering is responsible for ensuring that all staff members to understand and implement the diesel storage practices in the department.

Procedure:

- ❖ The Diesel collected from the Company will be stored in our department Store in plastic cans, during Occasions and festivals only.
- ❖ The cans should be study and puncture proof with caps tightly closed and kept in a upstanding position.
- ❖ The flammable articles like brooms, clothes, mops etc. will not be kept in the vicinity of the Diesel cans.
- ❖ In case of spillage of Diesel sand or dust will put on the spillage and attempt to be made to collect the spilled fuel in the bucket / container.
- ❖ In case of fire in this area the person at site will try to extinguish it with Portable fire extinguisher or sand.

End

	Name	Designation	Signature
Issued by:		Town Administrator	
Approved by :		Manager Admn. & Per.	

ANNEX – IV

Sample Procedure - 2 : Operational Control Procedure for Training, Awareness & Competence

NAME OF THE LOCAL BODY			
ISO 14001 CLAUSE 4.4.2	OPERATIONAL CONTROL PROCEDURE FOR TRAINING, AWARENESS & COMPETENCE	Doc. No. : TS-ESM-14001-12	
		Issue No. : 2	Date : 02/5/01
		Revision No. : 0	Date : 02/5/01
		Page No. 1	

1.0 OBJECTIVE :

To identify training needs and ensure that all personnel whose work may create a significant impact upon the environment have received appropriate training.

2.0 SCOPE:

Applicable to all employees and interested parties of township covered under the EMS developed in line with the ISO 14001: 1996 International standard.

3.0 RESPONSIBILITY

- The overall responsibility for establishing, documenting, implementing and updating the training system lies with the Management Representative.
- The responsibility for identifying and approving the training needs of personnel in the Township other than Hospital lies with the Manager – Town Administration.
- The responsibility for identifying and approving the training needs of all personnel in the Hospital lies with the Senior Manager – Medical & Health Services.

4.0 ISO 14001 STANDARD REQUIREMENTS

The organisation shall identify training needs. It shall require that all personnel, whose work may create a significant impact upon the environment, have received appropriate training.

It shall establish and maintain procedures to make its employees or members at each relevant function and level aware of

- the importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system;
- the significant environment impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system, including emergency preparedness and response requirements.
- The potential consequences of departure from specified operating procedures.

Personnel performing the tasks, which can cause significant environmental impacts, shall be competent on the basis of appropriate education, training and / or experience.

Sr. No	Activity	Document Reference	Responsibility
5.1	Identification of Training Needs		
5.1.1	Awareness Training on Environmental Management	TS-TNI-DD-XX	MR/Manager – Town Administration/ Sr. Manager Medical & Health Services.
5.1.2	Training needs of all employees in the Township other than Hospital are identified by Manager-Town Administration in consultation with MR and recorded in “Training Need Identification Form”.	TS-TNI-DD-XX	Departmental Heads or Incharge of respective departments
5.1.3	Training needs of all employees in the Hospital are identified by the Sr. Manager – Medical & Health Services in consultation with MR and recorded in “Training Need Identification Form”.	TS-TNI-DD-XX	Sr. Manager – Medical & Health Services
5.1.4	Training needs identified as in 5.1.1, 5.1.2 and 5.1.3 are forwarded to the HR Department of, Works for arranging the training retaining a copy with the identifying authority and MR.	TS-TNI-DD-XX	Management Representative
5.1.5	HR department in consultation with MR prepares an Annual Environmental Training Plan and recorded in “Environmental Training Plan for the year ——” form.	TS-TNI-DD-XX	Asst. Manager - HR
5.2	Imparting Training		
5.2.1	Incharge Training function arranges to conduct training programmes as per the requirements as identified in the Training Planner in consultation with Management Representative.	TS-TNI-DD-XX	Incharge of Training function
5.2.2	All employees of the Township are given training on understanding of Significant Aspect & Impacts, Objectives and Targets, Operational Control Procedures, EMPs, Emergency Preparedness Plans and other environmental benefits of Improved Personnel Performance.	—	MR/Manager-Town Administration / Sr. Manager Medical & Health Services.
5.2.3	Training on Environmental Policy to all employees / residents / merchants is imparted by different methods like interactive sessions, by posters, by media, by conducting competitions, by cable network, etc.	—	MR/Manager-Town Administration
5.2.4	Various Non-Governmental Organisation leading newspapers and house magazines are also influenced for increasing Environmental Awareness amongst residents.	—	MR/Manager-Town Administration

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Sr. No.	Activity	Document Reference	Responsibility
5.2.5	Training of employees should include the competency training to ensure the capability of personnel and level of experience especially those carrying out specialised Environmental Management functions, e.g.: Trained personnel to handle Sewage Treatment Plant.	—	MR/Manager-Town Administration
5.2.6	An attendance sheet is maintained during the training to see the number of persons attending the training.	Attendance Sheet training	Person who conduct the
5.2.7	MR in consultation with the Representative Department incharges, shall, if necessary, provide in writing instructions to employees / residents / merchants. The instructions shall be in the form of Dos & Do Notes.	—	MR / Manager-Town Administration
5.2.8	During execution of the job, Manager – Town Administration shall visit the area to see that the employees / residents / merchants are following the instructions.	—	Manager-Town Administration
5.2.9	In case, the employees / residents / merchants do not follow the instruction, the management shall take necessary action to correct them.	—	MR / Manager-Town Administration
5.2.10	The Annual Environmental Training Report is prepared in Environmental Training need identification cum training format at the end of the year.	—	Manager-Town Administration
5.2.11	A few training plans is developed for the next year taking care of the shortfalls of the previous year.	TS-ETP-DD-XX	Asst. Manager – HR
5.3	Executiveness of Training		
5.3.1	Effectiveness of training imparted is evaluated by any method for improving the techniques used.	—	Asst. Manager – HR

5.0 PROCEDURE STEPS

5.1 Cross Reference

- | | | | |
|---|--------------|---|---|
| 1 | TS-TNI-DD-XX | = | Training Need Identification Form |
| 2 | TS-ETP-DD-XX | = | Environmental Training Plan for the year——“ form. |
| 3 | — | = | Attendance Sheet |

6.0 RECORDS

Sr. No	Record Title	Record No.	File Name/No	Location	Maintained By	Retention Period (Atleast)
1	Training Need Identification Form	TS-TNI-DD-XX b all department in Form No TS-ESF-MR-12-01	Training File	Town Office	Manager-Town Administration	3 years
2	Training Need Identification Form	TS-TNI-DD-XX b all departments in Form No. TS-ESF-MR-12-01	Training File	Hospital	Sr. Manager-Medical and Health Services	3 years
3	Training Need Identification Form	TS-TNI-DD-XX b all departments in Form No. TS-ESF-MR-12-01	Training File	MR's Office	Management Representative	3 years
4	Attendance Sheet	-	Training File	MR's Office	Management Representative	3 years
5	Environmental Training Plan for the year—	TS-ETP-DD-XX TS- in Form NO. ESF-MR-12-02	Training File	HR Dept.	Asst. Manager-HR function	3 years

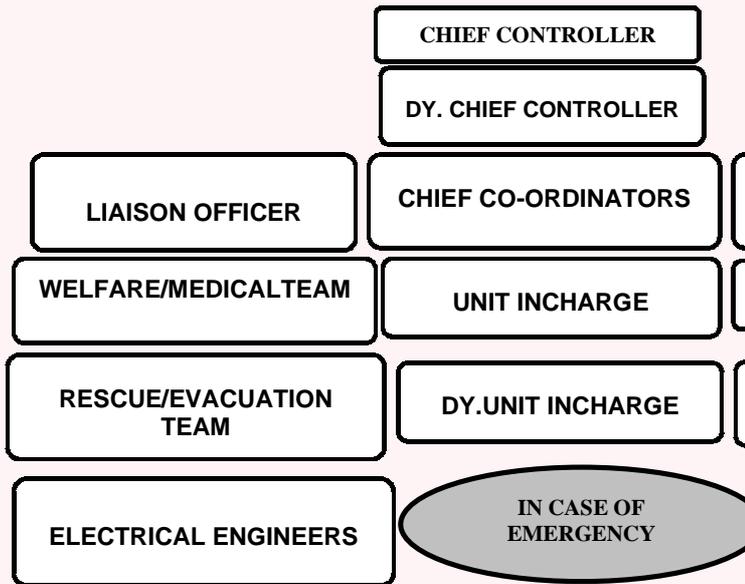
	Name	Designation	Signature
Issued by:		Town Administrator	
Approved by :		Manager Admn. & Per.	

ANNEX – V

Sample Emergency Preparedness and Response (EPR) Plan

PREPARED BY A TOWNSHIP, WHICH PARTICIPATED IN CTI-USAID PROJECT TO IMPLEMENT ISO 14001

ON SITE EMERGENCY PLAN TEAM



PREAMBLE

In spite of various preventive and precautionary measures taken in works, the possibility of a mishap cannot be totally ruled out. Hence the need to prepare EMERGENCY PLAN for dealing with the incidences which may still occur and are likely to affect LIFE and PROPERTY in the residential areas and other places as identified in this plan.

Such an emergency could be the result of malfunction or non-observance of operating instructions. It could, at times, be the consequences of acts outside the control of residents / employees like severe storm, flooding, or deliberate acts of arson or sabotage.

INTRODUCTION

A major emergency is one, which may cause serious injury or loss of life and damage to the property. This Emergency Plan explains the code of conduct of all personnel in the vicinity, along with the actions to be carried out in the event of an Emergency. This Plan is the guidelines for residents, employees, visitors, contractors, transporters etc. It not only defines responsibilities but also informs about prompt rescue operations, evacuations, rehabilitation, co-ordination and communication among various Team Members.

The Emergency procedure outlines are suitable for round-the-clock coverage including holidays. These emergency procedures shall be followed as outlines in this plan.

EMERGENCY

An emergency is a situation, which may lead to or cause a large-scale damage or destruction to life or property or environment within or outside the residential area. Such an unexpected severe situation may be too great for the residents & / or employees within the Premises / Outside.

NATURE OF EMERGENCY

The emergency specified in this Emergency Plan refers to occurrence of one or more of the following events.

- a) Fire.
- b) Explosion.
- c) Major accidents such as Land slide, structural and building Collapse, Road Accident.
- d) Electrical Short Circuit / Shock.
- e) Medical Emergencies. Example. Heart attack etc.
- f) Natural calamities like storm, wind, flood, earthquake etc.
- g) Deliberate sabotage, terrorism, civil commotion, air raid etc.

IDENTIFICATION OF HAZARDOUS AREAS

Storage of

- LPG Cylinders

Kerosene

- Wood

Plastic

- Paper
- Cloth

Activities : Using gas stove for Cooking
Using Electrical Appliances
Using hazardous chemicals and liquids.

OBJECTIVE

- a) To control the emergency, localise it and if possible eliminates it.
- b) To avoid confusion / panic and to handle the emergency with clear-cut actions.
- c) To minimise loss of life and property, inside as well as outside.
- d) To take head counts and rescue operations.
- e) To give first aid medical treatment to the injured.
- f) To Preserve records and to take adequate steps to prevent recurrence.
- g) Restoring normalcy of any emergency.

SI.NO	SITES / LOCATIONS	EMERGENCY CONT
1	Residential Colonies	
	• Hill side colony	Neighbouring building or room
	• Station side colony	Neighbouring building or room
	• Creek side colony	Neighbouring building or room
2	Udayachal Schools	
	1 Primary School	Office of Primary School
	2 High School	Office of High School
3	Consumer society	
	• Hill side society	Society office
	• Station side society	Society office
	• Creek side society	Society office
4	Colony Dispensary	Doctors room
5	Pragati Kendra	Kendra office

EMERGENCY CONTROL CENTRE

For the purpose of handling emergency, respective areas are declared as the Emergency Control Centres. For accidents occurring at different sites / locations, Emergency Control Centres are as follows:

- a) The **EMERGENCY PLAN** will be kept at above-mentioned locations.
- b) List of important telephone numbers such as Police, Fire Brigade, Hospitals and emergency Team members etc.
- c) Site layouts indicating Entrances / Exits, storage of Hazardous Material Safety Data Sheet, location of safety equipment, fire fighting system (layout of fire hydrants), roads, approach to surrounding areas / village, truck /car parking areas etc.
- d) List of employees & concerned residents/employees with address, telephone numbers, blood groups etc.
- e) List of persons to be contacted in case of emergency.
- f) One Ambulance at the Factory dispensary will be on ready for any emergency. Resident's vehicle will be used as an additional conveyance for any injured person.

ROLE & RESPONSIBILITIES

CHIEF CONTROLLER

On getting information from telephone operator, he proceeds promptly to the EMERGENCY CONTROL CENTRE and takes overall charge of all the activities for dealing with an emergency.

- a) He remains in the EMERGENCY CONTROL CENTRE till the emergency is called off so that all concerned are aware of the location of his availability during the emergency.
- b) He communicates and co-ordinates among various team leaders.
- c) He is the final authority on all matters related with management of emergency such as fire fighting, emergency control, rescue operations, calling outside agencies for assistance, welfare, evacuation, transport, rehabilitation, liaison, public relations etc.

DEPUTY CHIEF CONTROLLER

- a) Assist Chief Controller in all his duties and shall act as Chief Controller in absence of Chief Controller.

UNIT - IN - CHARGE / DY. UNIT INCHARGE

- a) Arrange to inform promptly about the emergency to CHIEF CONTROLLER/ DEPUTY CHIEF CONTROLLER and SITE CONTROLLER.
- b) Ascertain whether any person is trapped inside and arrange for his/her rescue.
- c) Inform MEDICAL CENTRE in case of necessity on Telephone.
- d) Execute all jobs to control the emergency such as isolation, diversion of the process to other areas, transfer of chemicals to spare storage containers, arrange for removal of combustible/inflammable/explosive/toxic chemicals, drums, bags etc., from the scene of the emergency.
- e) Direct the fire and rescue team.
- f) He will ask for assistance from the member present at that time for rendering services as may be required for the effective control of the situations.
- g) He will communicate and co-ordinate various activities with the member present.
- h) He will also take full responsibility of the following:

Supplying cranes, lifting tackles, welding/gas cutting accessories, trucks, tools or materials that may be needed during the course of the emergency operations in liaison with the SITE CONTROLLER.

In the absence of the UNIT-IN-CHARGE, the Dy.Unit Incharge will carry out the above duties.

CHIEF COORDINATOR

- a) He will co-ordinate the activities of all the team.
- b) He will evaluate the safety and environmental hazards.

SITE CONTROLLER

Rush immediately to the scene of the fire/emergency, select and set out appropriate fire/emergency equipment. He will take the below mentioned actions at the earliest opportunity, if the fire/emergency is not controlled.

- a) Report to the UNIT-IN -CHARGE and CHIEF COORDINATOR about the emergency.
- b) Call the security personnel from factory premises or from their residences for additional manpower if required.
- c) Make available extra security personnel for maintaining law and order.
- d) Regulate entry and exit of personnel required for controlling the fire / emergency.
- e) Restrict entry of any person other than authorised by the UNIT-IN CHARGE.
- f) Direct the fire fighting operations/emergency control.
- g) Take command of the fire team.
- h) Arrange for Personal Protective Equipment if required for the emergency.
- i) Take all possible steps necessary to control the emergency.
- j) Call the Local Fire Brigade in case of necessity in consultation with the CHIEF CONTROLLER/ CHIEF COORDINATOR.
- k) Call the Police Station in case of necessity in consultation with the CHIEF CONTROLLER.
- l) He will work in consultation with the UNIT-IN-CHARGE.
- m) He will collect and disseminate information as required to all concerned.
- n) He will keep detailed records of the incident and progress of operations to fight the emergency.
- o) In case of power failure/telephone service disruption he will arrange for messengers for the purpose of communications.

LIAISON OFFICER

- a) He will maintain liaison with the press, Government agencies and the neighbourhood regarding the emergency under instructions from CHIEF/ DEPUTY CHIEF CONTROLLER.
- b) He will take all the steps required for welfare such as providing tea, snacks, emergency temporary MEDICATE CENTRE in the vicinity in consultation with CHIEF CONTROLLER/SITE CONTROLLER/ MEDICAL OFFICER.
- c) He will disclose all the necessary information in the office so as to avoid rumours and confusion.
- d) He will be responsible for providing transport facilities for removal of casualties to Medical Centre, and also for their eventual removal to the hospital if required.
- e) He will also provide transport for evacuation of personnel in case the area is to be evacuated.
- f) He will co-ordinate the transport services, arrange for temporary shelter in consultation with SITE CONTROLLER.
- g) He will take responsibility of Law and Order and keep liaison with Police, Fire Brigade and other Governmental/Non Governmental agencies in liaison with the CHIEF COORDINATOR.

MEDICAL OFFICER

- a) He assumes complete responsibility of providing medical assistance and treatment during the emergency.
- b) He will provide and arrange for ambulance services and medical facilities from outside agencies and hospitals, if so required.

WELFARE / MEDICAL TEAM

- a) This team is responsible for providing First Aid and Canteen facilities such as tea and snacks to the injured as and when required.
- b) The team Leader will be the MEDICAL OFFICER.
- c) The LIAISON OFFICER will work in co-ordination with the MEDICAL OFFICER.
- d) The leader on receiving the emergency information will mobilise his team. The first-aid attendants will remain in the MEDICAL CENTRE in full readiness.
- f) Some of the Team Members will accompany the injured to the MEDICAL CENTRE / TEMPORARY MEDICARE CENTRE.
- g) The FIRST AIDERS will attend any injured person brought to the MEDICAL CENTRE. If the

Sector Specific Manual for Developing and Implementing EMS in Urban Local Bodies & Townships

number of injured persons are more, the leader will give direction for the treatment of various personnel. The team will not move out of the MEDICAL CENTRE till the emergency is over. They will keep continuous communication with the UNIT-IN-CHARGE and direct the injured to the hospital.

- h) In case where hospital treatment is required, the leader will arrange for transport through the SITE CONTROLLER and will inform the hospital in advance so that they are prepared for the emergency.
- i) They will list the names of all personnel for whom treatment has been given and others, who have been directed to the hospital.

RESCUE / EVACUATION TEAM

- a) This team will directly fight the emergency under the instructions from the UNIT-IN-CHARGE/ SITE CONTROLLER.
- b) On hearing the emergency the group leader will establish communications with the UNIT-IN-CHARGE/ SITE CONTROLLER and start handling the emergency directly.
- c) Various engineers for controlling the emergencies will assist the TEAM LEADER.
- d) The leader will take the help of SECURITY TEAM to cordon off the area.
- e) The leader will ensure that the emergency does not escalate, but is contained and extinguished within the spot of occurrence.
- f) The leader will mobilise his team and establish contact with the LIAISON OFFICER regarding manpower accounting and the searching operation if required.
- g) The leader will ensure that he and his team members wear the necessary Personal Protective Equipment while searching for the missing personnel.

ENGINEERING TEAM

This team will ensure safety of the remaining part of the emergency area. Members will take instructions from the UNIT-IN-CHARGE as to whether building or office to be evacuated. This team will mobilise with necessary tools and tackles to handle any repair work on an emergency basis.

SECURITY TEAM

- a) The team will assist the SITE CONTROLLER who is the leader, in carrying out his duties.
- b) The team leader will arrange to provide security coverage at the main gate, site of occurrence of emergency and also at SECURITY OFFICE.
- d) The team will effectively cordon off the emergency area and will prevent unauthorised people entering the scene.
- e) Fire Engine or Ambulance requisitioned by the SITE CONTROLLER/ MEDICAL OFFICER is to be permitted inside the Colony. Other officers from State Government or neighbourhood should be courteously conducted to the RECEPTION ROOM and inform the CHIEF CONTROLLER so that they can be taken care of.
- f) All tank lorries should be sent out of the premises. Transfer materials to safer places. Eliminate the ignition source.

ELECTRICAL TEAM

- a) Representatives of this team will switch off the Mains of electrical connections at the emergency site.
- b) They will make the arrangements for the temporary lights at the emergency site, if required.
- c) The Electric supply will be restored after discussing with the CHIEF CONTROLLER as soon as the emergency is called off after

TELEPHONE OPERATORS.

- a) On getting the emergency message, they will immediately contact CHIEF CONTROLLER and other TEAM MEMBERS of the OEP. On the advice of CHIEF CONTROLLER, call the local Fire Brigade or Police during the emergency if needed.
- b) Telephone operator will follow instructions only from CHIEF CONTROLLER / SITE CONTROLLER / CHIEF COORDINATOR.

- c) They should keep the telephone board free for urgent communications.

DISCIPLINE

UTMOST DISCIPLINE SHALL BE MAINTAINED IN HANDLING THE EMERGENCY AND THE GUIDELINES OF "DO'S AND DONT'S" SHALL BE STRICTLY FOLLOWED

Do's

- Give attention to all instructions.
- Report to your TEAM LEADERS and carry out your assignments.
- Guide the visitors/contract labourers outside the emergency zone to designated location.
- Only qualified First-Aiders shall render First Aid wherever possible and wait for the Doctor.

Don'ts

- Do not panic.
- Do not communicate with any external agency unless instructed by CHIEF CONTROLLER/ DEPUTY CHIEF CONTROLLER/ CHIEF COORDINATOR/ SITE CONTROLLER.
- Do not spread unauthorised or exaggerated information's to others.
- Do not approach the emergency site as a spectator.
- Do not engage unnecessarily the communication aids like Telephone/ Public Address system and other means to make the same available for handling emergency.
- Do not disturb the TEAM LEADERS, assigned with specific work for handling emergency.

ALL CLEAR SIGNAL

UNIT-IN-CHARGE will inform CHIEF CONTROLLER after assessing the situation that emergency is over and CHIEF CONTROLLER will declare that emergency is over. Till the declaration is issued, all the leaders and members will adhere to the task and be present at that prescribed location.

Even after the emergency is over, a skeleton staff of the RESCUE / EVACUATION TEAM will be available at the site of the emergency for atleast 15 minutes.

After the emergency is over, all the TEAM MEMBERS should meet in the EMERGENCY CONTROL CENTRE and each team member should submit a report to the UNIT-IN-CHARGE about team performance and other details observed. Based on this, a final report will be submitted by the UNIT-IN-CHARGE to the CHIEF COORDINATOR within 24 hours of occurrence of emergency.

The CHIEF COORDINATOR & SITE CONTROLLER will carry out an investigation of the emergency. This report shall be submitted within 48 hours of occurrence of emergency to the CHIEF CONTROLLER.

PROCEDURES ON NOTICING AN EMERGENCY

- a) Inform Telephone Operator on emergency telephone number –
- **INCASE OF EMERGENCY & SMALL FIRE, INFORM ON**
 - **INCASE OF MAJOR FIRE, INFORM ON ABOVE NUMBERS AS WELL AS ON - 101**
- b) In case of injury, inform MEDICAL CENTRE on...

EMPLOYEES DUTIES AFTER RECEIVING INFORMATION.

On getting the emergency call/ the employees and for residents of the colonies who have been asked to evacuate the area shall move out of the house / department / area without panic through the exits under the guidance of RESCUE/ EVACUATION Team Members and assemble near the specified Assembly Point.

ASSEMBLY POINT

In case of an EMERGENCY depending upon the location, any one point is to be considered as ASSEMBLY POINTS

Area in front of the building entrance will be considered as the **ASSEMBLY POINT**.

THE CONTENTS OF THE ON-SITE EMERGENCY PLAN WILL BE INFORMED TO ALL EMPLOYEES THROUGH SAFETY APPRECIATION PROGRAMMES.

Sector Specific Manual for Developing and Implementing EMS in Urban Local Bodies & Townships

FIRE EXTINGUISHERS DETAILS

Sr. No.	Type of Extinguishers	Applic
1.	Soda Acid / Water CO2	Wood, Paper, Cloth etc., e electrical equipment.
2.	Foam	Oil, Petrol, Diesel, Paint, T Liquid fire
3.	Dry Chemical Powder	All types of fires except co
4.	Carbon Dioxide (CO2)	All types of fires.

FIRE HYDRANTS DETAILS

Installed at conspicuous locations.

FIRST-AID FACILITY

First-Aiders.
Medical Centre.
Ambulance

HAZARDOUS AREAS WITH IN THE TOWNSHIP

Sr.No.	Hazard	Location
1.	Fire & Explosion	Residential Quarters
		Udayachal Primary School
		Udayachal High School
		Dispensary
		Consumer Society
		Pragati Kendra
2.	Major Accident	Residential Quarters, UPS, UHS, Dispensary, Consumer Society, Pragati Kendra
3.	Natural calamities	Residential Quarters, UPS, UHS, Dispensary, Consumer Society, Pragati Kendra
4.	Miscellaneous	Residential Quarters, UPS, UHS, Dispensary, Consumer Society, Pragati Kendra
5.	Traffic Accident	Residential Quarters, UPS, UHS, Dispensary, Consumer Society, Pragati Kendra
6.	Food Poisoning	Community Hall at Station Road Colony
7.	Electric Short Circuit / Shock	Residential Quarters, UPS, UHS, Dispensary, Consumer Society, Pragati Kendra

MITIGATING ENVIRONMENTAL IMPACTS IN CASE OF EMERGENCIES

LOCATION : PIROJSHANAGAR TOWNSHIP, VIKHROLI

SECTION : Residential colonies, Udayachal Pre-Primary and Primary School, Udayachal High School, Pragati Kendra, Consumer Societies, Colony Dispensary, Pragati Kendra.

LIST OF HAZARDOUS MATERIALS USED

- LPG Cylinders
- Petrol, Kerosene, Thinner, Turpentine, Oil
- Wood, Plastic, Clothes

HAZARDS INVOLVED

- Fire
- Explosion

ENVIRONMENTAL IMPACT

- Air Pollution
- Resource Depletion
- Soil Contamination

WAYS AND MEANS TO MITIGATE ENVIRONMENTAL IMPACT

- In case the gas cylinder catches fire, the area around will be evacuated and the cylinder would be transferred to a near by open area.
- After shifting, the gas cylinder should always be covered with wet gunny cloth.
- Water will be sprinkled continuously over the cylinder in order to avoid its heating up and the possible resultant explosion.
- The cylinder will be under constant observation till the gas gets completely burnt.

In case of spillage of inflammable material, the same will be collected and reused / disposed in a proper manner in consultation with the Unit Incharge / MR / JMR.

ANNEX -VI

Ongoing EMS Maintenance

1. What is EMS maintenance?

Most companies invest substantial manpower time and effort in designing an EMS and in the initial implementation of the EMS so as to make the system ready for certification. Once the recommendation for certification is done, it is important to sustain the efforts initiated with the EMS. Here again, manpower time and effort is required. Top and senior management must ensure that there is a core manpower commitment to maintain the EMS on an ongoing basis. This section contains some EMS maintenance tips that are bound to be useful to an organisation in maintaining the EMS.

2. Environmental Policy

- Use opportunities to disseminate the policy with external stakeholders as this may bring unexpected business benefits
- Include an environmental policy tag along with the final product
- Get the marketing department to use the company environmental policy in their product advertising initiatives
- Remember that re-distribution of the policy internally is alone not sufficient for all employees, especially the operators, to understand the organisation's commitment
- Review the policy for its appropriateness whenever major changes in the business or market place has occurred

3. Environmental Aspects

- Include aspects and impacts of new development, process changes, equipment additions and construction projects
- Update evaluation of aspects and impacts after the completion of objectives and targets
- Lower evaluation cut-off scores with time to address a larger number of environmental issues within the EMS
- Review the appropriateness of the evaluation criteria periodically
- Assess the combined impacts of several non-significant impacts to see whether the combined impacts will be significant

4. Legal and Other Requirements

- Get your company library or information officer to maintain newspaper clippings on new legislations announced or proposed
- Incorporate draft legislations into the Legal Register and start tracking compliance even though it is not yet in force
- Attend training programmes on legislation to keep the company information up-to-date
- Develop simple-to-understand notes on environmental legislation for the benefit of all the employees
- Subscribe to magazines or information service companies on environmental legislation

5. Objectives and Targets

- Update your current objectives and targets periodically to account for any delays in implementation
- Keep abreast of technological developments to propose new objectives and targets
- Make sure at least one objective and target is implemented across all departments in a 3-year period to ensure participation across the company
- Maintain a balanced mix of objectives and targets
- Weigh the pros and cons from a financial viewpoint before putting forward a new objective and target

6. Environmental Management Programmes

- Update your current EMPs periodically to account for any delays in implementation
- Ensure that the last step in an EMP is checking whether the objective and target is accomplished
- Develop EMPs only from approved objectives and targets
- Keep track of the performance indicator related to the EMP if applicable
- Provide the detailed action plan in the EMP with intermediate times every two months

7. Structure and Responsibility

- Review the effectiveness of the MR and other key personnel in maintaining the EMS
- Ensure that all the departments continue to play a role in the EMS
- Ensure the roles, responsibilities and authorities are communicated to any new recruits or after promotions
- Assess the resources required for maintaining the EMS not only in terms of money but also in terms of time
- Update the organisational chart in the EMS Manuals whenever there is a change in the organisational structure.

8. Training, Awareness and Competence

- Ensure that training is done on an ongoing basis and not sporadically
- Arrange for external faculty to conduct an in-company EMS-related training only after providing them with substantive information about the organisation's EMS so that the training is internalised
- Make sure that new recruits receive awareness training and relevant competence training
- Send company employees for inter-company training programmes periodically to bring fresh inputs
- Encourage detailed training feedback and assess them seriously

9. Communication

- Devise new types of communication to keep the environmental focus alive – audios, videos, compact discs and interactive compact discs
- Make sure complaints are addressed within a reasonable time frame
- Invite known personalities to lecture on environmental management
- Ensure that good suggestions received are suitably publicised and rewarded
- Investigate whether the communications have reached all levels and all departments within the company.

10. EMS Documentation

- Strive to minimise EMS documentation all the time
- Do not unnecessarily write procedures which are not required by ISO 14001 and do not serve any purpose
- Move towards electronic documentation wherever possible
- Strengthen linkages between EMS documentation and other management systems within the company
- Review the relevance of the EMS documentation structure with the changing organisational structures

11. Document control

- Be systematic and structured about document control
- Make no exceptions while administering document control as it may create problems at a later date
- Understand the role of the document controller. Create and revise documents in line with the document controller's requirements
- Ensure that the appropriate stamps "Obsolete" or "Master" or "Controlled" are placed in appropriate documents. Make sure that there is only one set of such stamps
- Use an easy filing mechanism - avoid stapling - to enable easy document revisions

12. Operational Control

- Improve the content of operational control procedure with more implementation experience and whenever new / fresh information is forthcoming
- Ensure that the respective operators know their operational control and do not have to refer to the EMS manual
- Introduce new operational control procedures if they are going to be useful although it may not be related to a significant environmental aspect
- Undertake checks with the suppliers and contractors on their perception and implementation of the company guidelines
- Update the guidelines sent to the supplier and contractors on an annual basis

13. Emergency Preparedness and Response

- Ensure that the emergency services equipment are properly maintained
- Test procedures based on their relative importance
- Record and analyse the performance during these tests
- Make sure that emergency procedures are suitably amended based on the findings of tests or reports of emergency incidents
- Keep the response plan up-to-date by checking for changes in telephone numbers and other contact details.

14. Monitoring and Measurement

- Do not solely measure; always evaluate the measurements as well
- Make the monitoring of progress of objectives and targets to be less paperwork oriented
- Do not overemphasise on calibration as it is required only for environmental data measuring equipment
- Assess the company-wide key environmental data and present it in the top management reviews
- Undertake monitoring campaigns to reduce resource (water and energy) use

15. Non-conformance and Corrective and Preventive Action

- Ensure that the person responsible for a non-conformance writes both the corrective and preventive action in the report
- Make sure that the corrective and preventive action is commensurate with the nature of the conformance at the time of closing non-conformances
- Use positive language while raising non-conformances
- Highlight repeated non-conformances and bring them for discussion at the management review meetings
- Change procedures, if required, prior to closing non-conformances

16. Records

- Strive to reduce the number of records (as these tend to grow continuously) by combining records and by questioning its utility
- Maintain shop floor records with suitable protection as the chance for damage is high
- Reflect on the need for the designed retention time based on the implementation experience
- Discard sheets which are dated beyond the retention time
- Avoid all duplication / photocopying for the sake of records; provide cross-references

17. EMS Audits

- Bring about a healthy auditor-auditee atmosphere during all audits
- Do not orient the EMS audits towards documentation
- Do not make EMS audits as a frivolous exercise; maintain the seriousness, move away from being fault-finding and strive for value addition
- Send different employees on external auditor training for new inputs / ideas
- Engage an external environmental-cum-audit expert outside of your certification agency to audit the EMS to provide some fresh insights

18. Management Review

- Conduct management review when all the key, decision-making members are available
- Use the management review as a forum for decision-making
- Use time wisely in the management review as it is always in short-supply
- Prepare the minutes to reflect the important points
- Do not use the management review meetings as an audit review.

**ANNEX –VII
Glossary of Terms**

- ❖ **Audit** – A planned, independent, and documented assessment to determine whether agreed upon requirements are being met.
- ❖ **Certification** – Procedure by which a third part gives written assurance that a product, process, or services conforms to specified requirements.
- ❖ **Certification Body** – Body that conducts certification of conformity.
- ❖ **Certify** – Top provides written assurance that a product, process, or services conforms to specifies requirements.
- ❖ **Certified** – The EMS of a company, location, or plant is certified for conformance with ISO 14001 after it has demonstrated such conformance through the audit process. When used to indicate EMS certification, it means the same things as registration.
- ❖ **Compliance** – An affirmative indication or judgement that the supplier of a product or service ash met the requirement of the relevant regulation; also the state of meeting the requirement.
- ❖ **Compliance Audit** – A systematic, documented, periodic and objective review by regulated entities of facility operations and practices related to meeting environmental requirement.
- ❖ **Conformance** – An affirmative indication of judgement that a product or services has met the requirements of the relevant specifications; also the state of meeting the requirements. Usually refers to meeting requirements of the ISO 14001 management standards.
- ❖ **Continual Improvement** – Process of enhancing the environmental management system to achieve improvement in overall environmental performance, in line with organisation’s environmental policy. Note – The process need not take place in all areas of activity simultaneously. (ISO 14001)
- ❖ **Environmental Performance** – The measurable results of the environmental management system, related to an organisation’s control of its environmental aspects, based on its environmental policy, objective, and targets. (ISO 14001)
- ❖ **Environment** - Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation. Note - Surroundings in this context extend from an organisation to the global system. (ISO 14001)
- ❖ **Environmental Aspect** - Element of an organisation’s activities, products, and services that can interact with the environment. (ISO 1400 1)
- ❖ **Environmental Audit** - Systematic, documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified environmental activities, events, conditions, management systems, or information about these matters conform with audit criteria, and communicate the results of this process to the client. (ISO 14010)
- ❖ **Environmental Impact** - Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s activities, products, or services. (ISO 14001)
- ❖ **Environmental Management System (EMS)** - Organisational structure, responsibilities, practices, procedures, process, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy. (ISO 1400 1)
- ❖ **EMS Audit** – A systematic and documented verification process to objectively obtain and evaluate evidence to determine whether an organisation’s environmental management system conform to the EMS audit criteria set by the organisation, and to communicate the result of the process to management. (ISO 14001)

- ❖ **EMS Audit Criteria** – Policies, practices, procedures, or requirements, such as covered by ISO 14001, and if applicable, any additional EMS requirements against which the auditor compare collected evidence about the organisation’s EMS. (ISO 14011)
- ❖ **Environmental Performance Evaluation** - Process to measure, analyse, assess, report, and communicate an organisation’s environmental performance against criteria set by management. (ISO 14031 WD4)
- ❖ **Environmental Policy** - Statement by the organisation of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for setting of its environmental objectives and targets. (ISO 14001)
- ❖ **Environmental Target** - Detailed performance requirement, quantified wherever practicable, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives. (ISO 14001)
- ❖ **Fence line** - The area in which an organisation chooses to implement its environmental management system - a department, division, or specific operation.
- ❖ **Gap Analysis** - A comparison of an organisation’s existing management structure for environmental aspects against the elements of an environmental management system. Used to identify what EMS elements are missing.
- ❖ **Interested Party** - Individual or group concerned with or affected by the environmental performance of an organisation.
- ❖ **Quality System** – Organisation structure, procedures, processes, and resources needed to implement quality management. (ISO 8402)
- ❖ **Stakeholders** - Those groups and organisations having an interest or stake in a organisation’s EN4S program (e.g., regulators, shareholders, customers, suppliers, special interest groups, residents, competitors, investors, bankers, media, lawyers, insurance companies, trade groups, unions, ecosystems, cultural heritage, and geology).
- ❖ **Standard** - A recognised unit of comparison, which provides a gauge of the “correctness” of those things, we are comparing.
- ❖ **System** - Collection of unit processes that when acting together, perform some defined function; what an organisation will do, who will do it, how will it be done. (ISO 14004)
- ❖ **Third Party** - Person or body recognised as being independent of issue involved, as concerns the issue in question. Note - Parties involved are usually supplier (“first party”) and purchaser (“second party”) and external auditor (“third party”). (ISO/IEC Guide 2)
- ❖ **Verification** - Process of authenticating evidence. (ISO 1401 0) The act of reviewing, inspecting, testing, checking, auditing, or otherwise establishing and documenting whether items, processes, services, or documents conform to specified requirements. (ANSI/ASQC A3)

ANNEX VIII

List of References

1. ISO 14001: 1996 Environmental Management Systems – Specification with guidance for use
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3. ISO 14010:1996 Guidelines for Environmental Auditing – General Principles
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