

---

## **IMPLEMENTATION OF INDUSTRIAL POLLUTION CONTROL PROGRAMS IN SRI LANKA**

ELLEPOLA, RAMANI

Director (Environmental Protection), Central Environmental Authority, Sri Lanka

### **SUMMARY**

This paper describes the basic legal provisions relating to Industrial Pollution Control in Sri Lanka. The major regulatory programs on pollution control, as well as programs designed to assist industries are discussed. The problems faced by the Regulatory Agencies and industrialists in complying with environmental norms as well as future trends in the implementation of pollution control programs with the devolution of powers to the provinces is briefly discussed.

### **1 LEGISLATIVE PROVISIONS RELATING TO POLLUTION CONTROL IN SRI LANKA**

Industrial pollution control is a relatively new field in Sri Lanka. The Central Environmental Authority (CEA) was set up in 1981, subsequent to the enactment of the National Environmental Act No.47 in 1980. At its inception, the Authority functioned mainly as a coordinating and policy making body without regulatory powers to control industrial pollution. Subsequently, an Amendment was brought in to the National Environmental Act in 1988, giving wider powers to the Authority.

There are two main regulatory provisions in the National Environmental Act which are being implemented by the Central Environmental Authority. These are:

- a) The Environmental Protection License procedure for the control of industrial discharges; and
- b) The Environmental Impact Assessment procedure for major development projects.

The Regulations pertaining to these two processes were published in February 1990 and June 1993 respectively.

#### **1.1 Environmental Impact Assessment**

Since June 1993, all major development projects are required to undergo full scale environmental impact assessments prior to implementation. The so called 'Prescribed Projects' which require Environmental Impact Assessments include large scale projects such as highway development projects, power generation and transmission projects, construction of airports and harbors, River Basin development and irrigation projects, extraction of timber, and clearing of land areas, mineral extraction projects, solid and hazardous waste treatment and disposal sites

as well as development of industrial estates above a certain magnitude. In addition to this, very large scale, individual industries with a high pollution potential are also required to undergo full scale Environmental Impact Assessments.

The Environmental Impact Assessment procedure ensures that all the impacts that a major project may have on the environment are identified and mitigatory action planned at an early stage. This makes it easier for project proponents to plan for such measures to be incorporated into the project at an early stage of the project planning cycle.

## 1.2 Environmental Protection Licence Scheme for Industries

Since July 1990, all industries which discharge or deposit effluents or emissions into the environment are required to obtain an Environmental Protection Licence (EPL) from the Central Environmental Authority. The Licence so issued to an industry will stipulate the standards and criteria under which the industry is allowed to discharge its waste.

Different standards are required to be complied with, depending on whether the final effluent is discharged into an inland surface water body such as a river or lake, into coastal waters or used for irrigation purposes. Although the above mentioned standards for discharge of waste water applies to all industries in general, several selected industrial sectors such as the textile, natural rubber processing and leather tanning industries are required to meet industry specific standards which are somewhat less stringent than the general standards mentioned above. In addition to the standards for liquid effluent disposal, there are additional regulations on hazardous waste disposal, noise generation etc. which the Central Environmental Authority has already published. Air emission standards have also been developed and will come into force in the near future.

The Environmental Protection Licence issued to an industry is legally binding on the industry and violation of the conditions in a licence is an offence punishable under the National Environmental Act.

The licence issued to industries is annually renewable and if an industry is found in non compliance with the conditions in the licence, action is usually taken to cancel the licence and proceed with legal action. However, legal action against industries is usually initiated, after warnings are given by the Authority requesting the industry to comply with the relevant environmental norms.

## 1.3 Problems of Existing Industry versus New Industry

In reviewing the present status in Sri Lanka in relation to industrial effluents, it is clear that major pollution problems arise mainly from those industries which were established two to three decades ago, before the present Environmental Regulations came into force. As such, a clear demarcation has to be made between the so called 'existing' industries which are industries already in operation when the present environmental regulations came into force as opposed to 'new' industries which came into existence after environmental regulations came into force.

The Central Environmental Authority has been successful to a great extent in controlling pollution arising from new industries (i.e., industries established after 1990). It is a relatively easy task to control pollution from these 'new' industries, as action is taken by the industry at the planning stage itself to install the necessary pollution control systems.

The major problem lies in the control of pollution from the so called 'existing' industries. These are industries which were established twenty to thirty years ago before environmental regulations were in place. Many of these older industries often use outdated technology and have not given any thought to waste minimization or end of pipe treatment. Many of these industries are cash strapped, and find it difficult to adopt new technology or install end of pipe

treatment systems as it may require considerable amounts of funds. Some of these industries also face problems such as the lack of physical space for the installation of the required end of pipe treatment systems.

The industries which generate the largest quantities of waste water in Sri Lanka are, the textile, natural rubber processing and food processing industry sectors. These three industry sectors are widely distributed throughout the country. In addition to these, large scale industries such as the pulp and paper mills and small scale leather tanneries also contribute to water pollution, although these are few in number.

Industrial effluents are generally disposed of into nearby water bodies such as rivers, lakes or into the ocean. The major problem with disposal of waste water into water bodies arise from the fact that most of these rivers are being used by the general public for various purposes such as bathing, washing etc.

The situation regarding siting and control of pollution from new industries has significantly improved since the enactment of the National Environmental Act and its regulations in 1990. Most new industrialists are now aware of the need to plan their pollution control strategy at an early stage of the planning process unlike in the older industries when not much attention was paid to pollution abatement measures at the planning stage, thereby making it more difficult and costly to incorporate pollution control measures at a later stage.

The necessary legislative provisions are already in place for taking legal action against errant industrialists who are violating the norms and standards stipulated by the Central Environmental Authority. However, the Authorities have been fairly flexible in this regard particularly in relation to existing industries. These industries have been allowed sufficient time to meet the stipulated standards. In cases where the industry concerned does not make any attempt at all to abate the pollution from his industry the Central Environmental Authority proceeds with legal action.

## **2 ENVIRONMENTAL STANDARDS IN SRI LANKA**

At the present time several Environmental Standards have been developed and are being enforced by the Central Environmental Authority through the Environmental Protection Licence (EPL) Procedure and the Environmental Impact Assessment (EIA) Process. The available environmental standards, are briefly described below.

### **2.1 Industrial Effluent Standards**

The following standards are presently being enforced on industries which discharge wastewater:

- a) General standards for discharge of effluents into inland surface waters.
- b) Tolerance limits for industrial effluents discharged on land for irrigation purposes.
- c) Tolerance limits for industrial and domestic effluents discharged into marine coastal areas.
- d) Tolerance limit for effluents from rubber factories discharged into inland surface waters.
- e) Tolerance limits for effluents from textile industry discharged into inland surface waters.
- f) Tolerance limits for effluents from tannery industry.

## 2.2 National Environmental (Ambient Air Quality) Standards

Ambient air quality standards have been set up in Sri Lanka after taking into consideration, the WHO recommended standards for ambient air quality as well as the existing air quality in the country which was studied through several air quality monitoring programs.

A commonly made allegation particularly by industrialists is that Sri Lanka has set a very stringent ambient air quality standard. The ambient air quality standards set up by the Central Environmental Authority is in fact more stringent than that recommended by the World Health Organization. However, there is a specific reason for adopting such a standard. Air Quality Monitoring carried out by the Central Environmental Authority in the Colombo Metropolitan Area has indicated that the air quality in the city of Colombo is relatively good. Except for parameters such as Suspended Particulate Matter (SPM), other important parameters such as Carbon Monoxide, Sulphur Dioxide, and Oxides of Nitrogen were well within the WHO recommended levels. In fact the measured concentrations were below the levels stipulated by the WHO. Taking this fact into consideration the Ambient Air Quality Standards was made more stringent than the WHO recommended threshold levels with the primary aim of maintaining the air quality levels at the present levels. Furthermore, the ambient air quality standards are not regulatory standards and as such are not imposed on industry.

## 2.3 National Noise Control Standards

The Central Environmental Authority receives a large number of public complaints on a daily basis. A majority of these complaints are with respect to noise. It was therefore considered necessary to publish noise level standards with respect to noise arising from industrial and other activities such as construction activities. The noise control standards came into force in 1996. These standards are imposed on new industries with immediate effect while existing industries have been given a grace period of one and a half years to meet the standard.

## 2.4 Air Emission Standards for Air Polluting Industries.

With a view to controlling emissions of harmful pollutants such as sulphur dioxide, particulates and oxides of nitrogen from major air polluting industries such as thermal power generation plants, refineries, cement plants, acid manufacturing plants, steel mills, air emission standards were developed in 1996.

These air emission standards have not been published as yet and are therefore not in force. Once they are published they will apply to new industries with immediate effect and industrialists who are already in operation will be given a grace period in order to meet the proposed emission standards.

# **3 PROGRAMS TO ASSIST INDUSTRY COMPLY WITH ENVIRONMENTAL NORMS**

In Sri Lanka a mix of regulatory and incentive based strategies are adopted in order to control pollution arising from industries. There are many programs which have been initiated in recent times with a view to providing assistance to industries. Special emphasis has been given to the control of pollution from the so called "existing" industries which are older industries set up several years or decades ago before the present environmental regulations were in force. Some of these programs are briefly described below.

### 3.1 Pollution control and Abatement Fund (PCAF)

A 'Pollution Control and Abatement Fund' (PCAF) has been set up in order to provide interest free loans as well as free technical assistance to industries which have been established in the past and which have pollution problems at present.

Under this scheme industries are able to obtain funding on a concessionary basis for the installation of waste treatment systems and for the implementation of other pollution minimization measures. The funds are being disbursed through the major development banks. This is a boon to industries, in particular the small and medium scale industry who may lack the finances required for implementation of pollution control measures.

### 3.2 Common Waste Treatment Systems

In order to assist older industries in special areas with a high concentration of industries where the necessary space for the installation of treatment systems is not available, the Government, with World Bank assistance, is to set up common waste treatment systems for joint waste treatment. Industries in such areas will be expected to join the common waste treatment system or install waste treatment systems on their own. Two areas with a high concentration of industries have been identified, one to the North of Colombo the capital city, and the other to the south of Colombo, where such treatment systems are to be installed in the near future. The treated waste water from these two treatment systems will be disposed of into the ocean through pipelines after treatment.

### 3.3 Demonstration Waste Treatment Systems

There are several specific industrial sectors where the required pollution control technology is not available in the country at present. Demonstration waste treatment systems have been set up for such industrial sectors by the Government in order to assist similar industries to set up their own treatment systems with confidence.

### 3.4 Cleaner Technology/Waste Minimization Project

Another program which is being implemented in order to assist industries is a demonstration waste minimization project in selected industrial sectors. A UNIDO assisted waste minimization project is being implemented by the Central Environmental Authority covering three selected industrial sectors. These are the distillery, textile and metal finishing industrial sectors. Through this project, selected industries in these three industrial sectors have been shown ways and means of reducing waste generation quantities through simple process and raw material changes, as well as good house keeping practices. Demonstration waste minimization projects such as these help industries in meeting the required environmental standards while at the same time reducing end-of-pipe treatment costs.

### 3.5 Future Siting of Industry

In order to avoid the problems arising from inappropriate siting of industry, the Government has made a policy decision that in future, all effluent generating high polluting industry should be sited in industrial estates with treatment facilities. However, at present a sufficient number of such estates are not available for this purpose. The Ministry of industries is in the process of identifying and developing several industrial estates countrywide, in order to cater to this need. The plan is to develop these industrial estates on a Build Own and Operate or Build Own and Transfer basis. In addition to these, there are several industrial estates being developed by the private sector.

### 3.6 Relocation of Selected industrial Sectors

Other programs which are ongoing is the relocation of industries which have similar processes, to one central location in order to facilitate sharing of costs for waste treatment and disposal. One example in this regard, is the relocation of tanneries situated in and around Colombo to a suitable location outside Colombo. The main reason for the relocation of these tanneries was that these tanneries which were established several decades ago were carrying out their operations in highly residential areas which had developed in and around these industries. The operation of these tanneries was causing a major nuisance to the nearby residents. In addition, although these tanneries many of which are involved in chrome tanning generate substantial quantities of waste water often containing chromium, in most of these locations there is not sufficient space for the installation of the necessary treatment systems. The relocation of the tanneries has given an opportunity to the industry to share the cost of waste treatment in addition to minimizing pollution/nuisance problems by moving out from the populated areas.

### 3.7 Management of hazardous industrial waste

Although the quantities of hazardous waste arising from industrial operations in Sri Lanka is not very substantial at the present time, it is envisaged that the problem is bound to become serious with increased industrialization. There are a few selected industrial sectors which are already facing a problem in relation to the disposal of hazardous waste. With an increasing number of industries installing treatment systems for the treatment of their waste water, a serious problem with regard to the disposal of sludge from such waste treatment systems has arisen. A recent survey carried out in Sri Lanka, has estimated that a total of 40,000 MT of hazardous waste is being generated within the country annually, of which almost fifty percent consists of waste oil. The proper disposal of this waste poses a serious problem, due to the non availability of a high temperature incinerator or a properly designed land fill site in the country. The government is in the process of identifying a suitable site to be developed as a hazardous waste land fill site. Although Regulations governing the management of hazardous waste have come into effect in 1996, the implementation of the Regulation is being delayed due to the non availability of the required infrastructure facilities such as landfill sites.

### 3.8 Controls on the Import and Use of Toxic Chemicals

Chemicals classified as pesticides, fertilizers or pharmaceuticals are fairly well regulated in Sri Lanka, as legislation is already in place for the purpose. All pesticides, fertilizers and pharmaceuticals go through a registration process whereby aspects such as toxicity and environmental effects are looked into very carefully, as well as efficiency..

However, the use of toxic chemicals by industry is a fairly serious problem in Sri Lanka, as extremely toxic/hazardous chemicals are sometimes being imported into the country, for use in industry. At the present time there is no registration or permit scheme in place for the control of industrial chemicals.

A complete inventory of the chemicals in use within the country has been compiled by the Central Environmental Authority. Relevant data on nearly one thousand chemicals is now available in the Authority as a computerized data base. Chemical and trade names, acute and chronic toxicity data, environmental effects, disposal methods, and the legal status of these chemicals in other countries are available in this data base. In addition, international data bases such as the Geneva based International Register of Potentially Toxic Chemicals (IRPTC) has made available their data bases to the Central Environmental Authority. The Authority has

identified several highly hazardous chemicals which are presently being imported into Sri Lanka with no restrictions at all. It is proposed to bring in a suitable control system, for the import and use of these chemicals in the near future.

## 4 FUTURE TRENDS

### 4.1 Amendment to the National Environmental Act

The existing system of implementation of programs to control industrial pollution has been described in detail above. In brief, the major regulatory program for the control of Industrial Pollution, is the issue of Environmental Protection Licences to waste generating industries. All industries which discharge waste water, emit noise or air emissions are required to obtain an Environmental Protection Licence from the Central Environmental Authority and to discharge their waste material in accordance with the standards and criteria prescribed by the Central Environmental Authority.

#### 4.1.1 Decentralization of Licensing

As the law stands today, all waste generating industries whether they are high or low polluting in nature, are required to obtain an Environmental Protection Licence. This places a heavy burden on the Central Environmental Authority which is required to issue licences to the estimated 25,000 to 30,000 industries scattered through out Sri Lanka. It is a difficult if not an impossible task to issue such a large number of licences on an yearly basis even for agencies which are well staffed. It is unreasonable to expect a handful of officers to perform this task effectively. Part of the functions relating to the Environmental Protection Licence Procedure have already been delegated to the Local Authorities. Since January 1994 the issue of Licences to a total of fourteen low polluting sectors of industry have been delegated to the Local Authorities. A further 4 sectors of industries were added to the delegated list in 1996. Delegation of part of the Authority for the issue of Environmental Protection Licence has relieved the Authority of part of its heavy load.

#### 4.1.2 Shifting the Burden of Compliance

The present program to control industrial pollution places the burden of detection of pollution, solely on the Central Environmental Authority. Under the provisions in the National Environmental Act, only the Central Environmental Authority is empowered to initiate legal action against high polluting industries which are operating in violation of standards and criteria prescribed by the Authority. (Local Authorities have the necessary powers to initiate legal action against the smaller scale low polluting sectors of industries). Furthermore, the burden of proving that a particular industry is polluting is on the Authority. This places a heavy burden on the Agency in the implementation of its Pollution Control Program.

In order to overcome the above problems and to implement a more effective Pollution Control Program, the Authority has recommended certain amendments to the National Environmental Act. The major Amendments include the requirement that in the future, industries which require an Environmental Protection Licence from the Central Environmental Authority would be prescribed by Regulation. Industries so prescribed by the Authority will be required to obtain an Environmental Protection Licence from the Authority and carry out operations according to the conditions stipulated in the licence. All waste discharges from such industry will be required to meet the standards prescribed by the Authority in the Licence.

There are reservations in some quarters whether this process would result in industries that are not prescribed by law, to operate as they please with no controls. This would not be the case however, as all industries whether prescribed or not, will be required to abide by the standards and criteria stipulated by the Authority.

Industrial development in Sri Lanka is still at a stage where there are only a handful of very large scale highly polluting type of industry. Compared to other countries in the region such as India, Thailand, Indonesia and Malaysia the level of industrialization in Sri Lanka is relatively low. There are no large scale industry such as petrochemical industries and other chemical manufacturing plants of the scale that are found in neighboring countries.

Given this situation, Sri Lanka is in the fortunate position that action could be initiated to ensure that in future when large scale high polluting industry do come into the country, the necessary infrastructure would be in place to ensure that the operation of such industries do not cause unacceptable levels of pollution.

#### 4.2 Functions of Provincial Authorities Versus the Central Government

Although at present, a majority of the Pollution Control Programs are being implemented by the Central Government through the Central Environmental Authority, with the devolution of powers to the provinces, it is envisaged that a majority of the pollution control activities will be devolved to the regions, in time to come.

At the present time the North Western Provincial Council has its own statute and the Environmental Protection Licence program for industries is being administered through the Provincial Authority. This system is acceptable except for a few problems which have to be overcome. The following specific problems have been identified in this regard.

The Provincial Authority is somewhat hampered in the performance of its duties due to the lack of personnel. In addition, the Provincial Authority does not have the experience and expertise presently available at the Central Environmental Authority in order to tackle major pollution problems arising from large scale high polluting industry.

Pollution problems such as air or water pollution, do not respect boundaries. A pollution problem in one province can severely affect the neighboring provinces. It is important therefore, that minimum standards are available to the provinces in order for them to operate in such manner that is acceptable to the rest of the country.

The division of responsibilities between Provincial/Local Authorities versus the Center requires to be clarified. At the present time, in the absence of fully functional Provincial Environmental Agencies there is no conflict between the center and the provinces. In future however, when the Provincial Authorities come into being, the roles of Provincial Authorities as opposed to that of the Central Government will have to be clearly defined in order to avoid confusion.