

Environmental Justice BULLETIN

Vol: 1 No:4 March 2003

PR 5523



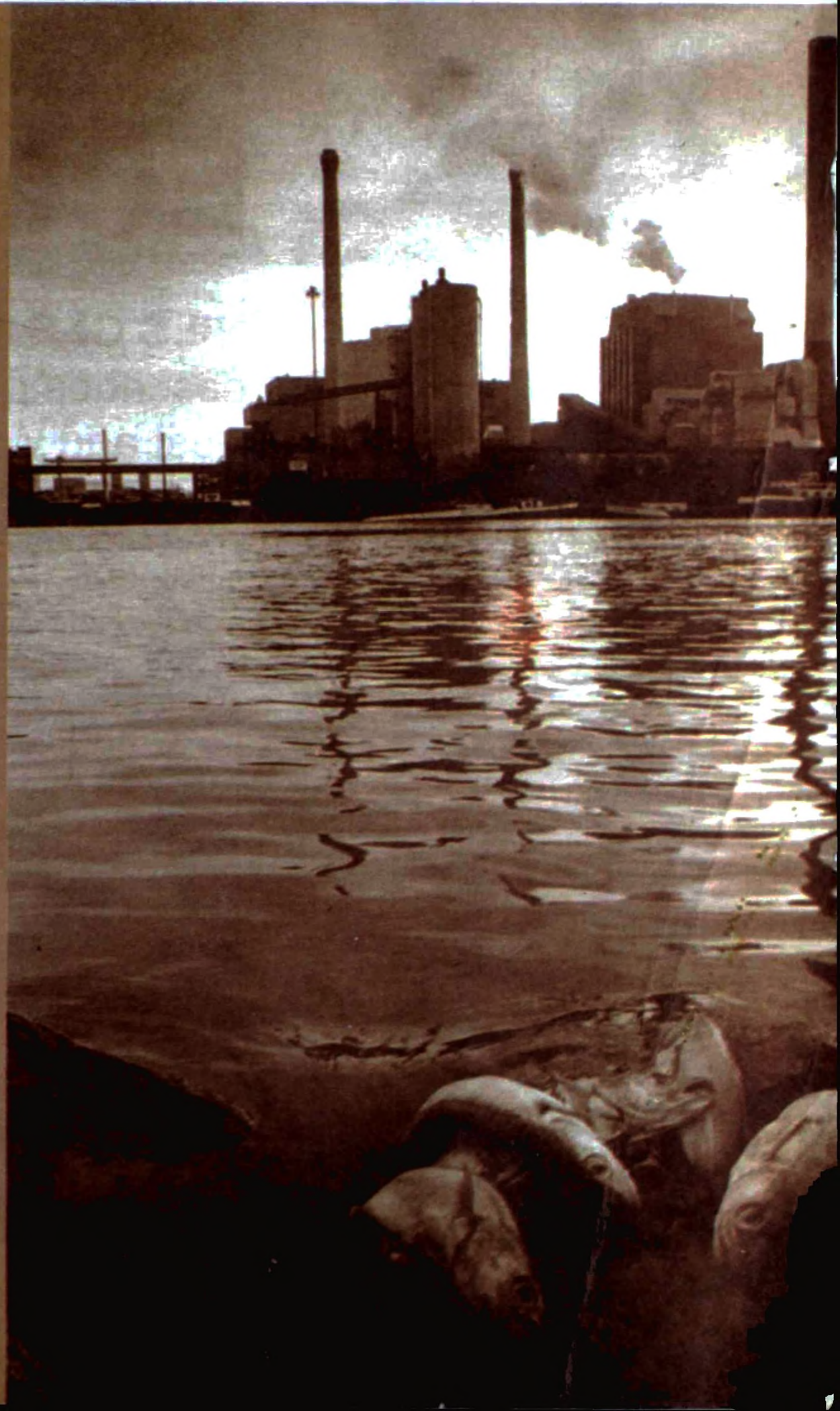
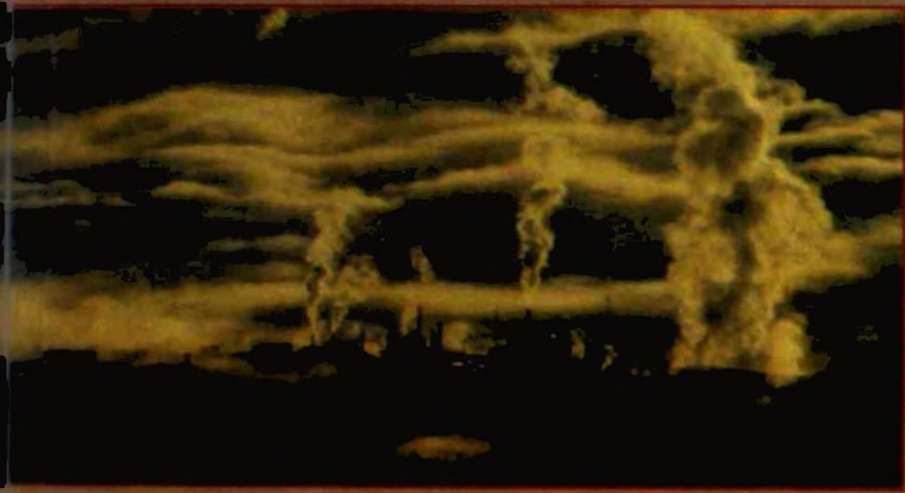
Published by

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The Environmental Foundation Ltd

ISSN 1391-8648

Industrialization and Environment



The Environmental Foundation is a national level non-governmental organization focused on environmental justice of Sri Lankan community for the last twenty-one years. It is also a welfare organization functions as an action station for interested citizens, scientists and lawyers in their effort to make our courts and government agencies more efficient and effective in protecting environmental rights through which to make environmental consciousness in our country.

It is our vision to make aware environmental injustice issues and propose suitable remedies to prevent or to reduce these hazards by recurring.

This bulletin highlights the environmental issues of Sri Lanka and we would be much obliged if you or your organization could contribute to this with topical articles on environmental justice with hazards related to air-water pollution, irreversible loss of bio-diversity and ecosystem, impacts on socially disadvantaged groups, inefficient technologies, biased economic development policies and practices and unsustainable resource consumption.

Editor.

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Print Design - NEO Graphics 074-300372

PR 5523



Industrial Revolution was the widespread replacement of manual labor by machines that began in Great Britain in 18th century and yet continuing in some parts of the world. The Industrial Revolution was the result of many fundamental and interrelated changes that transformed agricultural economies into industrial ones. Goods that

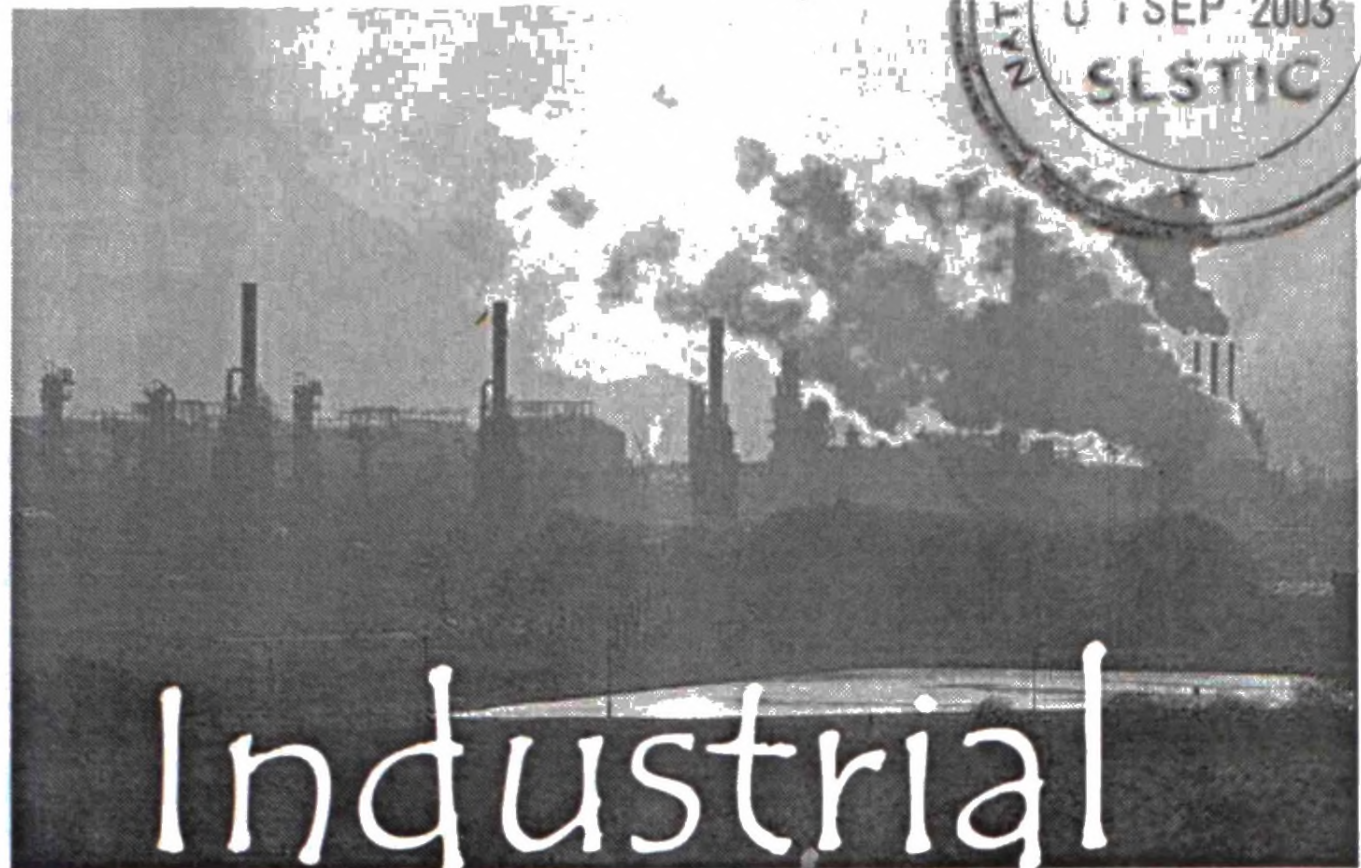
traditionally been made in homes or in small workshops began to be manufactured in factories. Productivity

and technical efficiency grew dramatically, in part through the systematic application of scientific and practical knowledge to the manufacturing process. Efficiency was also enhanced when large groups of business enterprises were located within a limited area. The Industrial Revolution led to the growth of cities as people moved from rural areas into urban communities in searching work.

The changes brought by the Industrial Revolution overturned not only traditional economies, but also whole societies. Economic changes caused far-reaching social changes, including the migration of people into cities, the availability of a greater variety of material goods and new ways of doing business. The Industrial Revolution was the first step in modern economic growth and development.

The Industrial Revolution began in Great Britain during the post 18th century and spread through regions of Europe and to the United States during the following century. In the 20th century industrialization on a wide scale extended to parts of Asia and the Pacific Rim. Today mechanized production and modern economic growth continue to spread to new areas of the world, and much of humankind has yet to experience the changes typical of the Industrial Revolution.

The Industrialization was nominated as a revolution as it changed societies in both significantly and rapidly. Over the course of human history, there has been only one other group of changes as significant as the Industrial Revolution. This is what anthropologists call the Neolithic Revolution, which took place in the later part of the Stone Age. In the

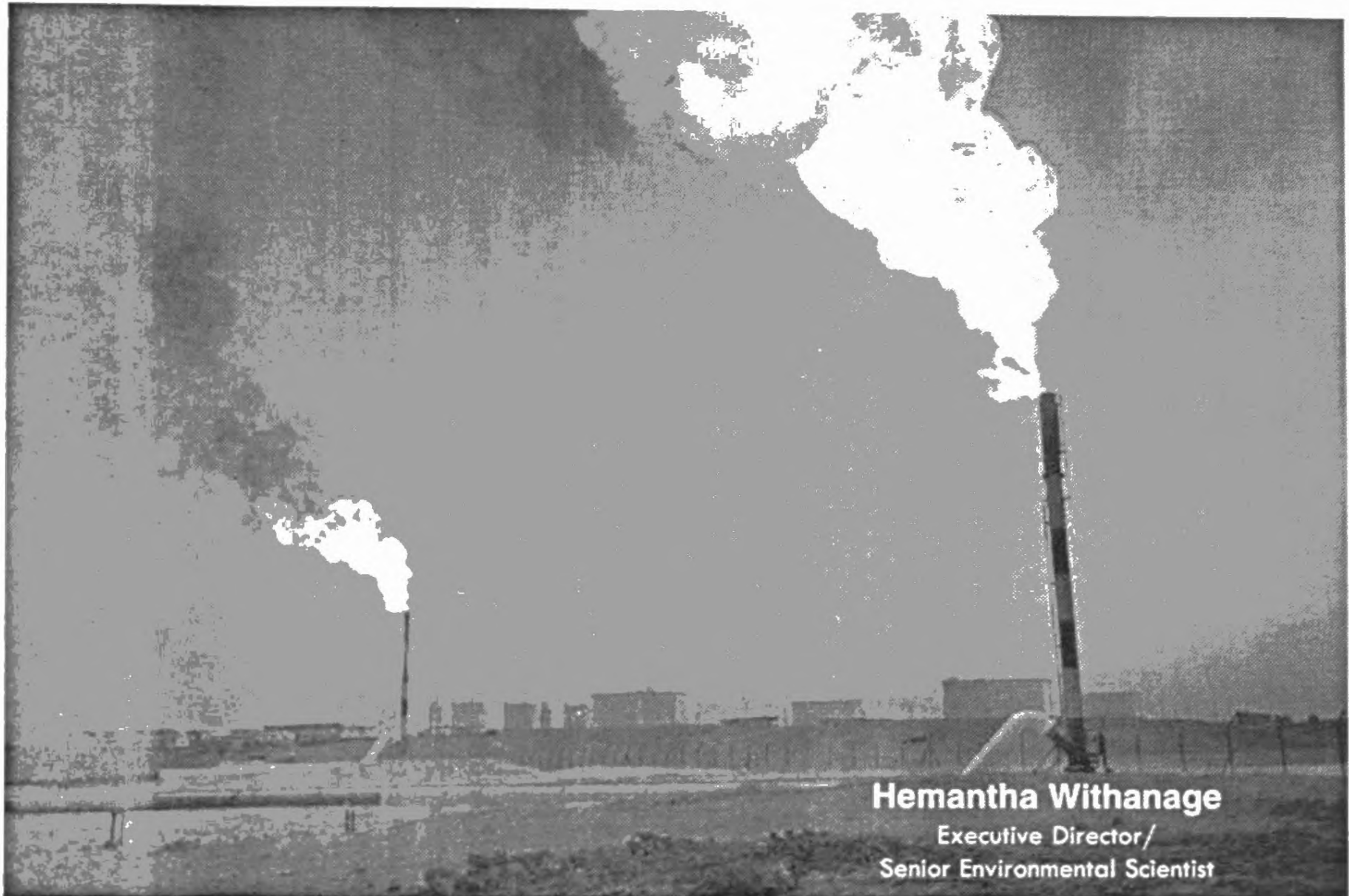


Industrial Revolution

Neolithic Revolution, people moved from social systems based on hunting and gathering to much more complex communities that depended on agriculture and the domestication of animals. This led to the rise of permanent settlements and, eventually, urban civilizations. The Industrial Revolution brought a shift from the agricultural societies created during the Neolithic Revolution to modern industrial societies.

The social changes brought about by the Industrial Revolution were significant. Large portions of the population relocated from the countryside to towns and cities where manufacturing centers were found. The overall amount of goods and services produced expanded dramatically and the proportion of capital invested per worker grew. New groups of investors, businesspeople, and managers took financial risks and reaped great rewards.

In the long run the Industrial Revolution has brought economic improvement for most people in industrialized societies. Many enjoy greater prosperity and improved health, especially those in the middle and the upper classes of society. Industrialization has brought factory pollutants and greater land use, which have harmed the natural environment. In particular, the application of machinery and science to agriculture has led to greater land use and therefore extensive loss of habitat for animals and plants. In addition, drastic population growth following industrialization has contributed to the decline of natural habitats and resources. These factors, in turn, have caused many species to become extinct or endangered.



Hemantha Withanage
Executive Director/
Senior Environmental Scientist

Industrialisation - The lost path

Industrialisation of Sri Lanka is a continuing dream of the regimes since 1977. The conversion of agricultural Sri Lanka to industrialised Sri Lanka has increased the pollution of environment while increased the natural resources utilisation. Human labour has been converted from agriculture to industries to serve the foreign market. This greatly affects the sustainability of the country.

As a result of industrial dream of the nation, the country has undergone a severe poverty and unequal distribution of wealth. The industrial labour industry has increased the urban migration. The Urban Development Authority (UDA) estimates that about thirty five percent of the population or about 550,000 people in the Western Province live in such uncongenial areas.

There are indications of wells, being contaminated by faecal matter owing to their proximity to latrines. This can lead to major environmental health hazards. Inadequate waste disposal facilities, dumping of polythene/ plastic waste, poor drainage facilities,

and indiscriminate pollution of waterways, air and noise are typical problems prevalent in urban centres mainly due to industrialisation.

The urbanisation is closely related with industrialisation. Industrial pollution is particularly severe in the Colombo and Gampaha Districts where more than seventy per cent of all registered industrial units are located (Central Bank 1996, NEAP 1998 2001)

Particularly heavy concentrations of industrial units are located in the Moratuwa-Ratmalana and Ekala-Ja-Ela areas. Surface waters are affected including Kelani River, Negombo Lagoon, Lunawa Lagoon and Bolgoda Lake where the fisheries are threatened. Spent wash from distilleries in Kalutara district has affected ground water quality. Severe pollution results from the tanneries and the paper (pulp) mills. Most tanneries use chromium compounds as the tanning agent. Electroplating is often done in small scale on shop verandas that involves the use of deadly poisonous chemicals like potassium

cyanide. Vapours and particulate matters including asbestos fibres released into the atmosphere by industries posing a health hazard to people in the neighbourhood. The noise emitted by the operation of factory machineries can also cause serious disturbance to neighbours. Solid waste from factories can be a public nuisance.

Industrial Parks what for?

Sri Lanka has approximately 300 highly polluting industrial units. Water pollution is the most serious concern. (ERM 1993, NEAP 1998-2001) Many of these are still outside from the Industrial Parks. Katunayake, Ekala, Rathmalana, Biyagama and Awissawella, are some of the industrial areas close to Colombo. Also there are number of industrial estates in the sub-urban and rural areas. Though the industrial parks were introduced for easy pollution control, most of the high polluting industries are still located outside the industrial parks. Also many of the industrial parks or the individual industries do not have proper effluent treatment and waste disposal facilities.

Although Sri Lanka has some good ambient environmental standards, lack of enforcement has become one reason for the uncontrollable level of pollution. There are no specific standards for industries except in very few instances. Therefore the ambient environmental standards alone are insufficient to control the industrial pollution. Out of more than 20,000 industrial units approximately less than half have obtained the Environmental Protection Licence so far.

It is estimated that over 85% of the industries have no form of treatment for effluent discharges of the production processes (Steel and Hansen 1995). The only exceptions are the few medium and large-scale establishments, which can afford the treatment, and two export promotion zones in Katunayake where waste is centrally treated. (State of the Environment, MOFE, 2001)

Therefore the concept of Industrial parks is not success in Sri Lanka due to various reasons. This includes lack of political and the industry sector commitment and lack of law enforcement.

Industrial problems

The industries need manpower. Therefore many of the rural poor move to the industrial areas. They suffer both occupational health problems and social problems. They have no proper lodging facilities and sanitary facilities. Lack of occupational health standards and the non-enforcement of the standards are major problems in this sector. The toxic contamination, high noise level, air pollution are some serious negative impacts. Occupational health problems particularly in the sectors where labour is less organised such as agriculture and mining are a major cause of mortality and morbidity. For example occupational health issues are very serious in the graphite mining industry.

Excessive **waste generation** is another result of both urbanisation and the industrialisation. Generation of large amount of waste is also a result of the wrong consumption model. In the rural traditional life there is very little waste and they do not have any waste disposal problems. But in the urban sector, both domestic and industrial waste disposal are major environmental issues.

There are **no waste minimisation programmes and no proper waste collection mechanism** and waste



disposal has become problematic during the last two decades. Both domestic waste and industrial waste has this disposal problem. It is estimated that Colombo Municipal Council area presently generates over 700 tonnes (at present this amount is more than 1,000 tonnes per day) of waste a day and that quantity will increase as income increases. (*World Bank 1995*)

At the national level more than 45,000 tons of hazardous waste is produced per annum including hospital waste. (*ERM 1997, NEAP 1998-2001*) There are approximately 58 waste dumps in the Western Province, most of which are almost filled to the capacity. (*UDA, 1996*) There is no proper disposal facility for hospital waste too. In 1996, over 95 percent of the clinical waste generated in Colombo was disposed in open dumps with no form of pre-treatment (*ERM, 1997b, 1997c*)

Toxic waste generation is a major environmental threat commencing from 1970s. So far Sri Lanka has not introduced any waste minimisation programme and there are no toxic waste disposal sites. Sri Lanka enacted the toxic waste regulation in 1998; unfortunately this has not been implemented so far, showing the weakness of the regulating authority.

The washing of toxic material transporting containers and the dumping of the toxic material in abandoned lands have increased and is a new threat resulting from industrialisation and the activities of the harbour.

Air pollution due to heavy traffic, power generation and the industries has become a serious issue in the urban and industrial areas.

Energy is one of the most important features in both urbanisation and industrialisation. The energy sector in Sri Lanka is in a real crisis. For many of the Sri Lankans energy utilization is hydro power electricity. Due to this reason alternative sources of energy have not been given proper attention.

Biomass supply accounts for approximately 70% of the total energy consumed in Sri Lanka and are used for domestic and industrial use. Large-scale industrial uses include the manufacture of bricks and smoked sheet raw rubber. Unfortunately the roll of Biomass

in energy supply has not been recognised by government or by public due to the domination of the electricity sector.

Industrial water pollution

Colombo and Gampaha are the most developed regions in the country, accounting for nearly 80% of the industrialization. Two major industrial areas are Ratmalana- Moratuwa located south of Colombo, and Ekela-Jaela located in Gampaha District. About 140 industries are located in the Gampaha district, and 50% of them cause high pollution. Other industrial areas, such as Biyagama, Homagama, Oruwala and Kalutara are relatively small. The major effluent generating industries have been identified as textile dyeing and bleaching, food processing, leather tanning, metal finishing, agro produces and mineral products. The majority of these discharges untreated effluent to the outside water drains of the country. (*State of the Environment Sri Lanka, MOFE, 2001*)

The pollution from the Kelani river was estimated as 36,000 kg/day of COD being discharged into in-shore waters compared with an estimated 6000 kg/day of COD discharged from the Mutuwal outfall some 1500m from the shore. In addition, the concentration of faecal coli forms at the mouth of the Kelani is greater than in the seawater above the outfall.

Kelani river which provides water to the Colombo City is polluted both by industries as well as by domestic waste. The Central Environment Authority (CEA) and Moratuwa University Study (1995 on the Baire lake Pollution) concluded that, "Lead and faecal matter, to a great extent and BOD, to a lesser extent, exceeds the minimum ambient quality standards for inland water bodies". Although there are regulations governing the discharge of industrial effluent and domestic waste, enforcement mechanisms are weak. (*State of the Environment Sri Lanka, MOFE 2001*)

Conclusion

Starting from the 1960s the government changed its vision and policies to convert the country to an industrialised country. Sri Lanka as an agricultural nation was not ready with proper infrastructure and environmental standards for a better-industrialised

nation. As a result, today we can see congested cities, polluted wells, lagoons, rivers, wetlands, soils and air. While toxic dumps can be seen everywhere the surface and even the ground water has become polluted.

The industrial parks which were created to minimise the industrial problems lost its mission due to political interference. Now they have become pollution centres in urban and rural areas. Majority of the polluting industries still located outside those parks. Industrial dream of the regimes have disturbed the

sustainability of the country and the agricultural base. The conversion of the agricultural labour to the industrial labour has not served the best interest of the country.

The recent arrival of Indian polluting industries to so called industrial parks and outside with the blessing of the Board of Investment has done much of the damage to the environment. They are the most polluting metal recycling factories. In this lost path, if industrialisation continues, Sri Lanka will be a toxic dump in Asia.

Environmental injustice issues arising due to industrialization

Careful observation of all complains related to industries show that they have common causal factors such as old inefficient machineries, disorganized effluent discharging systems, poor emission regulatory systems, inadequate occupational safety, improper I.E.Es (Initial Environmental Examination) and monitoring systems. Poor planning and management are major features of all these negative impacts. Following examples can be given to point out above-mentioned situation.

Craft suppliers Pvt.Ltd. (Ratmalana) is a large-scale wood based industry producing a huge annual out put. During the daytime, it produces an intolerable noise, which may lead to hearing deformities. Inhaling sawdust and emissions Cumming from burning sawdust might cause respiratory disorders. Saw dust has been identified as a carcinogenic substance.

Trans screen automated pvt. Ltd. Effluents are discharged to waterways without proper treatment, paint vapor coming from spray painting can cause respiratory problems, and some may be carcinogenic.

There has been another case in a garment factory situated at **Pepiliyana** where it has been constructed in a narrow road. It causes severe traffic congestion during the daytime. Factory has

poor drainage system, which is again directed to open road. Factory has no regulatory measures for regulating emission and effluent discharge. (No purification.) Company has no EPL. (Environmental Protection License)

Senarathne engineering enterprises is a steal works factory. It also generates a huge sound and paint vapor coming from spray paints and iron dust may cause respiratory problems.

Polythene factory (Batuwatta-West) causes sound pollution in twenty four hours. Burning polythene can result emission of poisonous gases.

Rubber factory-Halpewatta discharges its entire acetic acid residue to natural waterways causing nose ting stink. It can contaminate ground water as well.

Looking at all these issues we can conclude that industries should be confined to an industrial zone should not be situated in residential areas. All companies should practice environmental management system.

(Based on studies done by the environmental justice and equity section of Environmental Foundation)

By Subash Hathurusinghe

Hazardous Wastes are the solid, liquid or gas wastes that can cause death, illnesses and injuries to people or destruction of the environment if improperly treated, stored, transported or discarded. Substances are considered hazardous wastes if they are *toxic* (containing substances that are poisonous), *ignitable* (capable of burning or causing fires), *reactive* (able to explode or produce toxic cyanide or sulfide gas) or *corrosive* (able to corrode steel or harm organisms because of extreme acidic or basic properties). Mixtures, residues or materials containing hazardous wastes are also considered as hazardous wastes.

Many dangerous substances can be used only with special precautions that minimize their risks. When discarded, these substances are no longer under the direct control of the user and may pose special hazards to people or to other organisms that contact with it. Because of such potential risks, hazardous wastes are processed separately from ordinary wastes.

Industrial waste

Hazardous wastes are generated by nearly every industry. Industries that themselves generate few hazardous wastes nonetheless use products from hazardous waste generating industries. For example, in the computer software industry, writing software generates little hazardous waste, but the manufacture of computers involves many industrial processes. Making a computer circuit board generates spent electroplating baths that contain metal salts and the production of computer chips involves acids, other caustic chemicals and solvents.

Agricultural waste

Industries are not alone in generating hazardous wastes. Agriculture produces wastes such as pesticides, herbicides and materials used in their application. Fluoride wastes are by-products of phosphate fertilizer production. Even soluble nitrates from manure may dissolve into groundwater and contaminate drinking-water wells; high levels of nitrates may cause health problems.

Household waste


Household sources of hazardous wastes include toxic paints, flammable solvents, caustic cleaners, toxic batteries, pesticides, drugs and mercury from



Hazardous

broken fever thermometers. Local waste-disposal systems may refuse these items. If they are accepted, careful monitoring may be required to make sure soil or groundwater is not contaminated. The householder may be asked to recycle or dispose these items separately.

Renovations of older homes may cause toxic lead paint to flake off from walls. Insulation material on furnace pipes may contain asbestos particles, which can break off and hang suspended in air; when inhaled, they can cause lung diseases and cancers.



Many dangerous substances can be used only with special precautions that minimize their risks. When discarded, these substances are no longer under the direct control of the user and may pose special hazards to people or to other organisms that contact with it.

it, and animals that move over it. Sludge from municipal sewage disposal may contain toxic elements if industrial waste is mixed with domestic sewage. Sludge used as a fertilizer may contaminate agricultural fields. Growing plants may take up toxic substances that do not break down or bind tightly to the soil. The toxic substances may later accumulated in animals that eat crops grown there and possibly in people dominating higher levels in food chains.

Air may contaminated by direct emission of hazardous wastes. Evaporation of toxic solvents from paints and cleaning agents is a common problem. The air above hazardous waste may become dangerously contaminated by escaping gas.

River and lake pollution, if it is toxic enough, may kill animal and plant life immediately or it may cause injuries slowly. For example, fluoride concentrates in teeth and bone, and too much fluoride in water may cause dental and bone problems. Compounds such as dichlorodiphenyltrichloroethane (DDT), and dioxins are more soluble in fats than in water and therefore tend to accumulate in fats within plants and animals. These substances may present in very low concentrations in water but accumulate to higher concentrations within algae and insects, and build up to even higher levels in fish. Birds or people that feed on these fish are then exposed to high levels of hazardous substances. In birds, these substances can interfere with egg production and bone formation.

Even pollution that is not toxic can kill. Phosphates and nitrates, usually harmless, can fertilize the algae that grow in lakes or rivers. When algae grow, in the presence of sunlight, they produce oxygen. However, if algae grow too much or in too fast, they tend to consume greater amount of oxygen when both the sun is not shining and in decaying after its death. Lack of oxygen eventually suffocates other lives. Toxins contained in algae may poison some living organisms. This process of algal overgrowth is called *eutrophication* and can kill life in lakes and rivers.

Underground pollutants can be carried by underground water flows. These wastes form spreading underground plumes (long, featherlike columns) of contaminants, which may reach the surface if the water emerges in a spring or is pumped by wells.

Wastes

Medicinal waste

Hospitals pay special attention in disposing wastes contaminated with blood and tissues by separating hazardous wastes from ordinary waste. Pharmacies discard outdated and unused drugs and medical testing laboratories dispose various chemical wastes

Effects of hazardous waste

Hazardous wastes may pollute soil, air and surface or underground water bodies. Pollution of soil may affect people who live on it, plants that put roots into

LAWS PROMOTING ENVIRONMENTAL FRIENDLY INDUSTRIES

By Chandi Pathirana



Being different from other species, human beings sought luxuries to the betterment of their livelihood. Mere sufficiency of food or shelter did not ever satisfy them. They are born with an intention of fulfilling their needs in the most convenient but modest way. This intention to live a sophisticated life laid the foundation of "development". The concept of development grew so wider that the human population is now being divided into groups not upon the humanity, but upon the development they have reached, and the concept of development, which should have several faces as social, religious and economic, got only one mean; that is economic development. Money became the most important factor and for most of the developed and developing countries, industrialization became the money machine.

Industrialization – we cannot push it aside, in this state of consequences. World – the whole world depends on it. Growth of population, free economy, interrelations among the countries and political pressures altogether has made each one of us incorporated with all other citizens of the world and their activities.

Nevertheless, the benefits will not be sufficient to cover the disadvantages of industrialization. Among the disadvantages, the major is the pollution to the

environment. Development meant for the betterment of life, but industrialization while succeeding in economic development is directly deteriorating the quality of basic needs of life on earth as air, water and soil.

Since the world could not do away with industrialization, then came the idea of controlling it even up to some extent. Law became one such controller. Environmental law, country wise and world wide is now being developed to strain up the benefits and block the hazards little by little. Since it was long ago, the industrialization started and long ago, the environment became its victim, environmental law has been unable to give effects overnight. Yet through out the world, though develop or developing do try to use law to prevent the hazardous effects to the environment.

Environmental law formed out a peaceful approach towards industrialization and other development related issues focusing on the practicability and aiming a success in finding solutions for the pollution. In 1982, the world charter for nature quite the concept of controlling human activities to prevent pollution and accepted the concept that human life an extinction depends upon nature.

In 1983, Bruntland report – our common future came out with a concept of achieving development targets without affecting the resources of the future generations. Balancing the conflicting interests, the report introduces a new programme for environment and development. The concept brought out from the report was sustainable development. This concept was introduced to harmonize the development process; effects of industrialization, reduce the conflict between industrialization and affected species from the pollution it has caused. This is the main concept recognized to overcome the problems of pollution occurred in the process of development that is mainly through industrialization. Pre-

cisely 'no-to industrialization' became 'yes-in an environment friendly way'

From then on through a number of conventions, declarations, principles and protocols environmental law in the international level has been developed a legal situation that encourages environmental friendly industrialization which does not allow pollution as a result of industrial process. The 'react and care' changed into 'anticipate and prevent' setting the green light on for the environmental protection.

To discuss a few such regularities through environmental law, the three major principles of international environmental law could be taken as examples.

Precautionary Principles.

This principle relates to the situations where measures were identified to prevent an environmental disaster that may occur in the future. In such a situation; according to this principle; lack of scientific evidence should not in the way of any action taken towards environmental protection.

Ex: In 1970s scientists predicted the harmful effects of degradation of ozone layer mere were no significant evidence to prove it, but in 1985 Vienna convention came into force. Since in incidence such as the above due to the irreparability or severeness of the threat the uncertainty of scientific inventions should not become a barrier. This is applied in the text of Cartagena protocol. U.N. convention of climatic changes and BASEL convention are two other examples. In the Indian case of *Kuldip, Sing* the petitioner asked for an injunction to halt a future nuisance in the name of environmental protection. The Superior Courts in India gave effect to the above precautionary principle admitting that "the court will not interfere for a future nuisance unless (1) The damage to the environment is eminent. (2) Where it is likely to cause irreparable damage if let it occur and (3) Act has inherently dangerous results. If not a person is free to any act promoting his industry but accordingly to the ways and means of guaranteed environmental protection.

Polluter pays principle.

In ordinary law, a person is made accountable if he is at fault, but under this principle if the person is the polluter, without showing fault he is liable to pay for the damage. Environmental protection license is a

must for recognized industries in Sri Lanka. NEA is a good example for implementing of the said protection. Licenses are issued to discharge waste for these industries under the tolerance limits and other conditions that has introduced for environment protection and the industry owner has to pay an amount of money for the license. Therefore, he is paying for the tolerance damage he is making.

This principle may go to an extent of restoration beyond the compensation. In *Indian Council for Environmental Legal Action vs. Union of India*, the responsible whose factory pollute under ground water affecting the soil fertility was ordered to pay for it and asked to restore the soil fertility.

Public Trust Doctrine.

This principle says that those who hold the power should hold the natural resources as a trust for the public and the future generations. The Coast Conservation Act reflected the evidence of this principle even before the NEA came into force.

In the case of *Kamalnath* the Supreme Court of India enforced this principle against a minister used his political powers to use natural resources for his personal industry causing an environmental damage.

Other than the discussed principles the principles of intergenerational equity, principle of good neighborhood, preventive principle, common but differentiated principle do make an effect resulting in number of conventions, protocols, agreements, national acts and regulations making clear cut pathway to an industrialization in an environmental friendly way. However, to reach the target, the countries should have an open approach to these laws in legislative, executive and importantly in judicial levels. Nevertheless, each citizen, each human being has its own responsibility to enforce these legal frameworks to achieve the true development, the true betterment of life for which the industrialization process worked out. If industrialization is for development, if the development is for upgrading human life, it should be carried on in an environment friendly manner and the environmental law, if enforced properly with each one of our strength may be the guidance for the said development and peaceful, harmless world to man or any other species.

Development and environment have become two opposing scenarios. However, both environmental protection and development are important for human while environmental protection is important for all living being. Since Rio, all global bodies and the national government have proposed and implemented many projects in the name of sustainable development and how to bring the sustainable development to settle the global environmental problems.

a menace in most urban areas. In addition, the air is being polluted in the urban centers. The natural environment is being seriously affected and therefore the local life styles have been seriously eroded. Most of the environmental disputes seen today are due to the competing interest of the stakeholder groups. Therefore, the very survival of the industries, traditional life and environment and the functionality of the government agencies are in danger due to this unsustainable model.

Environmentally Sustainable Industrial Development



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Dip. in Human Rights

The Concept of Environmentally Sustainable Industrial Development

Although it is late, we need to introduce sustainable development or in other words environmentally responsible development models for the sake of ecosystem, present and future generations and

Partnerships are one of the new mechanisms, which are coming to the scene under new negotiations. However many national and international sustainable development initiatives have been failed in past due to various reasons. However, there are many local level initiatives, which still survive and becoming models for the future world.

The dispute between industrial development and natural resources, and the local life style is a key problem in Sri Lanka since 1970s. The surface water and ground water in Colombo city is being polluted. Garbage and industrial waste has become

for the survival of industries. However, there is not any corporation or collaboration between main stakeholder groups, i.e industries, government and public. Therefore, we hope to build such a dialogue between the stakeholder groups around selected establishments or natural ecosystems and build a pleasant environment for the stakeholder groups to talk to each other and agree to a collaborative development plan through partnerships, which will be implemented and monitored by the same stakeholder groups.

Lack of a common forum for initiating the negotiations and dispute resolution is a common problem in



- A common decision making forum will be then organized with the representation of all the stakeholder groups. In this stage, we provide opportunity for all the groups with free discussion with moderation. When the groups understand, the issues related to the problems the forum encourages them to

the present development initiatives. This has led the development initiatives act in their own, without considering the environmental and social impacts. The idea of our initiative is to bring the stakeholder groups i.e state, private and public sectors to a common forum, which can use to discuss the issues, and negotiate. At the end of the negotiations, the stakeholder groups will come up with an action plan, which will be implemented and monitored by the



same group. The negotiations will be moving around the long-term sustainability of the establishment or the eco systems. The creation of the action plan, implementation and monitoring will be done with the partners i.e all stakeholders. During the negotiations suitable partnerships will be identified and at the end of the action plan partnerships will be initiated among the stakeholder groups.

Methodology of ESID Programme

- The first step of this project is to identify the stakeholder groups of the eco-system or the establishments such as industrial parks etc.
- Then we discuss with different groups and conduct education Programmes for the less informed groups. In this step, we empower the affected groups.

change their existing activities to a sustainable level.

- An action plan will be prepared with the collaboration of all the stakeholder groups and will establish monitoring. Under the action plan responsibilities of each stakeholder groups will be identified.
- If some stakeholder groups are not willing to participate or change the existing situation we will use our expertise both legal and science to empower them.
- Since the local authorities are part of the forum the group will monitor the enforcement together with them.
- Some research agencies, which are in the forum, will provide the technical expertise to the stakeholder groups.

Indianization of local industries

by Asanga Dehiwatta

Though the Board Of Investment (BOI) has a grand dream, that to make Sri Lanka a highly industrialized country, there is no scenic beauty in their dream or any environmental aspects. In the process of industrialization, they have established several industrial parks with the help of some politicians who concerned only their votes and people whose aim was a good income and better employment.

During this period, most of Indian melting companies were working in Nepal. The Nepal community protested against these companies and after listening to these protests, the intelligent Nepal politicians requested the Indian metal companies to leave Nepal immediately. These companies found that the situation in Sri Lanka was favorable as the BOI offered them industrial parks on a platter and Indians industries started establishing in Sri Lanka. At now they are in Merigama, Horana and Pannala Industrial parks and also have established their companies outside. These industries do not benefit the host country but only the company itself. They bring old metal from aboard containing oxidized and wash using chemicals. These chemicals lead the environmental degradation when using without purifying or any safety precautions. After removing oxides, these metals are melted and made into metal cubes that exported to India. The remaining metal deposits called "yabora" are discharged to environment.

Several metal processing companies in Sri Lanka produce Lead, Iron, Copper, and Aluminum Most of these are heavy metals and can cause injuries to human health. Lead is carcinogenic. These Indian companies are not worried about the surrounding environment and their neighbors. They release metal fumes to the atmosphere and metals to open canals. A good example is Navam Lanka Company, which releases lead fumes to the surrounding. Central Environmental Authority, the approving agency of IEE for Merigama BOI Industrial park, disclosed this fact.



	Measured Levels	Standard
Lead levels in Ambient Air	8.5µg/m ³	2.0µg/m ³
Lead levels in Ambient Water- Upstream	2µg/l	
Grab sample collected from leachate adding to the stream	1380 µg/l	50µg/l
Down stream	450µg/l	
Lead levels in Industrial waste water discharged	5.6mg/l	0.1 mg/l
Lead levels in Solid Waste	13527mg/kg	550mg/kg as Pb

This company does not even help to solve the employment problem in Sri Lanka. Most of the employees are Indians. For example in Navam Lanka Company, 95% of employees are Indians. Moreover, in Melbourne Metal Company in Ekala, 90% employees are Indians. The Sri Lankans in the area get only Headaches, Vomiting, Wheeze, Cancer etc. We yet cannot comment on long-term effects. However, we have experiences from highly industrialized countries as Japan. Now we need to take decisions. Are we to fulfill the BOI dream or to sacrifice our lives and environment?

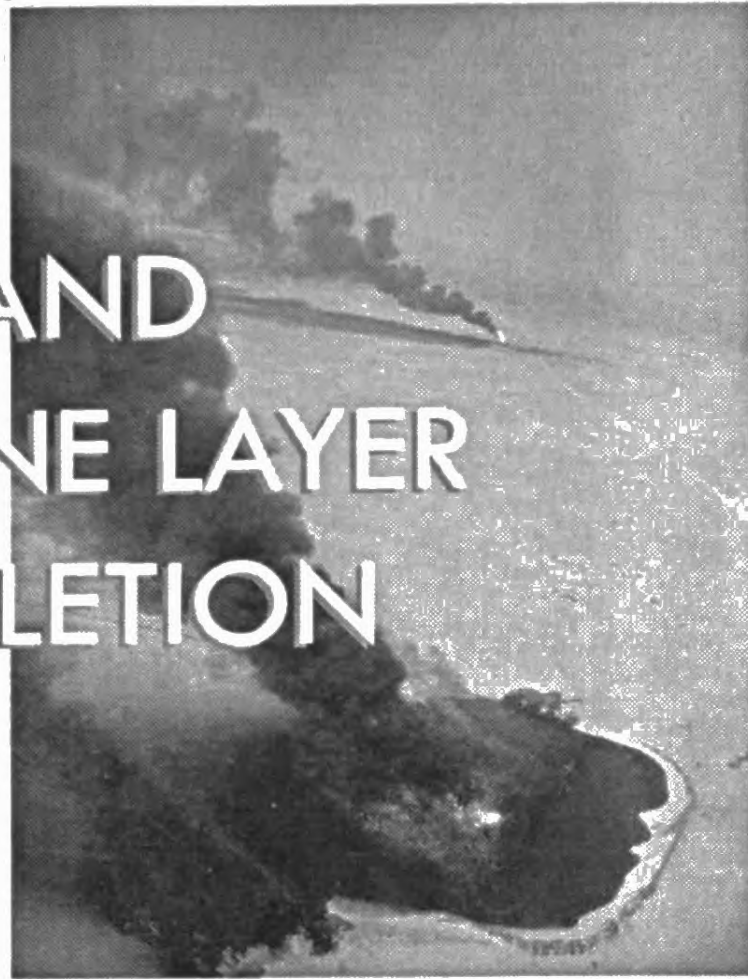
GLOBAL WARMING AND OZONE LAYER DEPLETION

Like the glass panes in a greenhouse, certain gases in the earth's atmosphere permit the sun's radiation to heat the earth but retard the escape into space of the in-

frared energy radiated back by the earth. This process refers as the greenhouse effect. These gases, primarily carbon dioxide, methane, nitrous oxide, and water vapor, insulate the earth's surface, helping to maintain warm temperatures. Without these gases, the earth would be a frozen planet with an average temperature of about -18°C instead of a comfortable 15°C (59°F). If the concentrations of these gases are higher, more heat could trap within the atmosphere and worldwide temperatures would rise.

Within the last century, the amount of carbon dioxide in the atmosphere has increased dramatically, largely because of the practice of burning fossil fuels, coal and petroleum with its derivatives. Global temperature has also increased by 1°C (about 1.8°F) within the past century. Atmospheric scientists have now concluded that at least half of that increase could be attributed to human activities, and they have predicted that unless dramatic action is taken, temperature will continue to rise by between 1° and 3.5°C (between 1.8° and 6.3°F) over the next century. Although this may not seem like a great difference, global temperature was only 2.2°C (4°F) cooler during the ice age than at present. The consequences of such a modest increase in temperature might be devastating. Sea levels will arise, completely inundating a number of low-lying islands and flooding many coastal cities such as New York and Miami. Many plant and animal species would probably driven into extinction, agricultural regions would disrupt, and the frequency of severe hurricanes and droughts is likely to increase.

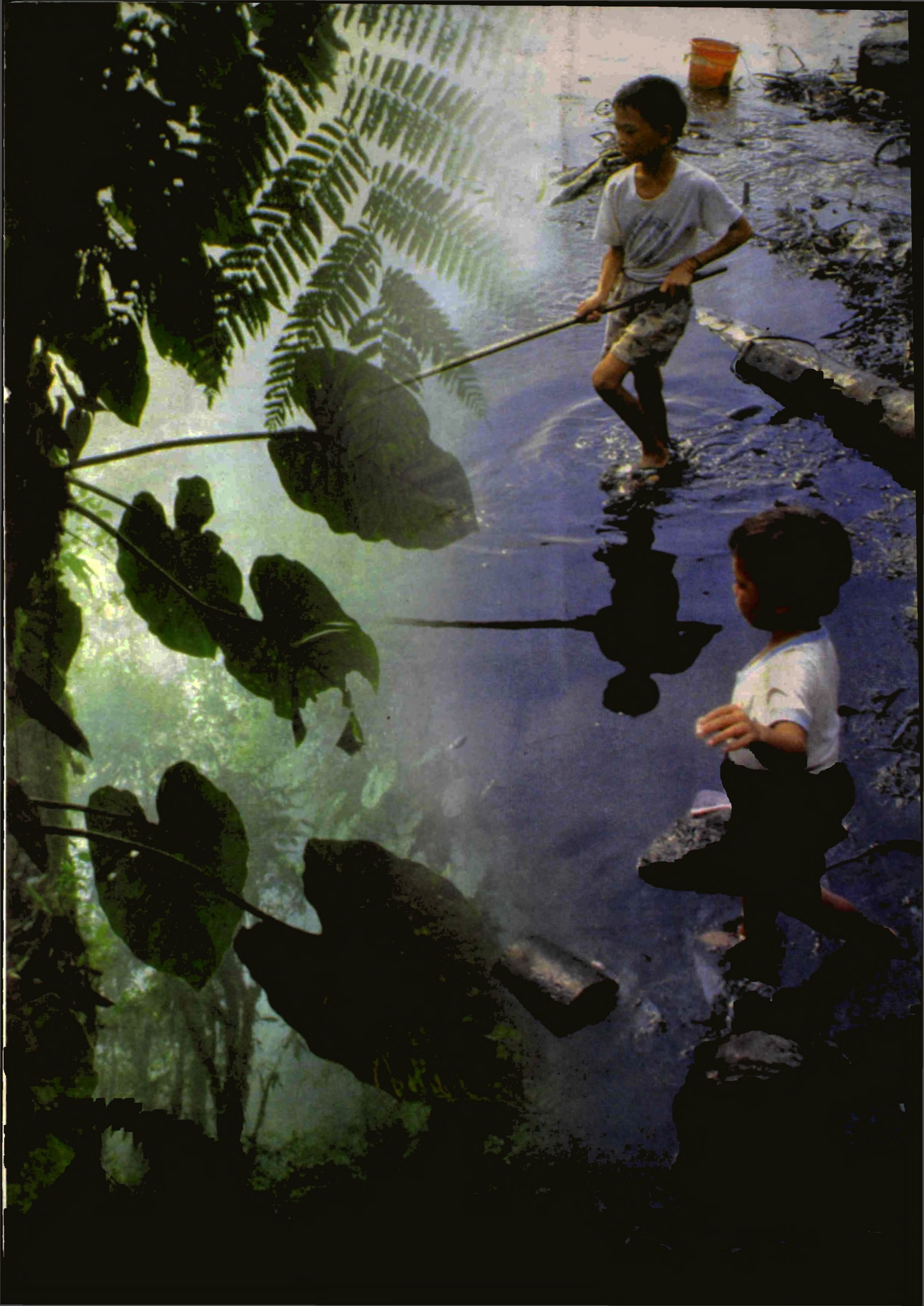
The ozone layer, a thin band in the stratosphere (a layer in the upper atmosphere), serves to shield



the earth from the sun's harmful ultraviolet rays. In the 1970s, scientists discovered that this layer was attacked by chlorofluorocarbons (CFCs), the chemicals used in refrigeration, air-conditioning systems, cleaning solvents and aerosol sprays. CFCs release chlorine into atmosphere. Chlorine in turn, breaks ozone down into its constituent parts of oxygen. As chlorine is not affected by its interaction with ozone, each chlorine molecule has the ability to destroy a large amount of ozone for an extended period.

The consequences of depletion of the ozone layer are dramatic. Increased ultraviolet radiation will lead to a growing number of skin cancers and cataracts and reduce the vigor of human immune system. Additionally, the growth rate of the oceanic plankton, the base of most marine food chains, will be negatively affected, perhaps leading to increased atmospheric carbon dioxide and thus to global warming. Even if the manufacture of CFCs were immediately banned, the chlorine already released into the atmosphere would continue to destroy the ozone layer for many decades.

Predicting the rate of ozone depletion is difficult. With many of the world's fastest developing countries in the process of industrializing and modernizing, there are reasons to believe that destruction of ozone layer and global warming will continue.



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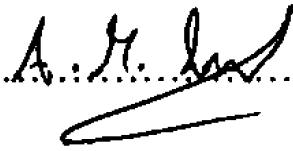
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