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Mr. Rafael Eitan, Minister
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Dear Reader:
The Spring 1998 issue of Israel Environment Bulletin coincides with the celebration of Israel's Jubilee and with the 25th anniversary of Israel's environmental administration. Each of the articles in this Bulletin reflects the innovative paths which Israel has chosen to take in order to continue its economic growth while protecting its precious environmental resources. Whether in the field of hazardous substance management or in the partnerships now emerging between industry and the environment, Israel is intent on implementing sustainable development strategies in which all stakeholders are involved. Finally, this year's environmental awards—whether in the fields of education, industry or on the individual level—aptly reflect the ever-growing environmental consciousness which is now evident at every level of society.

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MANAGEMENT OF HAZARDOUS SUBSTANCES IN ISRAEL

Safe management of hazardous substances is one of Israel's most pressing environmental concerns. Appropriate safety and control procedures for handling and treating hazardous substances and their wastes are integral elements of the country's environmental policy. Emission prevention, promotion of clean technologies, minimization of hazardous substance use and, when necessary, effective emergency response to accidents are essential elements of the Ministry of the Environment's policy on hazardous substances. At the same time, minimization, reuse, recycling, neutralization, and safe disposal lie at the heart of ministerial policy on hazardous wastes. Over the past five years, the legal basis for hazardous substance management has been strengthened and a wide variety of administrative and judicial enforcement and compliance tools have been introduced. This, in turn, has led to substantial environmental improvements, especially within the industrial sector in general and the chemical industry in particular. Hundreds of millions of dollars have been invested on compliance with stringent legal and professional requirements that largely parallel the requirements of the most developed countries worldwide.

Industrial Use of Hazardous Substances

It is estimated that Israel uses some one million tons of hazardous substances annually (excluding fuel), with major concentrations in such industrial areas as Haifa Bay, Ramat Hovav, Petah-Tikvah and Ashdod. Some 3,500 tons of hazardous substances are transported daily over Israel's roads.

Prior to 1993, when a wide range of laws and regulations on hazardous substances management were updated or introduced, the Ministry of the Environment used its authority under the Licensing of Businesses Law to impose environmental conditions on existing industrial plants within the framework of business licensing requirements. In cases of new industrial plants which were expected to adversely impact the environment, regulations under the Planning and Building Law called for the preparation of environmental impact statements in which plants were required, *inter alia*, to specify the measures which will be undertaken to prevent anticipated nuisances.

While business licensing requirements and environmental impact assessments continue to be used, the enactment of the Hazardous Substances Law in 1993 constituted a breakthrough in the "cradle to grave" supervision and management of hazardous substances. The administrative means for enforcement established by the law include a permit requirement for any premise dealing with a hazardous substance. This so-called Poisons Permit, which is issued by an official appointed by the Minister of the Environment, is only granted once the official is satisfied that the individual applying for the permit is familiar with the features of the hazardous substances in his possession and with safety requirements for its handling. The law imposes restrictions on the sale of toxic substances by manufacturers, wholesalers and retailers and prohibits import of hazardous materials by anyone not holding a permit or authorization from the appointed

official. It also prohibits the release from customs of a hazardous substance before customs officials ascertain that the importer possesses the necessary permit.

A recent amendment to the law (April 1997) has further strengthened the law by introducing further conditions into the permit, enlarging penalties, widening judiciary powers to issue performance orders, adding powers to issue administrative eviction orders, imposing personal liability on company directors and applying obligations on the state and its organs. The new penalties include high fines—ranging from $40,000 to $320,000—and imprisonment periods of between six months and three years, depending on the severity of violations which are specified within the law.

Licensing of Businesses Regulations, also promulgated in 1993, require owners of industrial plants in which hazardous substances are stored, sold, processed or produced to take all necessary measures to treat these materials according to best available technology and to manufacturer instructions. The regulations specify the measures that must be taken to prevent and/or treat accidents, such as leaks, dispersal or conflagration of hazardous substances. Owners of plants handling hazardous material are required to prepare and maintain a file on the treatment of hazardous substances in case of accident. They are also required to present an annual report to the local authority on the hazardous substances in their possession, their maintenance, storage, packaging, safety measures, and other information.

The regulations are enforced and supervised through the business licensing system that is operated by local authorities with the participation of relevant government ministries. Thirty-nine local environmental units and Associations of Towns for Environmental Improvement throughout Israel play an essential role in enforcing these regulations.

Integrated Emergency Response

Preparations for a system to deal with hazardous substances accidents date back to the early 1980s, but recent years have witnessed increased efforts to bring about concrete progress. A comprehensive contingency plan for integrated response in hazardous substances incidents was endorsed by the government, and today the tasks of each of the relevant bodies involved in the treatment of an accident involving hazardous substances are clearly delineated. Broadly speaking, the police is responsible for commanding and coordinating treatment at the site of the accident; the fire and emergency services are responsible for initial activities at the accident site; and the Ministry of the Environment is responsible for detection, monitoring and risk assessment and for recommendations to the commander in charge on such measures as population evacuation, closure of surrounding areas, transfer of hazardous substances to the Ramat Hovav hazardous waste site and site restoration. During emergency periods, the police transfers its authority to the Home Front Command (Civil Defense Corps.).

Each of the Ministry of the Environment's six district offices has a designated response team and a mobile unit and is aided by local environmental units, all under the professional guidance of the Hazardous Substances Department of the Ministry of the Environment. The

regional response teams are backed up by a departmental mobile unit which fulfills such services as response, calibration, equipment supply, maintenance, guidance and field advice to the district response teams and local units. The Information and Response Center for Hazardous Substances plays an essential role in the system, coordinating among the various response forces, collecting data from the scene and from the Meteorological Service, undertaking risk assessments and providing essential information and analysis services.

Major resources have been allocated toward implementation of the plan with special emphasis on training exercises and simulation techniques as well as review of the theoretical literature. Response teams must take an intensive five-day course which includes two days of practical exercises. A special training center for hazardous substances, established by the Ministry of the Environment, instructs and trains all public services, including police, fire fighting services, army units, hospitals and other medical services, that deal with catastrophes involving hazardous substances. Israel's industries are required to take all necessary steps to prevent accidents, prepare emergency procedures, train staff, and prepare suitable equipment and safety gear.

Information and Response Center on Hazardous Substances

Since the availability of up-to-date information on hazardous substances is a top priority, the Ministry of the Environment established an Information and Response Center for Hazardous Substances in 1993. This Center operates in coordination with the existing information center of the Home Front Command which was set up in 1988. The center is connto international databases and to the computer of the Customs Bureau. It supplies data on a 24-hour-a-day basis, in a system similar to the American CHEMTREC.

The center collects both quantitative and qualitative data on hazardous materials in every sector, as well as data on safety, detection, identification, alert, treatment and neutralization procedures. Data is largely derived from the information gathered during implementation of the various laws and regulations on hazardous substances and hazardous wastes. In order to expedite response capability during emergencies, information on key persons and facility layout is being collected and, in cooperation with the industrial sector, computerized industrial plant files with data on types and quantities of substances in each plant, environmental impacts and treatment in case of accidents are being prepared.

Treatment and Disposal of Hazardous Waste

Hazardous waste management in Israel is controlled within the framework of various regulations. Israel's licensing of business regulations on hazardous waste require owners of industrial plants to dispose of hazardous wastes originating or found in their plant, as soon as possible after production and no longer than six months from production, to the national site for the disposal and treatment of hazardous waste at Ramat Hovav. Disposal or treatment of hazardous waste elsewhere, for purposes of recycling or reuse, requires prior authorization by the Director General of the Ministry of the Environment. Regulations on import and export of hazardous waste (described later in this article)

enable Israel to fully comply with its obligations under the Basel Convention on the Transboundary Movement of Hazardous Substances.

Israel's national site for the disposal and treatment of hazardous waste, Ramat Hovav, was first chosen in 1977 for three major reasons: it is relatively far from populated areas, it is near industrial centers and it has the proper hydrogeological conditions. While problems abounded in the operation of the site from its opening in 1979 until 1987, major improvements have been introduced over the past ten years. In 1988, facilities for the neutralization of inorganic wastes began operating at the site, and in 1990 management was transferred to the Environmental Services Company (Ramat Hovav), a state-owned and controlled company that was established for the explicit purpose of operating the site.

The site has plants for neutralization, detoxification of cyanides, reduction of chromates and precipitation. It also has evaporation ponds and burial sites for neutralized solid wastes—all built in accordance with the US standard for the burial of such waste. The waste that arrives at Ramat Hovav is first introduced into a laboratory where it is analyzed, classified and routed for either chemical treatment, landfilling or incineration. The material is classified into three primary categories—organic, inorganic and solid waste—and each of the categories and subcategories is then routed toward a specific kind of treatment.

The major problem at the site since its erection has been the accumulation of some 65,000 tons of organic wastes that await incineration in temporary storage. The operation of a state-of-the-art incinerator, which began its run-in period at the end of 1997, will help solve this serious problem by helping to rid the site of these large quantities of organic wastes while incinerating incoming organic waste on a routine basis. The incinerator is currently capable of burning about 15,000 tons of organic waste per year, but its capacity may easily be increased to 20,000 tons per year. The $15 million incineration plant fully complies with the European Directive on the Incineration of Hazardous Waste.

The incinerator's run-in period was preceded by a risk assessment study which concluded that the incineration process can be made extremely safe. Furthermore, full operation of the incinerator depends on preliminary performance testing which is being analyzed according to EPA guidelines on hazardous waste incineration. For this purpose, the Ministry of the Environment has hired the services of a world-renowned expert who has accompanied the trial burn process. Thus far, the results have confirmed that the incinerator complies with all criteria. Additional assessments and tests are now being conducted with regard to the incineration of specific types of waste. A steering committee has been established to assure that the incinerator complies with operational and environmental standards related to waste incineration. The committee includes professionals from the Ministry of the Environment and surrounding local authorities as well as representatives of the area and public bodies.

The Ramat Hovav Industrial Council, which encompasses both the hazardous waste site and industrial plants in the area, operates a central system for the absorption and

neutralization of air pollutants, air monitoring detectors, and sophisticated alert and fire-fighting systems. With the impending operation of the incinerator, plans are being made for establishing a tank farm for the absorption of liquid organic wastes to replace the current method of drum storage.

Finally, the Environmental Services Company is erecting a new $2 million state-of-the-art laboratory which will accord with the highest European and American standards and enable the company to be certified according to both ISO 9000 and ISO 14002 standards. The existing laboratory at the site already engages in routine supervision of chemical processes as well as in research and development on various methods of hazardous waste recycling and treatment.

Improvements in Hazardous Waste Management

Over the last six years, since the Ministry of the Environment began dealing with chemical and toxic waste, an average of 45,000 tons a year have been received at the national site at Ramat Hovav. While there has been a dramatic and constant increase in the number of industries transferring hazardous waste to Ramat Hovav since 1990, the total amount of hazardous waste received at the national site has remained constant for the following reasons:

- In the early years of operations, the major hazardous waste generating industries disposed of large quantities of substances that had accumulated on their premises for a long time.
- Some large industries found other means of disposal, such as in old oil wells, with the approval of the Ministry of the Environment.
- Recycling activity began in Israel, both on-site at the generating plant and at specific recycling industries.
- Some industries have introduced improved and more efficient “clean production technologies” which generate less waste.

It is ministerial policy to continue to encourage alternative treatment of hazardous waste in order to promote the treatment of the increasing quantities of hazardous wastes which are generated each year. However, permits for hazardous waste treatment outside of Ramat Hovav for purposes of recycling and reuse are only granted after careful examination of the application and usually after implementation of a pilot demonstration. Special forms are used to help identify, supervise and follow up on industries that recycle hazardous wastes. In general, approvals are conditional on the use of best available technologies, compliance with existing standards and regulations, and on the same stringent conditions which are imposed on hazardous waste treatment at Ramat Hovav.

Hazardous Substances Recycling Facilities

Israel’s recycling efforts currently center on such processes as reclamation, regeneration, or recycling of solvents, organic substances which are not used as solvents, metals and metal compounds, acids or bases and used oil re-refining or other reuses of previously used oil. Thus, more than 40,000 tons a year of accumulated acid wastes generated in

certain plants are being reused in other plants to produce phosphate fertilizer. Other industries are successfully recycling metal wastes including aluminum, copper, tungsten, zinc, lead from used car batteries, tantalum and precious metals.

Inline with ministerial policy on the minimization of hazardous wastes, risk reduction through lowering toxicity levels and reuse and recycling, Israeli companies are currently trying to shift from end-of-pipe solutions to treatment at source solutions that include minimization of hazardous waste production through the avoidance of certain hazardous substances, introduction of clean production technologies and reuse and recycling of hazardous waste.

Israel's recycling facilities operate according to stringent environmental conditions using innovative technologies. Their activities are being encouraged by Israel's Ministry of the Environment as a means of reducing hazardous waste disposal in the country. To a large degree, the development of Israel's waste recycling industry is dependent on this country's ability to buy and sell hazardous wastes *for recycling purposes*. This ability may now be jeopardized by restrictions imposed on non-OECD members within the framework of the Basel Convention on the Tranboundary Movement of Hazardous Wastes and their Disposal.

International Cooperation

Cooperation with international organizations and states is an important component of Israel's environmental agenda. Israel fully supports the provisions of the London Guidelines which were developed by UNEP and the International Code of Conduct on the Distribution and Use of Pesticides developed by the Food and Agriculture Organization (FAO) as well as the procedure for obtaining the "prior informed consent" (PIC) of the importing country for certain banned or severely restricted chemicals. Presently, the PIC procedure is voluntarily implemented under existing legislation and all chemicals appearing on the present PIC list are treated as such.

Israel was one of the original signatories to the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal and ratified the convention in 1994, following the promulgation of Hazardous Substances Regulations (Import and Export of Hazardous Wastes) that provide the legal basis for the implementation of the convention. The regulations prohibit the import or export of hazardous wastes into Israel, except under a permit issued by the Minister of the Environment. Permit certificates for the import or export of hazardous wastes are issued only for recycling purposes, and are never issued for the import or export of hazardous waste for purposes of disposal, nor are they issued if the waste is destined for or originates in a country which is not a party to the Basel Convention.

Import is also conditional on the provision of data to the Minister of the Environment on the type of hazardous waste and its composition, based on results obtained in a certified Israeli laboratory. Requirements call for the hazardous waste to be transferred to Israel, stored, maintained and treated in an environmentally sound manner. In the case of export,

the competent authority under the Basel Convention must provide its written consent to receive the waste, and export must proceed according to its requirements. Moreover, the granting of a permit is subject to conditions imposed by the Minister of the Environment, and the permit may be canceled if the conditions or requirements set forth in the regulations are not met. Holders of permit certificates are required to report on quantities of imported or exported hazardous waste according to the requirements of the Minister of the Environment.

Israel's regulations on the import and export of hazardous substances, coupled with the country's accompanying hazardous substances legislation, incorporate the principle of "cradle to grave" management and supervision of hazardous substances and enable Israel to fully implement the provisions of the Basel Convention. However, the more recent decisions within the Basel Convention which relate to waste recycling and exclude Israel from Annex VII, in accordance with the criteria of OECD members, threaten to harm Israel's emerging recycling industry which cannot depend solely on the local market. The rationale behind phasing out the transboundary movement of hazardous wastes for recycling or recovery operations from OECD to non-OECD countries—namely that such movement has a "high risk of not constituting environmentally sound management of hazardous wastes as required by the Basel Convention"—clearly does not apply to Israel. In this country, environmentally and economically sound recyclable options for hazardous waste are a means of reducing the quantities of hazardous wastes destined for disposal. Israel's inability to buy or sell hazardous waste solely for the purpose of recycling under the recent decision may well mean the collapse of Israel's recycling industry and the subsequent increase in these hazardous wastes. In light of this, Israel has proposed its inclusion in the list of countries enumerated in Annex VII of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes along with the OECD, EU and Liechtenstein.

Sustainable Management of Hazardous Substances

In recent years, Israeli standards for pollutants have been revised and updated based on evolving research in economic, technological, health and agricultural effects. Within this framework, efforts are being made to review legislative and methodological developments in OECD countries and to amend and update Israeli legislation and policy accordingly. In addition, monitoring and inspection systems provide an up-to-date picture of the state of the environment, allow authorities to predict environmental trends, enable alert and response actions in cases of pollution episodes and contribute to the development of pollution abatement programs.

The Ministry of the Environment has invested major efforts in preparing the infrastructure for enforcing its laws and regulations: establishing a permit system, identifying facilities requiring permits, computerizing data, and promoting cooperation with customs officials and chemical suppliers to ensure that hazardous substances are not delivered to industries which do not maintain the requisite permit. These efforts, coupled with increased enforcement and compliance with legal and professional requirements, have allowed Israel to enter a new era of environmentally sound management of

hazardous substances and their wastes and to fully comply with the environmental objectives and spirit of the Basel Convention.

Fourth Conference of the Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal
23-27 February 1998, Kuching, Malaysia

One of the major issues which arose at the Fourth Conference of the Parties to the Basel Convention was the proposal of three countries to be included in Annex VII of the Convention. This Annex lists the countries that are exempt from a ban on the transboundary movement of hazardous wastes from OECD to non-OECD countries—namely OECD and EU countries and Liechtenstein.

Israel presented its proposal for inclusion in Annex VII within the framework of an environmental policy that seeks to promote the sustainable treatment of hazardous wastes as secondary raw materials by the Israeli recycling and reclamation industry, which operates under stringent environmental guidelines. Israel's environmental policy calls for minimization of hazardous waste and development of cleaner production technologies that promise to enhance sustainable development nationally, regionally and globally. The Israeli proposal accorded with suggestions of other Parties to the Convention to base Annex VII on professional and technical criteria rather than geo-political criteria.

Following is the statement made by the head of the Israeli delegation at the conclusion of the discussion on amendments to Annex VII in reference to agenda item IV/5:

"Since signing the Basel Convention in 1989 and following its ratification in 1994, Israel has been fully committed to the obligations and spirit of the Convention—adapting itself to it in its policies and administrative and legal systems.

It is on these grounds that Israel has presented its proposal tobe included in Annex VII, being confident that it can meet and fulfill any technical, professional and legal standard—not less than any other party presently included in Annex VII.

Nevertheless, we are aware that the time for acceptance of our proposal is not yet ripe so the proposal remains as is on the table of the Basel Convention. We are confident that in due time there will be a change of atmosphere and that further experience gained from the implementation of the Basel Convention will demonstrate the real need for objective and professional criteria to be in Annex VII.

Until such time let me say clearly and assure you that Israel will continue to respect and follow the decisions taken by the Conference of the parties, as it has been doing in the past and present."

ECONOMY AND ENVIRONMENT: A NEW PARTNERSHIP

Opening Statement: Conference on the Economic Benefits of Environmental Investment at the Factory Level

by Prof. Mordechai Shechter
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Back in 1984, *The Economist* asked people from different walks of life to make predictions for the next decade. When it reviewed them ten years later it found that Britain's refuse collectors had scored an easy victory over trained economists. Incidentally, if this is a consolation, finance ministers were at the bottom of the list. Besides telling us that the dictum "garbage in, garbage out" does not always apply, should we infer that economists are always wrong in their predictions? Not quite.

Environmental economists have for the past 30 to 40 years argued that economic realities cannot and should not be overlooked in the making and the execution of environmental policy. Moreover, that harnessing market forces, particularly price-like economic incentives, such as emission ("green") taxes and charges, marketable pollution permits, the bubble and banking concepts, can help achieve environmental objectives in a cost effective way, and allow firms more compliance flexibility to boot. That is, by exploiting, rather than antagonizing the profit maximizing motives of firms, the stated goals can be accomplished in a least-cost fashion, thereby saving scarce private and national resources. In spite of cold reception, if not outright opposition, on the part of all players, be they government administrators, green groups, or the polluting companies, environmental economists have stuck to their predictions and prognoses that adopting these policy tools is just a matter of time. And time indeed has proved them right. In the US (where even green advocacy groups such as the Environmental Defense Fund have lobbied strongly for the adoption of marketable permits), and eastern and western Europe, and elsewhere, one could witness in the past ten years or so an increased awareness, interest and application of economic incentives as an important tool in different areas of pollution control, abatement and prevention.

In a certain sense, this awareness is what motivated the organizers of this symposium too. It is the notion that what is good for the firm—profit and otherwise—with respect to its environmental "behavior," is not necessarily not good for society. Indeed, there are many instances, of which we shall hear in more detail during the conference, where less emissions and more recycling of wastes are also profitable to the company. Economy and environment do not necessarily antagonize each other. Moreover, in this conference we intend to prove that, contrary to Al Capone's famous saying, "You can get more with a kind word and a gun than with a kind word alone," evolving conditions indicate that maybe we can begin relaxing (but not giving up altogether!) our mandatory regulations that provide a credible threat of penalties, and rely more on voluntary self-regulation, guided by "self-interest" economic motives.

Thus, in recent years we are witnessing a certain shift in US strategy for environmental protection towards greater use of *voluntary* programs and self-regulation for pollution control rather than mandated command-and-control (CaC) approaches. If voluntary programs are successful in reducing pollution, they, too, have the potential to be more cost-effective than existing CaC regulations, because they allow firms flexibility to choose the most appropriate pollution control strategy, lower information costs and reduce the administrative burden on environmental agencies. A recent study examined this approach in the context of firms in the US chemical industry and their participation in the EPA's 33/50 Program during the period 1988-93. The analysis shows that firms decided to participate in the 33/50 Program because of rational economic self-interest. Incentives for participation included expected gains due to public recognition and technical assistance, and expected reduction in future liabilities and compliance costs under mandatory regulations. The Program led to a statistically significant decline in the release of toxic chemicals and had negative and statistically significant impact on the net income of firms in the short run; however, future profitability of firms improved significantly as the result of the program. The experience with the Toxic Release Inventory (TRI) Program—the public disclosure of environmental performance as a tool for regulating toxic emissions—has been largely similar: it achieved a 40-70 percent reduction in emissions, but did have a corresponding negative impact on share values at the time of reporting. However, those whose share values were most affected, acted in a more determined fashion to reduce pollution, thus leading to market value appreciation in the longer run.

In a somewhat similar vein one can recount a parallel story in the UK. During the 1990s, many larger companies developed a pro-active stance on environmental issues. The notion of '*compliance-plus*' behavior—out-performing the standards set down in government regulations—has gained wide currency in the boardroom as well as in the business studies literature. '*Clean technology,'* which promises both environmental improvement and economic gains, holds out the enticing prospect of a 'double-dividend' which renders irrelevant the traditional tensions between cost and higher environmental standards. Compliance-plus behavior is an increasingly sophisticated response to rising regulatory demands and public expectations. Shareholder value is enhanced by maintaining a clear gap between actual environmental performance and regulatory requirements.

But does the "warm green glow" of the corporate environmental statement provide assurance that companies are working towards real environmental improvement? Results of studies in the UK show that business behavior, certainly in larger companies, has changed significantly, though the task of maintaining shareholder value while meeting wider social demands for changes environmental behavior is no easy one. Compliance-plus strategies are being adopted by larger companies which are veterans of environmental and regulatory battles of the past. Such companies are typically found in sectors such as energy, chemicals, metals and vehicle manufacture. I should add that countries such as Israel need to explore the feasibility of designing incentives so that small, medium-size firms also engage in this kind of behavior.

In closing, it is the purpose of this symposium to present the US, European and Israeli experience in this area, with the hope that these examples will stimulate additional research and adoption of cost-reducing, profit-enhancing, and environmentally-benign processes and technologies. Let us remember that governments may take responsibility for setting policies aimed at mitigating the impact of human activity on the local and global environment. But, inevitably, it is individuals and companies which take the hands-on measures which lead to environmental improvement.

ECONOMIC BENEFITS OF ENVIRONMENTAL INVESTMENTS

Environmental investments at the factory level pay off. This was the theme of a March 1998 conference convened in Herzliya. Conference participants were impressed—and at time surprised—by the facts and figures presented. Several have already announced their intention to implement pollution prevention techniques in the hope of reaping both environmental and economic profit.

In the past, investment in environmental strategies was not seriously considered by companies on the assumption that any strategy that aims to protect the environment could not be economically beneficial. Today, this assumption is proving false. Economists have shown that companies can economically benefit from the incorporation of environmentally friendly technologies.

In an effort to elucidate these concepts, the Ministry of the Environment, in cooperation with the Israel Manufacturers Association, Ministry of Science, and the United States-Israel Science and Technology Commission, organized a conference entitled "The Economic Benefits of Environmental Investments at the Factory Level." With the aid of representatives from the Department of Economics at Haifa University, the Ministry of Industry and Trade and the Treasury, as well as some 20 companies from Israel and abroad, the conference set out to show just that—environmental investments can indeed generate economic benefits.

As representatives of Israeli and multinational companies reported on air and water pollution abatement, waste and wastewater minimization, and resource conservation, it became increasingly clear that environmental investments do more than benefit the environment—they benefit the plant itself in dollars and cents. In some cases, savings resulted from substantial financial investments in production technologies and strategies aimed at eliminating or reducing waste streams at source. In other cases, they resulted from good housekeeping, wise planning and new forms of cooperation whereby the wastes of one industry became the resources of others through recycling or reuse.

In all cases, companies stressed again and again that pollution prevention is a wise business decision. As the cost of waste treatment and disposal strategies increases, the economic benefits of pollution prevention are enhanced. The underlying philosophy of pollution prevention is that it makes more sense for the generator not to produce waste in the first place than to develop elaborate treatment strategies to prevent waste from damaging the environment. Companies have found that integrating pollution prevention strategies into their operations has actually improved production efficiency and economic profitability in a relatively short time period.

Case Studies from Israel and Abroad

The experience of such world renowned companies as 3M and Monsanto was of special interest to all participants. 3M reported that since instituting pollution prevention as the

primary means of addressing environmental challenges in 1975, its Pollution Prevention Pays program has saved the company over $750 million and prevented over 700,000 tons of pollution from entering the environment. Monsanto reported that since 1988, when it enacted a voluntary program to substantially reduce toxic and hazardous releases and emissions, toxic chemical emissions were cut by 90 percent in five years and overall waste was reduced by more than 50 percent. Commercial advantages came from recovering enough material to fund the necessary capital and operating expenses or by developing technologies that are of use to others.

However, large companies were not the only ones to report on profits. Examples also abounded of smaller size businesses that may be more relevant to the Israeli experience. Thus, for example, a representative of Nevada Small Business Development Center reported on 23 businesses and government operations that jointly invested about $300,000 in off-the-shelf proven waste reduction technologies. Savings are currently in the order of a quarter of a million dollars a year, and they avoid the generation of about 180,000 gallons of industrial and hazardous wastes. The average pay-back period for the technology investment ranged from four weeks to a year and a half.

Israeli participants in the conference hailed from the chemical, electronics, pharmaceutical, energy and metal industries. Many companies reported that savings resulted from circumstances which virtually "forced" them to invest in new environmental technologies—whether new standards or legal proceedings. Thus, Telrad, a leading telecommunications equipment manufacturer, was forced to upgrade its cooling tower systems following complaints of excessive noise by neighbors. The result—substantial savings and a return of the initial investment in two years.

In another case, the institution of more stringent emission standards for industrial effluents prompted Prigat, a producer of frozen juices and other products, to invest in an anaerobic facility for its Givat Haim plant. The severe problem of organic load was solved by a wastewater treatment system which breaks the organic wastes into methane gas. Today, the plant treats 600,000 cubic meters of wastewater for reuse in agriculture and uses the byproducts (biogas) for the production of electricity. The result—substantial savings in electricity and water and a payback period of three years.

The combination of more stringent environmental requirements and competition has also brought about changes at Teva Chemicals, producers of active raw materials for the generic pharmaceutical industry. New recycling systems now allow Teva to recover and recycle residues of organic materials and solvents which were previously discarded or destroyed. A special company was established by Teva to serve as a center for the recovery of solvents produced in its chemical plants, with some 5000 tons of solvents already recovered today. In the medium and long range, the solvent recovery system will enable reduction of inventories, safety, quality and reduction of purchase costs of raw materials while protecting the environment and soil, air and water resources.

More stringent national standards are not the only impetus for environmental investments. The globalization process which characterizes Israeli industries requires

industry to comply with environmental standards of international clients and with environmental conventions. Several Israeli companies have already been certified or are awaiting ISO 14000 certification—as part of their efforts to increase environmental protection or as a result of increasingly stringent standards from clients abroad or from insurance companies. To the surprise of many, the outcome of switching to new technologies or minimizing wastes in order to comply with stringent standards has been beneficial economically as well as environmentally.

Makhteshim, for example, one of the world's foremost manufacturers of agrochemicals, implemented process changes that helped save precious raw materials. In an effort to comply with the German TA Luft regulations, Makhteshim instituted several changes which soon translated into savings of millions of dollars—while preventing the emission of hazardous wastes into the environment.. Israel Bromine Compounds Ltd., one of the world's largest producers of bromine and bromine compounds and the first Israeli company to receive ISO 14000 certification, has saved hundreds of thousands of dollars in the recovery of dichloromethane by means of a recycling system based on activated carbon and prevention of its emission into the air.

While some savings resulted from production or process changes, others resulted from greater environmental awareness rather than financial investments. A notable example is Scitex, a world leader in digital prepress color printing. Recycling companies now utilize Scitex's production wastes—aluminum shavings, tin, lubricating oil, and silver—and save Scitex substantial sums in transporting these wastes to the national hazardous waste site at Ramat Hovav or to other treatment sites.

In a country plagued by wscarcity, water conservation is a top priority. Several companies are now opting for reverse osmosis and additional measures to conserve water and reuse it for a variety of purposes. Companies such as Intel have already reported substantial savings in water consumption, reduction of chemical use and reduction of salinity as a result of a switch to innovative technologies incorporating reverse osmosis. Implementation of similar water conservation and treatment technologies by a metal plating company, S & B Metal Plating and Heat Treatment, led to a substantial improvement in water quality, which in turn resulted in higher quality plating, water conservation and savings in transport and disposal costs to the Ramat Hovav hazardous waste site.

Yet another example of eco-efficiency is ascribed to Haifa Chemicals, the largest world supplier of potassium nitrate (for fertilizers). The company has invested in a cogeneration facility for the production of electricity and steam. Cogeneration enables the simultaneous production of electricity and steam by use of a single source of fuel and utilization of the residual heat which is emitted. Utilization reaches 85 percent as opposed to 35-45 percent in conventional processes. The electricity produced helps propel the compressors, process pumps and other electrical equipment of the plant while the steam is used in the production of potassium nitrate and phosphoric acid. Environmentally, the cogeneration process prevents superfluous and unnecessary emission of pollutants to the air. The use of low sulfur fuel also significantly reduces the

quantity of sulfur oxides emitted to the air. In cogeneration, emissions of sulfur oxides per hour are reduced from some 107 kilo (using conventional methods) to 12.5 kilo per hour. An added bonus is improved reliability of the electricity supply to the plant. Savings are substantial with a payback period of three years.

New Initiatives and Incentives

While there was general consensus at the conference that environmental investments pay off, participants stressed the importance of providing industry with incentives for environmental improvements. The Ministry of the Environment, which has repeatedly reiterated its commitment to this path, hopes to focus its efforts in the near future on the dissemination of vital information to industries on the benefit of environmental investments. The conference and its accompanying material constituted the first step in this new initiative. In addition to abstracts of the papers and lectures presented, the Ministry has published a preliminary compendium of case studies based on the experience of Israeli companies from the chemical, electronic, energy, food, metal, construction and paper industries and a manual entitled "Increasing Factory Profits via Environmental Investments, A Guide for the Perplexed". While the case studies clearly demonstrate, in terms of dollars and cents, that environmental investments are economically profitable, the manual includes examples of money saving strategies, checklists and tips on initiating pollution prevention programs, as well as useful appendices with tips for specific industries, Internet sites and lists of recycling plants in Israel. The proceedings of the conference will soon be published as well.

As a follow up to the conference, the Ministry is considering a project to advance economically advantageous environmental investments in industry. The proposed project, which would be experimental and relatively restricted in nature in the first phase, is designated to provide industry with financial incentives for the purpose of carrying out surveys which would help individual plants pinpoint areas where they can save money and reduce pollution—either with the help of in-house specialists or, if need be, outside consultants.

Concurrently, the Office of the Chief Scientist of the Ministry of the Environment is compiling information on some 30 additional case studies of economic savings that resulted from environmental investment in Israeli industries. It is also laying the groundwork for professional workshops targeted at specific industries or industrial sectors—from garages to the food industry. Each industry will be provided with specific information and guidelines on ways and means of increasing profitability while investing in the environment. It is anticipated that the dissemination of professional expertise by such means as workshops and the Internet will further encourage industries to increase profitability while protecting the environment.

Today, there is no longer any doubt that environmental investment is a "Win-Win Situation." Reduction of pollution generation at source reduces waste disposal costs. Decreasing the amount of raw material used or recycling it from the waste stream reduces the overall cost of investment in that raw material. Increased efficiency promotes the

conservation of such precious—and costly—resources as water and energy while maintaining production levels. In short, pollution prevention and eco-efficiency make business sense. The challenge today is to convince industry that environmental protection is not a burden but an opportunity—and a business opportunity at that. This is the message that the Ministry of the Environment is now trying to promote through its educational and financial programs.

GREEN BUILDING: GUIDELINES FOR ENVIRONMENTALLY RESPONSIBLE CONSTRUCTION

Significant energy savings ranging from 30 percent for air conditioning to over 50 percent for heating, increased work productivity, improved quality of life—these are only some of the advantages associated with green building processes. In a specially organized seminar which took place in Jerusalem on June 25, 1997, the Ministry of the Environment set out to prove just that to a receptive audience comprised of architects, contractors, developers, engineers and representatives of Israel's academic institutions. The green building seminar was convened with the cooperation of the Ministries of Finance, Housing, Interior, National Infrastructures and the Standards Institute and Israel Lands Authority. During the course of the seminar, guidelines on green building were distributed among the participants, wide-ranging lectures on green building in Israel and around the world were presented, and a film on the Audubon Headquarters Building in New York was screened.

Theory and Practice in Israel

Green architecture, sometimes referred to as "sustainable" or "environmentally responsible" architecture, promotes energy efficiency and encourages the application of life cycle methods for calculating materials; maximizes sustainable utilization of natural resources, recycled and recyclable materials; and incorporates healthy interior environments through enhanced natural lighting and ventilation and avoidance of toxic products. In addition, it requires the weighing of the economic and ecological factors of construction alternatives including such presently unacknowledged "costs" as resource depletion and energy consumption required for the extraction, transportation and fabrication of materials. Green design applies additional decision-making criteria to the management of building resources beyond architectural, aesthetic, and functional considerations.

The principles underlying green building are by no means alien to Israeli scientists and researchers. Nearly all of Israel's academic institutions engage in different aspects of research on the subject. Some prominent examples include the National Building Research Institute in the Technion-Israel Institute of Technology and the Desert Architecture Unit of Ben-Gurion University's Desert Research Institute. In these and other institutions, research findings are being translated into actual design projects in an effort to apply accumulated expertise to specific problems.

The International Center for Desert Studies in Sde Boker is one notable example of the application of such "green building" principles as energy efficiency and conservation through natural and innovative techniques for heating, cooling and lighting. Another is the Environmental Sciences Building at the Weizmann Institute of Science in Rehovot. This green building, inaugurated in 1996, was planned by architects in conjunction with Prof. Edna Shaviv, a Technion expert in climatic-energetic building. Over $5 million were invested in the building, with $700,000 alone invested in 12 different technologies for electricity conservation. Energy savings were mostly achieved through the

construction of large shaded windows, use of natural lighting, and sophisticated ventilation methods.

Environmentally Responsible Building Guidelines

Yet, these individual initiatives have proved too few and far between. To introduce the subject to as wide an audience as possible, the Ministry of the Environment has called for the incorporation of environmentally-sensitive construction materials and building practices into construction plans in the public sector throughout the country—and has formulated environmentally responsible building guidelines to help initiate this revolution. The guidelines are based on the environmentally-responsible building guidelines prepared for New York City in 1996 by Dr. Miriam Haran (now Deputy Chief Scientist of the Ministry of the Environment) and Professor Victor Goldsmith, on behalf of the Center for Applied Studies of the Environment of the City University of New York.

The guidelines deal with all stages of construction including:

- project and program planning including definition of the project and consideration of non-construction options, site selection, and building for the long term;
- design processes including integrated design processes and decision-making models for evaluating trade-offs;
- building energy use including life-cycle costing, site considerations (orientation and shading and massing), energy load management, building envelope (building shell, fenestration and glazing, slab and foundations and roof), building systems (mechanical, electrical, lighting, computers and telecommunication), and alternative systems (alternative energy technology);
- indoor environment including indoor air quality, daylighting, noise control, space layout and ergonomic and other health and safety considerations;
- material and product selection including life-cycle analysis (construction and finishing materials and furnishings) and waste management and reduction by design;
- water management including use reduction/management, stormwater runoff, use of non-potable water and landscaping;
- operation and maintenance considerations including planning and designing for healthy and efficient maintenance, post-occupancy evaluation and diagnosis, operation and maintenance protocol (construction administration testing, training and hand-off and designer-produced handbook and schedule), and solid waste recycling;
- construction considerations including health and safety issues (indoor air quality during construction, noise and toxic materials handling), water and energy management and construction, and demolition waste management (non-polluting and recyclable/reusable materials and other materials);
- external environmental issues including impact on the global environment, local impact and capacities (transportation and utilities), and building shadow.

On the Road to Implementation

The integration of environmental guidelines in building procedures is no longer a mere dream. In the aftermath of the June 1997 conference, an interministerial committee on green building was set up—with representatives of the Ministry of Environment, Housing, Interior, Infrastructures, Finance, Israel Lands Authority, Meteorological Service and Israel Defense Forces. The first results were not long in coming. The Ra'anana local environmental unit soon applied to the committee for help in preparing green building guidelines for a new neighborhood—the country's first "green neighborhood" in Kfar Saba in the environs of Tel Aviv. The guidelines have been incorporated into an environmental annex to the local masterplan which focuses on such elements as sound land use principles, building orientation, and prevention of adverse environmental impacts.

The environmental annex requires methods for the prevention of air, water and soil pollution, energy and water conservation, use of recyclable materials, separation of waste at source, and drainage and wastewater management. The neighborhood, which will include 1800 building units, will boast green areas and gardens and non-allergenic and water-conserving plants, while a neighborhood administration will help oversee environmental rules. Developers and contractors will be required to abide by the provisions of the annex.

In yet another initiative, the Ministry of the Environment has begun preparations for launching a "green hotel" competition later this year. The publication of a Hebrew manual on "green hotels"—now being completed—will not only promote environment-friendly activities in this sector but will guide hotels on ways and means of improving their environmental management systems. In order to comply with the conditions of the competition, hotels will have to prepare environmental management programs and demonstrate environmental gains.

The "Green-Building Seminar" proved an important landmark in raising awareness of this subject among many organizations in Israel. Thus, for example, an innovative program launched by the Ministry Industry and Trade should see the establishment of a consortium of academic institutions and industry on energy-oriented housing. Similarly, ideas have been raised for the construction of a model "green" government building in Jerusalem's Kiryat Ben-Gurion government complex with the support of the Ministry of Finance. Even the Israel Contractors Association has discussed the possibility of utilizing recycled water in building and road paving in order to save thousands of cubic meters of potable water.

The Ministry of the Environment's guidelines are now being applied to a number of demonstration projects. At a later date, based on the evaluation of pilot project performance, they will be refined to facilitate their application to building programs throughout the country. Properly managed, green pilot projects should yield reduced costs for the entire life of buildings, provide safer and more productive work environments, and prevent the inadvertent creation of pollution by-products that may later require costly remediation. In addition, they should help stimulate the development of a market for recycled and recyclable products. In short, implementation of the

guidelines should help usher in a new age of environmentally responsible building in this country.

Editor's Note: These green building principles are being integrated into Israel's draft strategy for sustainable development in the urban sector which is currently being formulated. Israel Environment Bulletin will survey the results of the interim reports prepared by the various target groups taking part in the formulation of Israel's sustainable development strategy in one of its upcoming issues.

ENVIRONMENTAL PRIZES GALORE

With the advent of 1998, Israel paid special tribute to a wide range of individuals, organizations and industrial plants which have chosen to place the environment high on their list of priorities. It is only fitting that as Israel celebrates its Jubilee Year and the environmental administration marks its 25th anniversary, environmental prizes should be distributed to so many deserving recipients in recognition of their contribution to a better environment in Israel.

The Chief Scientist of the Ministry of the Environment, on the occasion of one award ceremony, aptly reflected the sentiments of all: "If Israel's first fifty years were devoted to promoting security and increasing standards of living, priorities today must center not on mere existence alone but on a better quality of life and the environment for all the country's residents."

Environmental Shield to Industrial Plants

On January 21, 1998, the Ministry of the Environment and the Manufacturers Association of Israel signed a Covenant on Implementing Air Emission Standards—marking the new spirit of cooperation between industry and the environment which has emerged in recent years. It was only proper that on this momentous occasion, environmental prizes to industrial plants should be awarded as well.

Environmental Shields to the industrial sector have become a tradition in Israel. Each year, a selection committee, composed of representatives of the Ministry of the Environment and the Manufacturers Association, visits dozens of candidates for the prize. This year, the following two plants were chosen:

Nesher Ramla**, one of three cement plants operated by Israel Cement Enterprises Ltd., won the Environmental Shield for its efforts to improve air quality. The plant operates two production lines: a dry system with a 5000 tons/day capacity and a wet line with a 2100 tons/day capacity. In 1999, a new dry line will replace the wet-system kilns and further increase production capacity. The plant operates under a personal decree issued by the Ministry of the Environment within the framework of the Abatement of Nuisances Law.**

Nesher Ramla's efforts to reduce dust emissions include:

- **Installation of electrostatic precipitators and filters in the stacks.**
- **Transport of raw material from quarry to factory on a covered conveyor belt rather than trucks.**
- **Construction of barriers and landscaping of the perimeters of all quarries with trees and greenery.**
- **Planting of greenery and grass on the plant premises to reduce dust dispersion.**
- **Continuous monitoring in the stacks of the kiln.**

The plant complies with the German TA Luft regulations, plans to establish three monitoring stations to detect suspended particulates and nitrogen oxides, and utilizes fly ash, chemical gypsum and a variety of organic wastes to generate energy while exploring new methods to recycle waste as a source of energy.

Carlsberg Israel Beer Breweries **of Ashkelon, a major producer of beer and soft drinks, won the Environmental Shield for its wastewater treatment. Since 1995, the plant produces some 210,000 hectoliters of beer annually and some 500,000 hectoliters of soft drinks.**

The plant operates a facility for the anaerobic treatment of industrial sewage whose main function is to reduce organic load and enable its wastewater to be introduced into the municipal sewage system for further treatment.

Some 160,000 m3/year or 800 m3/hour of sewage are treated at the plant. The system, which disposes of 85 percent of the dissolved BOD and 80 percent of the dissolved COD, allows the plant to comply with the environmental conditions stipulated in its business license.

Environmental Prizes to Schools and Youth

"Increasing awareness of the environment is a prerequisite for environmental protection; the educational system is our most important tool in achieving this target." This was the central theme of Israel's first award ceremony aimed at paying tribute to secondary schools and students for their environmental projects. As speaker after speaker mounted the podium on May 4, 1998, it became crystal clear that environmental education is not mere instruction alone; it is a mission, a key to the future in which Israel's youth must play a central role. Moreover, environmental education has an added bonus: the combination of army uniforms and traditional kaffiyehs which filled the audience attested to the fact that environmental awareness is a unifying factor, able to bring together wide segments of the population on behalf of a common cause—a healthy and safe environment.

Two prize categories were awarded: one for an outstanding research project on the environment prepared by an 11^{th} or 12^{th} grader and one to a high school that promotes environmental studies. Following thorough evaluation, four outstanding research projects were chosen—ranging from development pressures on Lake Kinneret to wastewater treatment in the Arab settlement of Sakhnin. Four more prizes were awarded to schools whose support for and involvement in environmental studies were exemplary. In addition to the winners, seventeen consolation prizes were distributed—books on Israel's birdlife—to encourage all applicants to continue in their research and work on behalf of the environment.

Criteria for selection of the best research projects included scope and depth of the project in tackling the environmental problem, appropriate use of scientific tools such as databases, computers and scientific equipment, and level of fieldwork. Criteria for

selection of the outstanding schools included initiative and professional and scientific support to the students, success in promoting environmental studies and projects, teacher involvement in environmental research projects, and relative number of students working on environmental research projects.

The byproducts of the prize competition were felt throughout Israel's educational system. In addition to the recognition accorded to outstanding students and schools, Jews and Arabs alike, the competition evoked additional benefits as well: environmental awareness grew and many more students chose to prepare "ecotopes" (research projects focusing on the environment) as part of their final examinations.

Environment Minister's Shield

For the third year running, Israel's Minister of the Environment has awarded an Environmental Shield to voluntary organizations, groups and individuals working on behalf of the environment. This year's ceremony was especially significant—marking both Earth Day and Israel's Jubilee. It aptly captured the spirit of voluntarism that Israel has tried to cultivate over the years.

The initiative for the prize comes from the National Council for Voluntarism in Israel. Through its Forum of Organizations for Quality of Life and the Environment, headed by former Knesset Minister Mrs. Nuzhat Katzav, the Council is dedicated to fostering voluntarism in the environmental realm. The Forum, which originally worked along with the Histadrut Consumer and Environmental Protection Authority, now boasts 90 organizations and non-profit associations including women's organizations, immigrant groups, volunteers in local councils, and volunteers from the Arab sector.

Following are the 1998 winners:

Council for a Beautiful Israel: Founded in 1968, the Council is responsible for a wide variety of environmental activities focusing on the beautification of Israel, whether in industrial plants, army camps, educational institutions, community centers or hospitals. The Council's Center for Environmental Studies in Tel Aviv, where this year's ceremony took place, is dedicated to promoting environmental education and hosts some 500 classes each year

Hadassah Israel: This women's organization initiated a wide host of environmental activities in 1992. It promotes environmental awareness and involvement through workshops and seminars side by side with such concrete steps as separation of waste at source for recycling purposes and campaigns on behalf of public transport.

Naja Association for Environmental Protection-Sakhnin: This is one of the country's most active environmental associatin the Arab sector. It participates in a regional project to demonstrate environmental technologies within the framework of the multilateral peace talks, promotes educational projects, and cooperates with farmers in an effluent

reuse project for the irrigation of olive trees. The prize pays tribute to the Association for its environmental work in the Arab sector.

Yedida Lahav (WIZO): Mrs. Yedida Lahav began her environmental work in 1953 when she first became a staunch activist on behalf of a litter-free and nuisance-free environment. Her dedicated work exemplifies the spirit of volunteerism on behalf of the environment.

Salah Makladah – Dalyat el-Carmel: Salah Makladah's environmental activities focus on the "Hai Bar" in the Carmel, a wildlife reserve dedicated to restoring the area's native fauna. Despite a physical handicap suffered as a result of an accident during the course of his volunteer work at the Hai-Bar, Mr.Makladah continues to exemplify the best in volunteerism on behalf of nature conservation.

Levi Landman: As deputy director of a community center in Jerusalem, Mr. Landman initiated environmental activities targeted at the ultra-Orthodox population of his neighborhood in 1968. He volunteer activities have helped improve physical appearance of the neighborhood while solving a host of environmental problems. The prize pays tribute to Mr. Landman's volunteer work in the ultra-Orthodox sector.

Public Council for the Protection of the Environment, Hadera: This group of citizens, which began working on behalf of the environment in 1993, has helped promote environmental consciousness in their city and induce public bodies to act on behalf of the environment. The group has prepared an educational video, recruited youth to protect environmental sites, prepared a sound and light show and organized environmental competitions. The prize was awarded to the Public Council for its environmental activities in the municipal sector.

Resident Forum for the Environment, Oshiot, Rehovot: Beginning with a group of 10 volunteers, this group has succeeded in initiating and implementing a host of environmental projects including beautiful garden competitions, children's workshops, and cleanliness campaigns. The prize was awarded in recognition of its environmental activities on the community level.

Henry Ford Conservation Awards

The Henry Ford European Conservation Awards have celebrated the work of individual groups across more than 30 European countries and Israel for the past 15 years. This year, some 113 projects were presented for consideration in the Israeli competition, held in cooperation with the Boxenbaum-Neta Foundation and with the endorsement of the Ministry of the Environment and the Ministry of Education and Culture. Criteria for selection included usefulness and benefits of the project, devotion, originality, financial needs and international implications.

Conservation Engineering Category**: The first prize in this category was awarded to Ms. Gila Kahila Bar Gal from the Hebrew University of Jerusalem and to Shaul**

Aviel from Kibbutz Sde Eliyahu for their project: The Barn Owl as a Biological Pesticide against Rodents in Agricultural Areas. Utilization of the barn owl in agricultural fields has helped decrease the rodent population, limit the damage caused by rodents to agricultural yields, minimize the use of chemical pesticides against rodents and prevent damage to precious ecosystems, underground water sources and soil.

Heritage Category**: The first prize in this category was awarded to a project submitted by Shlomo Geva of the Economic Society of Haifa. The project presents the exemplary restoration and conservation of the German Colony in Haifa—from restoration of the facades of Templer buildings to restoration of the People's House and its conversion to a museum.**

Youth Project Category**: The first prize in this category was awarded to two projects:**

1. ***Adoption of Water Sites in the Golan Heights:*** **This initiative of the Gamla School in Katzrin saw the students construct footpaths to the springs and creeks of the area in a manner which displays the tourist potential of the area without damaging natural resources, landscape or cleanliness.**
2. ***Preservation and Reproduction of Wild Plants in Israel:*** **This project, submitted by Jaber Nadir from the Agricultural Education Farm in Taibbe, displays the dedication of this 8th grader who, in cooperation with other organizations and students, helped preserve and nurture wild plant gardens.**

Natural Environment Category**: The first prize in this category was awarded for the reclamation of the garbage dump at Kfar Kassem, a project implemented by the Southern Region of the Association of Towns for Environmental Protection. Kfar Kassem is the first garbage dump to be rehabilitated and restored in Israel in accordance with stringent closure procedure. Restoration has transformed the dump from a smelly and smoke-infested ecological menace which jeopardized water sources into a landscaped park.**

ENVIRONMENTAL LEGISLATION

National Parks, Nature Reserves, National Sites and Memorial Sites Law, 1998

In April 1998, one of Israel's foremost laws on nature protection received its newest facelift. The newly amended National Parks, Nature Reserves, National Sites and Memorial Sites Law of 1998 establishes a new and united "Nature Protection and National Parks Authority" while abolishing the Nature Reserves Authority (NRA) and the National Parks Authority (NPA) as separate entities.

The evolution of the law largely parallels the development of Israel's environmental administration. The original National Parks and Nature Reserves Law, enacted in 1963, established the administrative and legal basis for the protection of natural habitats, natural assets, wildlife and sites of scientific, historic, archeological, architectural and educational interest in Israel. Two separate authorities—the NRA and NPA—were created for this purpose. The NRA is responsible for about 370 nature reserves spanning a total area of 6.1 thousand hectares while the NPA is responsible for about 90 national parks spanning a total area of 25,000 hectares.

In 1992, an updated version of the law was enacted—the National Parks, Nature Reserves, National Sites and Memorial Sites Law. The amendment reflected the transfer of ministerial responsibility for national parks from the Prime Minister's Office and the Ministry of the Interior to the Ministry of the Environment. The amendment also expanded the protection mechanisms for areas designated as national parks and nature reserves in national masterplans but not yet declared or developed as such, and introduced further prohibitions on damage, trade and commerce in protected natural assets.

In the aftermath of a 1995 government decision to transfer ministerial responsibility for the Nature Reserves Authority from the Ministry of Agriculture to the Ministry of the Environment, the Minister of the Environment decided to reassess the existing organizational system. Accordingly, a professional interdisciplinary committee was appointed to review the system and to recommend a new framework which will facilitate concentration of efforts and resources to achieve budgetary, professional and organizational efficiency for the ultimate purpose of promoting conservation and development of natural assets, landscapes and heritage values.

The recommendation of the committee, namely to unite the two authorities, required legislative and organizational changes. Accordingly, the newly amended law creates the framework for operating the united authority and for achieving the targets of the unification through a synergistic effect. The amended law includes substantive as well as technical changes. Most importantly, it strengthens the administrative enforcement powers of the director of the Authority in minimizing or preventing damage to a nature reserve, national park or natural asset, as broadly defined in the law.

The 1998 law ensures that all stakeholders are represented on the National Parks, Nature Reserves and National Sites Council which advises the relevant ministries, planning bodies and local authorities on matters pertaining to implementation of the law. The Council is composed of government, local government and public representatives as well as experts in zoology, botany, ecology, archeology, geology, geography, history, economics, landscape architecture and conservation.

Mr. Aharon Vardi, who served as director-general of the Ministry of the Environment in 1996 and subsequently as director of the National Parks Authority, was appointed to head the newly established Nature Protection and National Parks Authority.

Collection and Disposal of Waste for Recycling Regulations (Obligation of Waste Disposal for Recycling), 1998

While Israel's recycling law is three years old, regulations designed to facilitate its implementation were only recently published following a long process of preparation and negotiation. The regulations, which will enter into force on July 1, 1998, set graduated recycling targets which require local authorities to gradually reduce their waste for disposal by means of recycling according to the following timetable:

- At least 10% by December 31,1998;
- At least 15% by December 31, 2000;
- At least 25% by December 31, 2007.

The regulations require the head of a local authority to inform the Minister of the Environment, within 30 days of their entry into force, of the amount of waste that was generated by the local authority during the previous year. A special reporting form with details on the components of the waste generated by the local authority is included in the regulations.

The regulations also provide for exemptions based on the economic feasibility of waste recycling or existing economic alternatives for waste disposal or technologies for waste reuse which are not environmentally harmful. Exemptions are also subject to reporting procedures which are specified in the regulations.

Promulgation of the regulations is a first phase in the implementation of the recycling law which was only partially implemented previously. With the entry into force of the regulations, the Ministry of the Environment will continue to engage local authorities in a dialogue in order to enhance implementation of the specific provisions of the regulations—a first step toward increased recycling and better waste management in Israel.

ISRAEL ECOLOGICAL SOCIETY ANNOUNCES NEW CONFERENCE

The Israel Society for Ecology and Environmental Quality Sciences has announced its Seventh International Conference—Environmental Challenges for the Next Millenium—to be held in Jerusalem on June 13-18, 1999. In order to bring together the best in global and regional environmental scientists, the Society has joined forces with the International Water Resources Association (IWRA) which will, for the first time, hold its Regional Conference on Water and Environmental Cooperation in Jerusalem. The conference is also co-sponsored by the International Association on Water Quality (IAWQ) with the participation of the International Association of Water Law (AIDA).

As in previous conferences, the subjects which will be addressed will include all facets of ecology and environmental sciences including ecology and conservation, water and wastewater, regional cooperation, environmental education, air quality, and environmental management, law and policy and more. The global and regional aspects of these and other topics will be covered in plenary and parallel sessions, along with specialized workshops, panel discussions and poster presentations. Special attention will be placed on discussing critical environmental issues in a regional framework.

Additional highlights of the conference will include a special mini-symposium on sustainable environmental education, an Environmental Youth Forum and a special workshop on Palestinian water problems.

Calls for papers are now being distributed. Abstracts for oral or poster presentations should be submitted by February 15, 1999. For registration and further information, please contact the Conference Secretariat:

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INTERNATIONAL YEAR OF THE OCEAN

In recognition of the importance of the ocean, the marine environment and marine and coastal resources for life on earth and for sustainable development, the United Nations has declared 1998 as the International Year of the Ocean. The objective of the declaration is to focus the attention of governments, organizations and individuals on joint activities on behalf of the marine environment. The intensive development activity which has taken place along tens of thousands of kilometers of seas and oceans presents a major threat to the world's sensitive marine and coastal environments. Actions must be focused on protecting these sensitive and finite resources today if irreversible damage to future generations is to be prevented tomorrow.

More than 100 states have expressed their commitment to join the initiative of the Intergovernmental Oceanographic Commission (IOC), UNESCO and the U.N. Assembly itself. EXPO 98, which took place in Lisbon in May 1998, devoted a special place to this initiative. Israel's pavilion featured a unique film produced by the Ministry of the Environment, in cooperation with the Israeli Diving Federation, on the underwater environment.

By a special resolution on the International Year of the Ocean, the Government of Israel has appointed a Committee of the Directors General of all relevant ministries, chaired by the Director General of the Prime Minister's Office, to coordinate its activities on the conservation of Israel's marine and coastal resources. The government decision requires government ministries to act, each in its own field of expertise, to implement the aims of the international initiative.

Following are some of the activities planned by the Ministry of the Environment in the areas of enforcement, cleanliness and information:

- Production of an educational kit for teachers and guides which will include articles on the marine environment and on marine and coastal protection. The kit will be accompanied by an activity book for students and by slides.
- Organization of a drawing competition on the marine environment targeted at primary, intermediate and secondary school students.
- Poster and slogan competition on the marine environment targeted at college, secondary and intermediate schools students.
- Adoption of sections of open beaches by industries, public organizations and local authorities entrusted with caring for them and preserving their cleanliness.
- Initiation of coastal cleanups along tens of kilometers of Mediterranean beaches in the summer of 1998. Field Study Centers of the Society for the Protection of Nature in Israel and youth movements will participate in the cleanup campaign which will be financed by the Ministry of the Environment. Groups will be provided with special shirts produced by the Ministry of the Environment to mark the International Year of the Ocean.

- Industrial prizes, within the framework of a competition organized by the Ministry of the Environment and the Manufacturers Association, will be awarded to industrial plants which will initiate activities on behalf of marine pollution prevention.