State of Israel

Ministry of the Environment

The National Infrastructure for the Sound Management of Chemicals

A National Profile

Report Presented by the Ministry of the Environment to the United Nations Institute for Training and Research (UNITAR) and the Inter-Organization Programme for the Sound Management of Chemicals (IOMC)

Prepared by the Information and Response Center for Hazardous Substances, Ministry of the Environment

July 1998

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Acknowledgements

This comprehensive report was made possible through the cooperation of a large number of institutions, public bodies and professionals.

Special thanks go to Dr. Israel Barzilay, Head of the Division of Hazardous Substances, Mr. Robert A. Gilead, head of the Information and Response Center for Hazardous Substances and other colleagues. Additionally my appreciation goes to Ms. Shoshana Gabbay, whose experience in environmental reporting was of immeasurable help.

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Preface

This document encompassing the profile assessing the national infrastructure for the sound management of chemicals, is the first of its kind compiled by the State of Israel. The information represented herein has been gathered from diverse sources in both the private and public sectors. The data are generally up to date through December 1997, however, some statistics could not be revised in time for this publication. The basic structure of the profile is in accordance with that requested by the IOMC guidance document. Nevertheless, certain chapters that were suggested have been omitted in the name of enhancing coherence of other chapters *viz*. that on 'Inter-Ministerial Commissions and Coordinating Mechanisms' and 'Resources Available and Needed for Chemicals Management' whereas the chapter entitled 'Awareness/Understanding of Workers in the Public' was not included due a lack of sufficient information. Moreover, blanks were left in tables where information was considered to be either unreliable or insufficient.

The inclusion of Annex II is two provide an overview of the scope of expenditure in public services in environmental protection, however this has largely increased in recent years. The Israel Chemical Catalog in Annex III was included to give an idea of the range and magnitude of the Israeli Chemical Industry and not intended as a means of publicity.

Chapter 1

National Background Information

1.1 Physical and demographic Context

Form of government: multiparty republic with one legislative house, the Knesset with 120 members of parliament.

Chief of state: President.

Head of government: Prime Minister

Official languages: Hebrew, Arabic

Local languages: Hebrew, Arabic, English

Total Population (1995): 5,386,000
Urban: 90.5%;
Rural: 9.5%.

Age breakdown (1993): under 15, 30.0%; 15-29, 25.0%; 30-44, 20.0%; 45-59, 12.3%; 60-74, 8.9%; 75 and over, 3.8%.

Population economically active: (1994): total, 2,019,200; activity rate of total population, 37.1% (participation rates: over age 15, 53.6%; female, 42.8%.

Birth rate per 1,000 population (1994): 21.2 (world average. 25.0).

Sex distribution (1993): male 49.6%; female 50.4%.

Population projection: (2000) 5,881,000; (2010) 6,713,000.

Doubling time: 44 years.

Density (1995): 260.2 persons per sq. km.

Life expectancy: (1992): male 75.1 years; female 78.5 years.

Literacy (1992): total population age 15 and over literate 3,390,027 (94.8%); males literate 1,698,696 (97.1%); females literate 1,692,331 (92.7%).

Educational attainment (1991): Percentage of population age 25 and over having: no formal schooling, 6.7%; primary education, 22.5%; secondary, 39.6%; post-secondary and higher 31.2%.

Unemployment rate: males, 7.8%, females, 7.6%.

1.2 Political and Geographic structure of the country:

1.2.1. Government ministries

Government authorities are divided into three different levels—national, regional and local. At the national level, the ministries are responsible for formulating an integrated and comprehensive national policy and for developing specific strategies, standards and priorities. The ministries consist of divisions that deal with the range of issues that are under their jurisdiction. There are seven district offices within each Ministry, including one in the Administered Territories, which are charged with implementing national policy.

1.2.2 Map of the State of Israel

1.3 Industrial and Agricultural Sectors

1.3.1 Industry in Israel: An Overview

Scarcity of water, a relatively small population, limited land reserves, and lack of natural resources has led Israel to base its economy on a well trained work force and advanced technologies generated by a network of academic and research institutions. In view of the country's qualified labor force and scarcity of mineral resources, industry has concentrated on manufactured products with high added values based on products based on Israel's own scientific and technological infrastructure. Until the 1970s, traditional industrial branches such as food processing, textiles and fashion, furniture, fertilizers, pesticides, pharmaceuticals, chemicals and rubber, plastic and metal products provided most of the country's industrial output. In the past two decades, however, advances have been made in the fields of medical electronics, sophisticated agrotechnology, telecommunications, pharmaceuticals, computer hardware and software.

In 1995, some 19,000 industrial firms employing more than 412,000 workers (14% of them with higher education) produced an output of $50 billion, 34% of which was exported. Israel's industrial output growth rate during 1990-94 was 32.5% (second highest to Korea's 34.5 %). Investment in industry amounted to $4.3 billion in 1995, a 10% rise compared to 1994 (when a 24% rise was recorded). The most significant growth has occurred in the high-tech sectors that are skill and capital intensive and require sophisticated production techniques as well as considerable investment in research and development (R&D). These sectors accounted for 37% of industrial production in 1965, 58% in 1985, and 62% in recent years. Over 90% of the funds devoted to industrial R&D were spent by high-tech firms.

1.3.2 Agriculture in Israel: An Overview

Agriculture in Israel is mostly intensive. There are, however, several regions, in the south the Negev and in the north the Galilee, that have extensive crop systems which are devoted largely to cereals and olive groves. The intensive production requires high inputs of chemicals in the form of fertilizers, pesticides and post harvest treatments. Irrigation water is used in novel ways to increase efficiency and applied frequently in the form of fertigation (fertilization through the irrigation system). Since the establishment of the state in 1948, the total area under cultivation has increased by a factor of 2.6 to 433,700 ha, whereas the irrigated land has increased by a factor of 8 to 240 000 ha. Most of the requirements for food are met by domestic production and some 1,000,000 m^3 of water and 90,000 tons of fertilizer are applied annually. Of the fertilizers, the bulk is N and P, with less K which is prevalent in most soils necessary. Fe and Zn are often deficient in the basic soils and are added micronutrients. Over

1.1,000,000,000 liters of milk, 1,330,000 tons of fruit (80% citrus) and close to 1,000,000 tons of vegetables are produced annually.

Awareness of the detrimental effects agriculture may have, has come to the fore in recent years, with the consequent establishment of the Agroecology Division within the Ministry of the Environment in 1987. The Hazardous Substances Division of the Ministry of the Environment and the Nature Reserves Authority oversee the prevention of improper use of Agricultural chemicals.

Major strides have been made in applying biological alternatives to chemical pest control, both post and pre-harvest. These trends are apparent in the Integrated Pest Management (IPM) approach where well calculated combination of chemical, biological and agronomic techniques are used simultaneously to achieve pest reduction. The "Organic" or "Biological Agriculture" approach, whereby the input of any mineral forms of fertilizer or synthetic pesticides is forbidden, has gained ground in recent years with a large annual increase in the number of farmers who receive certification under the auspices of the International Federation of Organic Agricultural Movements (IFOAM). It is estimated that close to 5% of Israel's agricultural exports are in the organic category.

Table 1a: Overview of the Manufacturing Sector

Sector	Micro facilities[1]	Small facilities[2]	Medium facilities[3]	Large facilities[4]
		10^3		
Industrial/manufacturing	15.227 (80%)	3.186 (17%)	0.397 (2%)	0.183 (1%)

[1] 1-15 employees, [2]16-100 employees, [3]101-250 employees, [4] More than 251 employees

Table 1b: Type of Agricultural Production by Region (1996)

Region	Major Crops
Jerusalem	Deciduous fruit
Tel Aviv	Market vegetables
Haifa	Subtropical fruit, market vegetables
North	Deciduous fruit, grains
Central	Subtropical fruit, market vegetables, cotton
South	Grains, tropical and subtropical fruit, cotton

Table 1c: Breakdown of Industrial Production by Region (1996)

Region	Total Value of Production ($) 10^3	Number of Industrial Facilities 10^3	Number of Employees 10^3
Jerusalem	8.683	1.534	21.3
Tel Aviv	39.710	6.831	99.4

Haifa	29.623	2.335	54.1
North	23.719	2.672	56.2
Central	38.865	3.952	83.3
South	19.364	1.373	35.5
TOTAL	159.964	18.697	349.8

1.4 Industrial Employment by Major Economic Sectors

Table 1d: Industrial Employment by Major Economic Sector (1996)

ISIC	Description	Number of Facilities	Total Employment 10^3	Output Value 10^6	Major Emissions and Effects
31	Food Industry, Beverages and Tobacco	1745	55.9	6720.571	Organic: Increased BOD in Effluent
32	Textiles/Clothing and Leather	2531	46.8	2976.571	Heavy Metals, Organic Contaminants
33	Wood and Wood products	3284	22.6	1670.857	Organic: Increased BOD in Effluent
34	Paper, Paper Products and Printing	2214	30.91	3347.714	Organic: Increased BOD in Effluent
35	Chemical/Coal/Petro / Plastic products	979	43.3	8339.429	Hydrocarbons, Heavy Metals, VOC
36	Non-Metallic mineral products	844	13.9	2518.857	Inorganic, VOC
37	Basic Metal Industries	4409	55.1	5238.571	Metals, VOC
38	Fabrication of Machinery and Equipment	2613	98.1	12312.29	VOC
39	Other Manufacturing Industries	331	4.0	260.2857	VOC
	Mining and Extraction (Minerals, Metals)	43	4.4	950.2857	VOC, Dust

TOTAL	18993	356.00	44335.43

Chapter 2

Chemical production, Import, Export and Use

Israel's Chemical and Pesticide Industry: An Overview

The chemical industry is not easily characterized. It usually includes industrial chemicals (e.g., fertilizers, pesticides, petrochemicals and synthetic fibers) and other chemical products (including paints, soaps, toiletries, food additives and medicines). The chemical industry is a major supplier of materials to other industries and other segments of the economy, including high performance chemicals for high tech industries such as the electronics and microelectronics industry, Israel's largest growing sector.

Israel's chemical industry is based largely on those fields in which Israel has a relative advantage, such as products based on minerals found in Israel (magnesium, bromide, phosphates, potassium), a petrochemical industry based on local oil refining, pesticide and organic intermediates industry, partially based on local research and development and a technologically advanced pharmaceutical industry which produces both generic drugs and unique products.

The main chemical industries are concentrated in three areas: Haifa-Akko in the north of the country, Ashdod in the center and Beersheba-Mishor Rotem-Ramat Hovav and the Dead sea in the south.

Israel's Ministry of Industry and Trade has established the following categories for Israel's chemical industry: minerals and salts, oil refining and related products, petrochemicals, pharmaceuticals and fine chemicals, organic intermediates, pesticides, detergents and soaps, paints, glues and adhesives, biotechnology and diagnostic products and other industries (e.g., food, candles, industrial gases). Some categories, such as oil refining, are dominated by one company; others, such as detergents and soaps, paints, glues and adhesives, consist of dozens of companies.

Types of Products

Data provided by the Chemicals and Minerals Division of the Ministry of Industry and Trade reveals the following main components of Israel's chemical and pesticide industry:

Basic Inorganic Chemicals

Most of the inorganic chemical industry is two conglomerate producers, which are basedon the two principal natural resources:

- The Dead Sea—source of potash, bromine, magnesium, magnesium salts and magnesium oxide, various fertilizers and other inorganic salts.
- The Negev mines—sources of phosphate rock, some exported as is and the rest undergoing further processing to phosphoric acid and its derivatives, to be used primarily as fertilizers and as food and feed additives.

Basic Organic Chemicals

The petrochemical industry draws upon the oil refineries in Haifa for its basic raw materials. This industry has grown and developed near these refineries and manufactures a wide range of organic chemicals, including aromatics (principally benzene, toluene and xylene), methanol, formaldehyde and polymers.

Biologically Active Chemicals

This sector consists of two main branches: pesticides for agricultural and domestic use and pharmaceuticals. Pesticides and herbicides production for agricultural and domestic use is a well-established industry whose products are the result of long-term research and development. The industry uses the advanced agricultural infrastructure in Israel as a convenient testing ground for new products. Over 80% of production is for export. The industry also exports a wide range of finished formulations, some of which are based on newly developed controlled-release and slow-release technologies.

The pharmaceutical industry has undergone a process of rationalization and centralization in recent years and is now largely dominated by the two companies. The industry manufactures therapeutically active raw materials—most of which are exported to companies manufacturing finished dosage forms—as well as the formulation of pharmaceutical specialties for human and veterinary use, for both the home and export markets. In all, the industry produces more than 700 different brand name products, comprising several thousand formulations. Most of the exported materials are produced by chemical synthesis but, in recent years, efforts and resources have been devoted to the development of drugs and diagnostic aids using biological processes, mainly biotechnology. These processes include extraction and purification of natural materials, as well as the manufacture of new or existing drugs using genetic engineering.

Other Industrial Chemicals

Other chemicals are used as intermediates and raw materials by other chemical companies as well as by a variety of other industries, in particular electronics, textile and metalworking industries. Most such chemicals are based on organic syntheses while some are inorganic in origin.

Consumer Chemicals

Included in this category are the dozens of industries supplying soaps and detergents, paints, adhesives, mineral oils and greases for general industrial and automotive maintenance, chemicals for the cosmetics industry, domestic pesticides, purified gases, candles, matches, etc.

Size and Extent of the Industry

Israel's chemical industry is a major component of the country's manufacturing capacity, representing nearly 15% of the country's entire industrial production (excluding diamonds). According to statistics provided by the Israel Ministry of Industry and Trade, total chemical production in 1996 was approximately $7 billion (including mining and minerals), total imports were $4 billion while exports totaled about $2.5 billion, representing a substantially larger share of the national total—20% (again, excluding diamonds). Sales of the chemical industry from local production are expected to grow by 4% in 1997 and to reach $7.3 billion. Import of chemicals (with the exception of fuels) is expected to grow by 7% in comparison to 1996 and to reach $2.3 billion.

Some 24,000 people are employed by the chemical industry—only 6% of the industrial labor force. The industry is thus capital-intensive rather than labor-intensive and represents the highest yield per employee of any manufacturing sector. In 1996, sales per employee reached $269,000.

Gross investment in the chemical industry has totaled about $800 million in recent years. While R&D spending in the chemical industry averages only about 3% of the total turnover, the largest share of R&D is targeted at pharmaceuticals (10-12% of turnover) and biotechnology and diagnostic products (20% of turnover).

In 1996, sales in the pharmaceutical branch reached $710 million, a 4.3% growth. Export alone was $330 million, a rise of 7% in comparison to 1995. In 1997, a growth of 8% is expected with sales reaching $770 million, of which $370 million will be for export, a 10% growth. Industrial R&D investment in pharmaceuticals and medical devices is more than $15 million per annum, a sum that is further supplemented by budgets allocated to academic R&D in this field. Israel's academic institutions,

which have over the years made a significant contribution to all sectors of the chemical industry, have been particularly conspicuous in spawning the country's biotechnology companies.

Export

The obvious limitations of the home market, due to its size and buying potential, have virtually forced Israeli companies to look overseas for continued growth and to invest ever-increasing efforts to obtain a greater share of world markets. Israel is in a unique position of having free trade area agreements with the European Union, the US and more recently with Canada and Turkey. Also helpful are agreements establishing joint research and development projects with foreign partners, including the Fourth Framework Program of the EU's Commission on Science, Research and Development.

Accordingly, nearly all the sectors of Israel's chemical industry are export oriented, with the possible exception of oil refining that was established to supply the local energy and vehicle fuel market. For many products, over 90% of sales go for export. There has been a rapid increase in exports over the past decade: from $1 billion in 1986 to $2.5 billion in 1996, an average annual growth of 10%.

Some 42% of exports are to Europe, 22% to the US, 10% to Japan and the Far East and the remainder to the rest of the world. Continuing capital and R&D investment coupled with strong industry-university cooperation provide good reasons for believing that the growth of the chemical industry in Israel will continue to accelerate. Long term planning by the Ministry of Industry and Trade calls for 7% growth in real terms over the next five years.

One of the major advantages of the Israeli chemical industry is its versatility affording flexibility in switching between various products in response to market demands. This is not at the expense of quality, as evidenced by the fact that nearly 40% of the turnover of the chemical sector are derived from export sales, mostly to industrially developed nations. Plants manufacturing for these markets fully meet the quality assurance and other standards, including environmental impact requirements of both the US and the EC.

Israel's marketing strategy has led to greater awareness of the need to meet strict international standards of quality and environmental control. An excellent example is the pharmaceutical industry, most of whose products are manufactured according to the stringent standards of the US Food and Drugs Administration. In cooperation with US counterparts, Israeli scientists will handle clinical trials for the lengthy and strict American FDA drug approvals, testament to their advanced skills. The FDA Harmonization Committee of the US-Israel Science and Technology Commission held two seminars in Israel in 1995 and 1996 on clinical testing according to Good Laboratory Practice (GLP) and Good Clinical Practice (GCP) which are required by the FDA.

Trends

In recent years, major investments have been made in Israel's local chemical industry and in Israeli companies abroad, a trend that is expected to continue in 1997 and beyond. Perhaps one of the most salient characteristics of Israel's chemical and pharmaceutical industry is its becoming multinational. In the past two years alone, the Israeli chemical industry invested some $600 million in the purchase of chemical plants throughout the world while multinational corporations bought chemical plants in Israel. For example, Israel's largest chemical companies bought companies in the US, Germany, France, Britain, Hungary, Italy, Brazil and Spain.

Beginning in 1993, there was an increase in the rate of investments in the chemical industry, with new investments reaching a level of nearly $800 million per year. Some $2 billion alone have been invested in the world's largest producer of potassium nitrate. A major part of the investment has been in a plant for extracting magnesium from Dead Sea brines. Investment in this venture, has made Israel the foremost source of magnesium in the world.

Similar investment and expansion have characterized Israel's bromine manufacturing company, already one of the world's largest, while some pesticide production plants are among the world's foremost manufacturers of agrochemicals. Israel's petrochemical industries have already undertaken an expansion program that will increase annual production of polymers to 600,000 tons per year. These investments will help ensure ongoing growth, particularly in export sales.

The future is promising, both in the traditional fields of manufacturing and in the utilization of Israel's professional work force in R&D to facilitate the development of new and advanced industries. The Israel Manufacturers Association forecasts that by the turn of the century, sales will exceed $10 billion with exports exceeding $4 billion.

One of the most important issues on the agenda of the chemical industry today is the environment. As a result of the growing attention given to this issue, the chemical industry is preparing to invest hundreds of millions of dollars on compliance with new legislation in Israel, which largely parallels the requirements of the European Union. In the past three years, the chemical industry has invested about $250 million in environmental improvement.

Table 2a: Chemical Production and Trade

Chemical Type	Production / Manufacturing		Imports		Exports	
	Value $ 10^6	Tons	Value $ 10^6	Tons	Value $ 10^6	Tons
Pesticides					296	

Fertilizers (N, P, K)	9064062		450
Petroleum Products			339
Consumer			22
Pharmaceutical (Including Veterinary)	308	315	373
Industrial/manufacturing			126
Intermediate and Organic Compounds			138
Other		226	23
TOTAL			1749

Source: Manufacturers Association

Table 2b. Chemical Waste Generation by type

Chemical Waste	Recycled	Exported[1]	Imported[1]
All Metals	33000	6600	4950
Solvents	13000		
Other	40000		
TOTAL	86000	6600	4950

[1]Hazardous wastes in accordance with the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes. All imports and exports of hazardous wastes are destined only for recycling.

Table 2c. Chemical Wastes Destination

Waste Treatment	Quantity treated
Toxic Waste Site	35000
Recycling	86000
Exports	6600
Imports	4950
Other methods [1]	60000
TOTAL	192000

[1] Used as fuel, cement filler or rendered inactive

Chapter 3

Priority Concerns Related to Chemical Production, Import, Export and Use

The main concerns in this respect are as would be expected in industrialized countries, *viz.* in air and water quality, and in the preservation of the natural environment. Steps have been taken in maintaining the biodiversity of the indigenous flora and fauna, including efforts to reintroduce species that have become extinct to the area over the last few thousand years. The intensive nature of Israeli agriculture has had detrimental effects on the environment as does the ever increasing demographic ratio of people to land. Due to a large influx of immigrants in recent years, pressure has increased on the authorities to make land available for construction and transport. All these activities have their potential environmental impact.

It is estimated that Israel uses some 1 million tons of hazardous substances annually, with major concentrations in such industrial areas as Petah-Tikva, Haifa Bay, Ashdod, Beersheba and the Ramat Hovav Industrial Zone. Some 3,500 tons of hazardous substances are transported daily over Israel's roads. In 1996, some 225 accidents involving hazardous substances occurred, most of which resulted from the emission of LPG, anhydrous ammonia or chlorine or spills of diesel oil, hydrochloric acid and bromine.

Before 1993, hazardous substances in existing industrial plants were supervised by means of environmental conditions attached to business licenses. Within the framework of the Licensing of Business Law, industries were required, *inter alia*, to report on types and quantities of hazardous substances, and to comply with numerous conditions relating to storage, monitoring and safety precautions. New industrial plants, which were expected to adversely affect the environment were required to prepare environmental impact statements that include programs for environmentally safe storage, treatment and transport of the hazardous materials.

Enactment of the Hazardous Substances Law in 1993 constituted an important breakthrough in the "cradle to grave" supervision and management of hazardous substances. The administrative means for enforcement established by the law include a licensing requirement, according to the Licensing of Business Law, for any premise engaged in the sale of hazardous substances, and a Poisons Permit requirement for any person dealing in toxic substances. Licensing of Business Regulations on hazardous industrial plants were promulgated in 1993 and 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 the best available technology and to manufacturer instructions.

In recent years, the Ministry of the Environment has invested major efforts in preparing the infrastructure for enforcing these and related laws and regulations: establishment of a permit system, identification of facilities requiring permits, computerization of data, and contacts with customs officials and chemical suppliers to ensure that hazardous waste is not delivered to industries that do not maintain the requisite permit. The Information and Response Center for Hazardous Substances plays an important part in the enforcement effort by collecting both quantitative and qualitative data on hazardous materials in every sector. Information is received from importers, suppliers, users, producers and transporters of hazardous substances as well as from the agricultural sector, government ministries, the central hazardous waste site at Ramat Hovav, customs officials, local authorities and licensing authorities.

Table 3a: Description of Problem Areas

Nature of Problem	City / Region	Pollution Problem	Underlying Cause(s)
Air pollution	Ramat Hovav, Beer Sheva	SO_x, NO_x and VOCs	Erratic factory emissions
Soil pollution	Ramat Hovav, Beer Sheva	Organic and Metallic contaminants	Factory and Toxic waste site effluent
Water pollution	Ramat Hovav,	Factory and Toxic waste site effluent	Factory and Toxic waste site effluent
Air pollution	Haifa Bay	SO_x, NO_x and VOCs	Factory emissions
Water pollution	Haifa Bay	Acidic sludge	Factory effluent
Air pollution	Haifa, Tel Aviv and Jerusalem	SO_x, NO_x and VOCs	Vehicle emissions

Table 3b i: Priority Concerns Related to Chemicals

Nature of Pollution / Contamination	Scale	Level of Concern	Ability to Control problem	Availability of Statistical data	Specific Chemicals Creating Concerns	Priority Ranking
Air	local	medium	medium	sufficient	SOx, NOx, ODSs and VOCs	3
Inland Waterways	national	high	low	insufficient	NO_3^- , PO_4^-, organic pollutants	2
Marine	regional	low	medium	sufficient	NO_3^- NO_2^-, P_{total}, Hydrocarbons	4
Ground Water	national	high	low	insufficient	nitrates, chlorides	1
Soil	national	medium	low	insufficient	Pesticides	3
Residues in Food	national	medium	low	insufficient	Organo-phosphorus, carbamates	2
Drinking water	national	high	high	insufficient	nitrates, chlorides, trihalo-methanes	3
Hazardous Wastes	local	medium	high	insufficient	Heavy metals, organic contaminants	2

Table 3b ii: Priority Concerns Related to Chemicals

Nature of Pollution / Contamination	Scale	Level of Concern	Ability to Control problem	Availability of Statistical data	Specific Chemicals Creating Concerns	Priority Ranking
Occupational Health: Agriculture	National	High	Low	Insufficient	Organo-phosphorus, carbamates, triazines	
Occupational Health: Industrial	National	Medium	Low	Sufficient	VOCS, NO_x, SO_x	
Public Health	Local	Low	Low	Sufficient	VOCs, NO_x, SO_x, water contamination	
Chemical Accidents: Industrial	National	Medium	High	Sufficient	Fuels, organic solvents	
Chemical Accidents: Transport	National	Medium	High	Sufficient	Bromine, LPG, fuels, organic solvents	
Unknown Chemical Imports	Regional	Medium	Medium	Insufficient	Chlorinated organic pesticides	
Storage / Disposal of Obsolete Chemicals	National	High	Medium	Insufficient	Banned pesticides	
Chemical Poisoning, narcotics	National	Low	Low	Sufficient	All relevant chemicals	
POPs	National	Low	Low	Insufficient	POPs	

Chapter 4

Legal Instruments and Non-Regulatory Mechanisms for Managing Chemicals

4.1 National Legal Instruments Addressing the Management of Chemicals

Supervision and control of hazardous substances and the industries that deal with them—for the purpose of protecting the environment, safety and human health—is undertaken in two spheres:

Supervision and regulation of industrial activity related to hazardous substances, for planning and prevention and in regulating activities and treatment during hazardous substance accidents; and

control over the hazardous substances themselves including limitations, standard setting, registration, reviews, etc.

Supervision and control are undertaken within the framework of a wide range of laws by various agencies, as specified in the previous section. Besides the specific legislation regulating the treatment and use of hazardous substances and hazardous wastes, government authorities have powers concerning hazardous substances under their relevant legislation in such areas as marine, air and road transportation, agricultural uses, civil defense, public health and worker safety. Due to the wide array of legislation, only the most relevant will be discussed below.

4.2.1 General Supervision of Industry

General supervision of industry is carried out at the stages of planning, establishment and operation within the framework of two basic laws:

Planning and Building Law, 1965

This law establishes a comprehensive legislative framework that monitors and regulates all building and land-use activities in Israel, public and private, within a three-level hierarchy: national, district and local. The law prohibits building activities without a permit which can only be issued if it fully complies with the statutory master and detailed plans applying to the specific area and project.

One of the most important tools in the land-use planning process is the Environmental Impact Statement (EIS). EISs have been used in Israel from the mid-1970s, although regulations governing the requirements of EISs were promulgated under the Planning and Building Law in 1982. Israel's EIS document must include five sections:

- Description of the environment to which the plan relates, before the development activity.
- Specification of the reasons for preference of the proposed site of the plan and its activities.
- Description of the activities resulting from implementation of the proposed plan.
- Specification and assessment of the projected environmental impact resulting from the implementation of the plan.
- Presentation of EIS findings and proposed conditions to be included in the plan regulations.

Israel's EIS regulations specify four kinds of projects for which an EIS is mandatory: power stations, airports, ports and hazardous waste disposal sites. The regulations also urge the preparation of an EIS for a wide range of other development activities including industrial plants situated outside designated industrial zones—if the planning authority considers that significant environmental impacts may occur beyond the immediate vicinity of the project. In practice, regional planning authorities regard this recommendation as mandating an EIS. In addition, any planning authority may require an EIS on any plan expected to have environmental implications and every Ministerial representative on the national or district planning level may require an EIS for any plan under discussion. Since the Ministry of the Environment is represented on the national and district planning authorities, it can exercise its right to require an EIS if the authorities themselves do not do so.

The Ministry of the Environment invests special efforts in the preparation of plan-specific guidelines for the preparation of EISs to ensure that the document, when submitted, will be a tool for decision makers. In addition, experts at the Ministry evaluate each EIS and issue an opinion that includes a summary of the main findings, the Ministry's conclusions, and a list of recommendations to the planning authority. In most cases, the planning authority welcomes the professional advice it receives from the Ministry of the Environment and incorporates all of its recommendations in its decision concerning the plan.

Licensing of Business Law, 1968

The Licensing of Business Law, despite its apparently general nature and its being legislated in 1968, is a central and vital tool in environmental enforcement. The law empowers the Minister of the Interior to designate and define businesses requiring licenses in order to ensure proper environmental conditions, prevention of nuisances, safety of those on or near the business premises, prevention of the spread of animal diseases, prevention of pollution of water resources by pesticides, fertilizers or medicaments, safety of public health, proper sanitary conditions and compliance with the Planning and Building Law. Licenses are subject to prior approval by persons empowered by the Ministers of the Environment, Health, Police, Labor and Welfare or Agriculture, depending on the type of business. Each of these ministries may make the granting of the license conditional on compliance with certain conditions. In cases where a business requiring a license is also licensable under another law, the business license may be withheld until licensing under the other enactment is completed. For example, businesses handling hazardous substances are required to obtain Poisons Permits (under the Hazardous Substances Law) before they are granted a business license.

The Ministry of the Environment imposes environmental requirements within the framework of the license. These include: limitations on emissions to the environment, soil, air, marine and other water resources based on various environmental standards (such as the Best Available Technology Not Entailing Excessive Cost - BATNEEC). Other relevant considerations are, for example, the location of the installation and its character. Specific limits based on emission standards issued by the Federal Government of Germany have been set within the framework of business licensing for various industries. Many of these conditions accord with the Recommendations of the OECD Council on Integrated Pollution Prevention and Control (IPPC).

The Ministry of the Environment is preparing drafts, modeled on the German TA-Luft 1986 and on its Dynamic Concretisation Clauses of 1991, for the following emission standards: total dust, volatile organic compounds, nitrogen oxides, sulfur dioxide, vaporous or gaseous inorganic substances, inorganic dust particles and carcinogenic substances.

Licenses under the law are issued by the head of the local authority in whose jurisdiction the business is located. Operation of a business without a license or in contravention to the conditions of the license or to business licensing regulations is a criminal offense. The law provides efficient tools for the supervision of industries and businesses, by stipulating special conditions to a license and by allowing for the administrative or judicial closure of businesses not abiding by the law, its regulations and/or special conditions. In recent years, a variety of environmental regulations have been promulgated within the framework of this law, including regulations on hazardous waste disposal, hazardous industrial plants, pest extermination and sanitary conditions in gasoline stations.

Public Health Ordinance, 1940

This ordinance provides a definition of nuisances and hazards, granting the Ministry of the Environment, Ministry of Healthand local authorities powers to order the removal and elimination of nuisances and hazards including those caused by inappropriate treatment of hazardous substances or wastes. The Ministers of Health and Environment may also promulgate regulations under this ordinance.

Abatement of Nuisances Law, 1961

This law prohibits and controls air, odor and noise pollution. The law authorizes the Minister of the Environment to address specific polluters with personal decrees instructing them on the adoption of measures for the prevention of pollution. These decrees have been instrumental in controlling air pollution from major industries. In addition, the Minister of the Environment has the authority to promulgate regulations defining national ambient standards. Draft regulations setting emission standards for air pollutants have recently been prepared.

Within the framework of this law, regulations have been promulgated including prohibitions on black smoke emissions from premises, emissions of particulate matter, air pollution from heavy fuel oil burners, and emissions of air pollution from solid waste disposal sites.

4.2.2 Chemical Safety in the Industrial Sector

Hazardous Substances Law, 1993

Enactment of the Hazardous Substances Law in 1993 marked an important breakthrough in the safe management of hazardous substances. The Hazardous Substances Law, with its attached listings of toxic substances and harmful chemicals, provides the Ministry of the Environment with authority for “cradle to grave” management of hazardous substances.

The law defines “harmful chemicals” and “poisons” as substances that are specified in the appendixes to the law. The “poisons” list includes those hazardous substances that, in the opinion of the Ministry of the Environment, should be controlled and supervised. It is based on the list of materials specified in the “Orange Book” of the UN on Recommendations on the Transport of Dangerous Goods, except for explosives. Hazardous substances (including chemicals) are listed and quantified within a recently amended annex and within attached regulations.

The law establishes a permit requirement for any premise dealing with hazardous substances. This so-called Poisons Permit, which is issued by an official appointed by the Minister of the Environment, is only granted once the appointed 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. Permit applications call for a description of the types and quantities of hazardous substances in the possession of the business, their risk level and the neutralization means available to the plant in case of an accident. Ministry of the Environment guidelines require that Poisons Permits only be granted following physical examination of the plant or installation.

The holder of a Poisons Permit is required to maintain a toxic substances register in which details of all sales and purchases of hazardous substances are recorded. These record books facilitate tracking of the movement of hazardous substances throughout the country.

The law prohibits import of hazardous substances by anyone not holding a permit or authorization by the appointed official. Israel's legislation on the import and export of goods prohibits the release from customs of a hazardous substance before customs officials ascertain that the importer possesses the necessary permit. The Ministry of the Environment is currently working with the customs authority on integrating the customs code number with the listing of hazardous substances that is enumerated in the law. A recent amendment to the law (April 1997) has further strengthened the law by enabling the introduction of 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, and responsibilities on the state and its organs.
The above mentioned new penalties include high fines - ranging from maximum sums of 150 thousand Shekels (approx. 45 thousand US$) to 1200 thousand Shekels (approx. 350 thousand US$), and maximum imprisonment periods of between six months and three years, according to the severeness of various violations which are specified within the law.

> The data provided in Poisons Permit applications is an important tool in the Ministry of the Environment's efforts to widen its supervision and control over the hazardous substances found in every industrial plant in Israel. Supervision and control extend to such essential activities as manner of storage, signposting, emergency response capability, hazardous waste disposal and emissions control. Implementation of the law has also helped the Information and Response Center for Hazardous Substances to accumulate additional data on the types of hazardous substances used in Israel, quantities, and manner of use as well as to identify users and locations.

Licensing of Business Regulations (Dangerous Industrial Plants), 1993

The Licensing of Business Regulations of dangerous industrial plants play an important role in improving safety and emergency response capabilities in industrial plants and include directives that are similar to the guidelines set in the Seveso Directive.

The regulations require owners of industrial plants in which hazardous substances or wastes are stored, sold, processed, transported or produced (even when the final product is not itself hazardous) to undertake all necessary measures to treat these materials according to the best available technology and in accordance with manufacturer instructions to prevent environmental risk and ensure environmental protection. The regulations specify measures that must be taken to prevent and/or treat mishaps and accidents, such as leaks, dispersal or conflagration of hazardous substances, as defined in the UN "Orange Book". They stipulate that hazardous substances in industrial plants may only be treated by skilled personnel who have undergone appropriate training.

Owners of plants handling hazardous substances are required to prepare and maintain a record book or ledger, specifying the treatment for hazardous substances accidents occurring during routine operation and which may constitute a danger to human life and the environment. The ledger should include information on the following: the plant itself, including details on the hazardous substances and their treatment; marking; potential accidents which may occur during the course of plant operation; existing means in the production system for protection against accidents which may occur as a result of the explosion, conflagration or dispersion of hazardous substances; safety procedures within the plant, including alert systems, neutralization measures, personal protection equipment, fire detection and extinguishing system; and a contingency plan for dealing with accidents, including details on existing neutralization procedures, available skilled manpower, emergency plan for activation of the manpower and equipment, and means of communicating and reporting to the relevant authorities. The ledgers also used by the Information and Response Center to conduct risk assessments on chemical accidents in industrial plants.

Owners of dangerous industrial plants are required to present an annual report to the local authority, including comprehensive and updated data on types, quantities and use of hazardous substances; changes in the production system and use of the hazardous substances; maintenance measures, including storage conditions, types of packaging, means of separation between different substances, and details on the storage area itself, its maintenance and the access to it; existing measures for protection against accidents; safety measures within the plant; industrial emissions, including wastewater discharge; and information concerning accidents that occurred during the year.

A uniform format for ledger is stipulated that includes the information required by all the authorities in the fulfillment of their mandates. The regulations are enforced and supervised by means of the business licensing system that is operated by local authorities with the participation of relevant government

ministries. Local environmental units, 32 of which have been established in municipalities throughout Israel, play an integral role in enforcing these regulations.

Licensing of Business Regulations (Disposal of Hazardous Wastes), 1990

These regulations 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 6 months from production, to the central plant for the neutralization and treatment of hazardous wastes in Ramat Hovav. The hazardous waste site is operated by the Environmental Services Company that was established as a state-owned and controlled company for the explicit purpose of operating the site. The national plant treats hazardous waste that is not radioactive, explosive or contaminated medical waste. Disposal or treatment of hazardous waste elsewhere for purposes of recycling, reuse or other reasons require the prior approval of the Ministry of the Environment.

Hazardous Substances Regulations (Import and Export of Hazardous Substances Waste), 1994

Israel was one of the original signatories to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, and their Disposal, 1989, and ratified the convention in 1994, following the promulgation of these regulations aiming to 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 certificate issued by the Ministry 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 that is not a party to the Basel Convention.

Import is conditional also on the provision of data to the Ministry of the Environment on the type of hazardous waste and its composition, based on results obtained in an Israeli laboratory, and it is required that the hazardous waste be transferred to Israel, stored, maintained and treated in a manner that will not damage the environment. In the case of export, it is required that the competent authority under the Basel Convention provide its written consent to receive the waste, and export must proceed according to its requirements.

Moreover, the granting of a permit certificate is subject to conditions imposed by the Ministry of the Environment, and it 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 Ministry of the Environment.

4.2.3 Treatment of Hazardous Substances during Military Emergency

Civil Defense Law, 1951

The Civil Defense Law regulates, *inter alia*, treatment of hazardous substances during military or national emergency. The section of the law that specifically relates to hazardous substances authorizes the Minister of Defense to declare a certain substances as hazardous when its dispersion is considered to be dangerous and a risk to human life or health, or when damage to property exists. Within the framework of the law, numerous regulations and orders were promulgated including the Civil Defense (Hazardous Substances) Regulations, 1991, and the Civil Defense Order (Declaration of Hazardous Substances), 1991.

The Civil Defense Order establishes a list of hazardous substances according to the list published in the UN "Orange Book." Under these regulations, anyone holding a substance which was declared to be hazardous by the Minister of Defense has to provide information to the Home Front Command on the industrial plant itself including details on the storage, consumption, and transport of the hazardous substance and the safety arrangements within the plant.

Industries are also required to submit an annual report to the Home Front Command with details on the types and quantities of hazardous waste in the possession of the plant. Currently, in an effort to streamline the system, measures are being taken to integrate the various reporting requirements by industrial plants into one format that can serve all relevant authorities.

An Emergency Services Administration within the Ministry of the Interior is operated by local authorities, and is responsible for absorbing evacuees and providing assistance and treatment to casualties during emergencies.

4.2.4 Worker Safety

Labor Inspection (Organization) Law, 1954

The Labor Inspection (Organization) Law authorizes the Minister of Labor and Welfare to promulgate regulations on such issues as safety committees, information and training to workers, safety programs, and environmental and medical check-ups of workers in potentially harmful industries. The law established a Labor Inspection Service to supervise labor safety, to promote vocational hygiene and welfare in workplaces and to guide employees and employers. Moreover, the law established an Institute for Safety and Hygiene to carry out training, research, and assistance to safety committees and the Inspection Service. Several regulations have been promulgated under the law, including:

- ***Organization of the Supervision of Work (Safety Committee and Safety Trustees) Regulation, 1960*** requires the establishment of safety committees, consisting of equal numbers of representatives of employees and employer, in workplaces employing at least 25 workers.
- ***Organization of the Supervision of Work (Safety Plan) Regulation, 1984*** requires workplaces that employ at least 50 workers (or less than 50 if so instructed by a regional labor inspector) to prepare a safety plan. The safety plan must include such details as organization of the safety system in each plant, safety rules and regulations, emergency procedures, risk assessment, training sessions, equipment that requires periodic testing, and requirements for medical testing of employees exposed to certain chemicals and dangerous substances.
- ***Organization of the Supervision of Work (Notification of Information and Instruction to Workers) Regulation, 1984*** requires employers to notify their workers regarding health or safety risks in the workplace. Employers must instruct employees on the proper use of any device or substance that may be injurious to their health. Employers must also notify employees on any new hazardous substances in the workplace.
- ***Organization of the Supervision of Work (Environmental Monitoring and Biological Monitoring of the Workers with Harmful Substances) Regulation, 1990*** requires employers to provide employees with the results of tests relating to dangerous substances in the workplace.

Safety at Work Ordinance (New Version), 1970

The Safety at Work Ordinance (New Version), 1970 is concerned with protecting the hygiene and safety of workers. Within the framework of this law, regulations were promulgated on chemical substances that have been shown to be carcinogenic or to cause health risks to those exposed to them during worktime. The regulations establish exposure thresholds for various chemical and physical factors that are permitted in the workplace. For substances not specified in the regulations, it was established that exposure levels will be according to those published in the USA in the latest version of the Threshold Limit Values and Biological Exposure Indices of the American Conference of Governmental Industrial Hygienists Inc. For some chemical substances, more stringent exposure values than those established in this publication have been set. In workplaces in which exposure to chemical and physical factors exceeds the set level, occupational and biological tests by authorized bodies are required according to 1983 regulations on the subject.

The Ministry of Labor and Welfare has published several types of regulations regarding specific substances considered dangerous. The Work Safety (Prohibition of Work with Certain Carcinogenic Materials) Regulation, 1984, for example, bans the use of substances considered to be carcinogenic for which substitutes are available. Other regulations set permissible levels for exposure to various harmful carcinogenic materials, including asbestos, pesticides, benzene, vinyl chloride, lead, mercury, arsenic, etc. The regulations specify, *inter alia*, a number of obligations in the field of occupational health, including requirements for medical checkups both before a worker begins his job and during his work. An authorized medical service has to maintain records of all medical check-ups for every employee.

The legal aspects of the use of asbestos and other harmful dust, for example, are handled by the Ministry of the Environment and the Ministry of Labor and Welfare within the framework of Regulations on Safety at Work (Industrial Hygiene and Public Health for Workers and the Public at Large Exposed to Asbestos, Talc and Crystalline Silicon Dioxide). These regulations, which cover the subject from both the environmental, occupational and public health aspects, were first issued in 1984 and have been periodically amended in light of new developments in medical research and technology. The 1991 amendment restricts the import of asbestos, sets strict standards on worker exposure, broadens the prohibition on the marketing of asbestos and its compounds in various products, and prohibits textile products containing asbestos.

Licensing of Business Regulations (Fuel Storage), 1976

These regulations were promulgated by the Minister of Labor and Welfare under the Safety at Work Ordinance and the Licensing of Business Law. They provide instructions on the storage of combustible gases or liquids and on means of storage, with special emphasis on safety issues.

Explosives Law, 1954

Within the framework of this law, the Ministry of Labor issues instructions and guidelines to those dealing with explosives on safety and precautions.

Gas (Safety and Licensing) Law, 1989 and Services and Commodities Control Order (Gas Containers), 1990

This legislation authorizes the Gas Administration at the Ministry of National Infrastructures to regulate the safety of different activities related to the treatment and handling of liquefied petroleum gas (LPG). The law authorizes the Minister of National Infrastructures to establish regulations and safety rules for gas installations and for those working in the gas sector.

4.2.5 Transport of Hazardous Substances

Order for the Supervision of Commodities and Services (Transportation and Towing Services), 1978

This order regulates the transport of hazardous substances on the road according to guidelines established by the UN in the Recommendation on the Transportation of Dangerous Goods. The order aims at preventing incidents caused by the improper loading, handling, transport and storage of hazardous substances, requires special permits for the transport company, driver and vehicle. The permits specify, *inter alia*, the quantity of each type of hazardous substance permitted for transport.

Every vehicle transporting hazardous substance must be equipped with protective equipment (e.g., firefighting and first aid equipment), with an integrated bill of lading/safety sheet, and with an emergency sheet that facilitates immediate emergency operations during incidents and accidents. The safety sheet, which identifies the transported substance, its potential risks and the required emergency response, is transferred to the driver together with the bill of lading by the plant sending the substance. The regulations set out specific requirements on labeling and handling precautions according to the nine categories of hazardous substances that have been established by the UN Committee of Experts on the Transport of Dangerous Goods. The vehicle itself must be marked with the necessary signs noting the name of the substance and its identification number, the emergency code, a telephone number for use in emergencies, and personal protection equipment according to the risk associated with the transported substance. Vehicle permits are only granted following special licensing tests that are conducted in an authorized facility while driver permits are only issued upon the completion of a special course. Finally, hazardous substance transport companies are required to employ safety officers to be responsible for transport safety.

Aviation (Transport of Hazardous Substances) Regulations, 1983

Within the framework of the Aviation Law, the Minister of Transport has promulgated regulations that prohibit the transport of a hazardous substance in an aircraft except according to the regulations. Hazardous substances are divided into classification groups. Packaging and labeling instructions comply with the instructions of the International Organization of Civil Aviation.

Ports Regulations, 1977

Under the Ports Ordinance (New Version), 1971, the Minister of Transport has promulgated regulations that deal, *inter alia*, with the loading and unloading of explosive materials and hazardous substances.

The regulations apply to Israeli ports and establish safety measures according to the IMDG code published by IMO. The regulations relate to safety measures to be taken during the arrival of cargoes of

explosives or hazardous substances, anchoring of the transporting vessel, loading and unloading of the materials, restrictions on quantities permitted for transport, packaging and labeling requirements, emergency procedures, supervision of transport of a hazardous substance, and obligations to maintain communication between vessels and the coast.

The regulations authorize the port director to instruct the owner of a hazardous substance to remove it from the port and to order the removal from the port area of any vessel carrying hazardous substances which is deemed to endanger the environment.

Ports (Safety of Navigation) Regulations, 1982

These regulation are derived from the IMO Code and contain provisions on the safe shipping, handling and loading of hazardous substances in a port. A hazardous substance is defined as a substance listed in the appendix to the regulations or a substance which the port director deems to be dangerous. The regulations prohibit loading of dangerous cargo on vessels and sailing of such a vessels without a special permit from the inspector of vessels which is only granted after compliance with the regulations. A captain of a vessel is required to inform the Port Authority of the fact that he is carrying a dangerous substance before entry into the port. She/He must also certify that the dangerous substance is properly packaged and labeled in accordance with the IMO Code. A loading permit is only issued by the inspector based on a loading plan for hazardous substances and loading is supervised by the inspector of vessels.

Under preparation are additional regulations, within the framework of the Ports and Railroads Law, on the transport of hazardous substances by train. These regulations will be based upon the provision of the European Convention on the Transport of Hazardous Substances by Railroad (RID).

Free Import Order, 1978

According to this law and in accordance with associated orders under the responsibility of the Minister of Industry and Trade, the release of a hazardous substance from the Customs Bureau is contingent on compliance with special conditions. The Customs Bureau is required to ascertain that the importer is in possession of all required permits, (such as a Poisons Permit), before the release of a hazardous substance from a port.

4.2.6 Pesticide Control

Protection of Plants Law, 1956

Under this law the Minister of Agriculture is empowered to deal with all pesticides used in agriculture and to promulgate regulations setting up prohibitions, obligations, limitations and registration instructions related to the production and application of pesticides. The Minister, following consultation with an advisory committee consisting of public representative and government workers, is authorized to regulate the sale, distribution, packaging and import of chemical substances designated for pest control, promotion of plant quality, and plant growth regulation in the agricultural sector and to set the necessary standards accordingly. The Minister may also require the licensing of pest control operators with the exception of farmers who personally deal with pest control in their own plots. The Minister is also authorized to approve equipment and work procedures related to pest control and to regulate the use of chemical substances for pest control.

Based on the law, the Plant Protection and Inspection Services of the Ministry of Agriculture has set up a system for the registration and supervision of agricultural pesticides.

Plant Protection (Import and Sale of Chemical Preparations) Regulations, 1994

These Plant Protection Regulations (which replaced an earlier 1967 version of the regulations) stipulate that the sale of pesticides must comply with numerous safety requirements *vis-a-vis* user, environment and consumer. The regulations set permit requirements both for experiments using a chemical formulation and for preparations which are manufactured or imported. They require that anyone producing or importing pesticides, plant growth regulators, defoliants, adjuvants, wound sealing materials and plant nutrients applied for specific established mineral deficiency must register them in the Plant Protection and Inspection Services of the Ministry of Agriculture. For purposes of registration, comprehensive information must be supplied on such matters as the characteristics of the preparation, its efficacy under Israeli conditions, means of operation, results of laboratory and field testing, direct and accumulated toxicological impact on agricultural produce, residues under Israeli conditions, possibility of soil accumulation, impact on animals, fish and bees, and a complete toxicological file.

Approval of the package label is an inseparable part of the registration process. The label must include such information as concentration of active ingredients in the preparation, manner of use, expiration date, pre-harvest interval, toxicity level, safety measures, etc. Specific criteria have been prepared for the registration procedure governing both experiments and pesticide production and import.

Assessment of the preparation in terms of its risk to humans, animals or the environment is undertaken by an advisory inter-Ministerial committee, including representatives of the Ministries of Agriculture, Health, Environment, and Labor and Welfare and the Consumer and Environmental Protection Authority.

4.2.7 Veterinary Pesticides

Animal Diseases (Chemical Preparations) Regulations, 1982

The Animal Diseases Regulations require the registration and licensing of chemical preparations used for the eradication, repulsion or attraction of pests in animals in a format which is similar to the registration of agricultural pesticides. The regulations prohibit the sale of such preparations without registration from the Veterinary Services in the Ministry of Agriculture. An application for registration must include a comprehensive description of the preparation in question and must be accompanied by samples of the package, the label, professional literature on use and efficacy, and confirmation from the Ministry of Health that it has no objection to registration.

Animal Diseases (Testing of Biological Residues) Regulations, 1994

This regulation establishes requirements for the detection of biological residues in animals. Biological residues are detected by separate laboratory tests for each substance which is a biological residue, including a pesticide, organic or inorganic substance, heavy metal, hormone, antibiotic or any other substance which leaves traces in animals at the time of slaughter as a result of treatment or contact of the animals with the said substance.

4.2.8 Pharmaceutical Safety

The Pharmacists Ordinance (New Version), 1981

The Pharmacists Ordinance empowers the Minister of Health to license and regulate all aspects of the use and transfer of medical poisons which are defined as a poison used for diagnosis, treatment, relief or healing as specified in the appendix. Anyone dealing with medical poisons is required to receive a medical Poisons Permit from the appointed official in the Ministry of Health. Within the framework of this ordinance, several regulations have been promulgated dealing with the packaging and marketing of drugs, classification, registration and maintenance of medical poisons and restrictions on the dispersion of poisons and chemicals from aircraft.

4.2.9 Pesticide Residues in Food

Public Health (Food) (Pesticide Residues) Regulations, 1991

These regulations establish maximum residue limits whose presence in food or its products is permitted. The permissible tolerance level is established according to the levels published in the *Codex Alimentarius* published by the World Health Organization and the Food and Agriculture Organization of the United Nations, as corrected and updated from time to time.

According to the regulation "no person shall produce for sale, import or market food which contains or carries on it a residue unless the level does not exceed the permitted level." Furthermore, food which is not certified in writing by one of the following bodies as fulfilling the requirements of the regulations shall be unfit for human consumption: Institute of Standardization and Control of Pharmaceuticals in the Ministry of Health, Food Control Services in the Ministry of Health, Plant Protection and Inspection Services of the Ministry of Agriculture and Veterinary Services of the Ministry of Agriculture. In addition, the regulations allow an authorized inspector to enter premises where plants are being grown, produced, processed, stored, packaged or sold in order to take samples of any such food or label intended for the marketing of such food or any container in which the food is packed. The sampling of food and the determination of the residue level of a pesticide shall be carried out as detailed in parts 5 and 6 of the Codex.

Public Health (Foods) Ordinance, 1935

Additional authority for regulating hazardous substances in food products (as well as in medical and pharmaceutical products and cosmetics) is granted to the Ministry of Health under the Licensing of Business Law and the Public Health Ordinance. The Public Health (Foods) Ordinance allows the Minister of Health to set standards for permitted levels of harmful substances such as pesticides in food. Under this law, the Food Control Service in the Ministry of Health is authorized to monitor and test food products for local consumption and to confiscate and destroy any fruit, vegetable or dairy product which does not meet regulatory standards.

Animal Diseases (Poultry Slaughterhouses) Regulations, 1960 and Supervision of the Export of Animals and Animal Products (Poultry Products) Regulations, 1976

The Department for the Control of Animal Products in the Veterinary Services also monitors pharmaceutical residues, pesticides and various environmental contaminants in poultry meat in accordance with maximum residue standards which have been established within these regulations. Hundreds of samples are monitored each year for the presence of such pesticides as organophosphates and chlorinated hydrocarbons as well as for heavy metals such as arsenic, cadmium, lead and mercury. Moreover, in order to comply with European directives on pesticide levels, the Veterinary Services also monitor pesticide residues in fish and milk products and issue Veterinary Health Certificates for these products.

4.2.10 Pesticides for the Protection of Public Health

Hazardous Substances (Registration of Formulations for the Control of Pests Harmful to Humans) Regulations, 1994

The regulations prohibit the production, import or maintenance of any substance which is not registered and which does not comply with the conditions stipulated in the registration and in the regulations. Authority for registering pesticides for the protection of public health is granted to the officer appointed by the Minister of the Environment. Applications for the production or import of unregistered pesticides must be submitted to the officer along with relevant documents, ranging from professional literature to complete toxicological files and safety data sheets.

Pesticide containers must bear a clear label with full information concerning the substance and must be marked with the standard poison symbol. Use of a pesticide in contravention to the directions specified on the label is prohibited. Advertisements must include a warning to the effect that the Ministry of Environment has established that use of the pesticide in contravention to label directions is dangerous to health and the environment.

A professional committee, composed of six representatives, evenly divided between the Ministry of Environment and Health, advises the appointed officer and discusses all pesticide applications. Registration is granted for a three year period. The regulations stipulate a number of cases in which the appointed officer, with the agreement of the professional committee, may refuse to register a particular pesticide, or may cancel registration or make it conditional upon the fulfillment of a number of prerequisites. For example, registration may be denied if another registered pesticide exists for the same purpose which is less harmful to humans, flora, fauna or the environment.

Licensing of Business (Pest Control) Regulations, 1975

These regulations establish licensing requirements for all pest control operators. Licensing is contingent on the successful completion of a course on pest control. The regulations also establish conditions on the storage, application and disposal of both pest control equipment and pesticide products.

An amendment to these regulations, which was issued in 1993 within the framework of the Licensing of Business Law and the Hazardous Substances Law, increases supervision over pest control operators and further controls insecticide use. The new regulations oblige pest control operators to maintain record books with full details of each extermination. In addition, the amendment provides a revised listing of preparations approved for use, specifying the insects and rodents for which each material is designated and indicating usage restrictions. The listing includes several categories of insecticides (*Bacillus thuringiensis*, insect growth regulators oil, Pyrethrins and Pyrethroids, Organophosphates, Chlorinated hydrocarbons and Carbamates) and rodent killers (anticoagulants). Two potentially poisonous substances for which no antidote exists were removed from the previous listing of permitted substances.

4.2.11 Biotechnology: Safety of Transgenic Plants

Plant Protection Draft (Experiments on Transgenic Plants and their Import Regulations) 1997

Israeli scientists have been actively involved in genetic engineering research since the 1980s and recent years have witnessed dozens of experiments in the area of transgenic plant research. The genes which have been inserted into plants and organisms using genetic engineering methods represent a wide range of markers and features: resistance to disease, insects and insecticides; resistance to stress (drought, salinity); and various crop features such as changes in the composition and production of different materials. This research activity is now leading to the first field experiments.

In light of these development, the Chief Scientist of the Ministry of Agriculture appointed a committee in 1988 to study issues related to the supervision of experiments involving transgenic plants. Based on the recommendations of the committee, a National Committee for Transgenic Plants (NCTP) was appointed in 1991 whose function is to approve experiments in transgenic plants in Israel and imported transgenic material. Members of the committee include researchers in genetic engineering from academic institutions, government bodies—Ministry of Agriculture, Science and the Environment— and representatives of private research bodies. The committee operates under the Plant Protection Law of 1956 and is based on the experience and composition of similar committees in the US, Europe and Australia. Concomitantly, institutional safety committees were established in universities and research institutes throughout the country which work in coordination with the main committee.

The NCTP works according to Directive 90/220/EEC. Every experiment with transgenic plants, genetically modified organisms and their import requires a permit. The information provided in the permit application includes, *inter alia*, details on the experiment itself, the location of the experiment (lab, greenhouse or field), containment measures, location of the experiment facility, marking, isolation, confinement, sanitation and biosafety procedure. This information is then used to determine approval or rejection. Each application must be accompanied by a commitment that the experiment will be conducted according to the procedures set by the institutional biosafety committee and the national committee, and that the institutional biosafety committee will be notified concerning both initiation and termination of the experiment. All institutions dealing with biotechnology research in Israel have appointed safety officers, and every grant application includes a biohazard statement which states that the agents used in the research project do not constitute a hazard to laboratory personnel or to the environment and that all biological materials used will be decontaminated by autoclaving before disposal. All work must comply with safety regulations that are based on NIH-CDC work practices.

The draft regulations on transgenic plant experiments or the import of transgenic material are based on current procedures which are already mandatory under the Plant Protection Law. They require anyone intending to conduct an experiment with transgenic plants or genetically modified organisms or to import these materials, at the level of laboratory, greenhouse, or field to apply for exemption or approval of containment measures (physical and biological) and safety procedures. Proposals are classified into three major categories: research plans which are exempt from safety procedures according to specific criteria; research plans at the level of laboratory or greenhouse whose approval by an institutional safety committee is conditional on containment methods and safety procedures; and field testing, which cannot be exempted, and whose approval is dependent on a review of containment and safety measures by the national committee. Experiments which are exempt from these procedures appear in the appendix of the draft regulation.

The first permits for field experiments in genetically modified agricultural produce were granted in 1996. They followed years of research in Israel and abroad and are conducted in special areas under the supervision of inspectors of the Plant Protection and Inspection Services of the Ministry of Agriculture. To date, some 100 experiments have been registered with the NCTP, of which seven are field experiments and the rest are at the level of laboratory and greenhouse.

Table 4a. Available Legal Instruments for Managing Chemicals (by Category)

Chemical Category	Importation	Production	Storage	Transport	Distribution / marketing	Use/ Handling	Disposal
Pesticides	X	X	X	X	X	X	X
Fertilizers	X	X	X	X			

Industrial	X	X	X	X	X	X	X
Petroleum	X	X	X	X	X	X	X
Wastes	X	X	X	X		X	X

4.3 Key Approaches and Procedures for the Control of Chemicals

The Ministry of the Environment operates on three different levels—national, regional and local. At the national level, the Ministry is responsible for formulating an integrated and comprehensive national environmental policy and for developing specific strategies, standards and priorities for environmental protection. The national level consists of over thirty divisions that deal with the wide gamut of environmental subjects that are under the responsibility of the Ministry of the Environment. An important element in national environmental policy is inspection and control. To strengthen environmental law enforcement, the Ministry has reinforced state inspection units in such areas as pesticides in the agricultural sector and has established a national inspection patrol that focuses on such areas as hazardous and solid waste disposal.

The six district offices of the Ministry of the Environment are charged with implementing national environmental policy. The district administration operates in tandem with the state inspection patrol, formulates environmental conditions for the licensing of businesses, etc. On the local level, the municipal environmental units and associations of towns for environmental quality operate throughout the country, serving the majority of Israel's population. These environmental units operate within the administrative jurisdiction of their respective municipalities but under the professional guidance of the Ministry of the Environment. They play an essential role in providing environmental services on the local level.

To be effective, environmental legislation must aim for achievable standards and have practical application. Israel's environmental legislation is wide-ranging: it seeks to prevent environmental deterioration, on the one hand, and to stop, abate and clean-up existing pollution, on the other hand. It includes environmental provisions in specific laws that deal with such environmental issues as air, water, marine, waste and noise pollution and nature protection, and more general laws, such as planning and building and business licensing, which constitute a legal base for resource management and sustainable development. National legislation is complemented by a wide range of environmental bylaws on the local level and by obligations derived from an increasing number of international conventions.

The transfer of authority for chemical management issues to the Ministry of the Environment has made a major contribution to the effective implementation of environmental policy in Israel. As a result, added emphasis has been placed on updating environmental standards, issuing administrative orders for pollution abatement and drafting new legislation. Environmental laws provide for criminal sanctions that usually take the form of fines and, at times, terms of imprisonment as well. In addition, citizens have the

right to initiate civil proceedings, with recourse to all civil remedies, including payment of damages. Several of the laws integrate regulatory and fiscal means, and some include provisions for the appointment of inspectors for enforcement purposes. Israeli legislation provides the authority to issue permits, licenses and regulations, to inspect regulated facilities, to require monitoring, to publish notices and warnings, to issue restraining orders, prevention of recurrence orders or corrective orders, and to initiate criminal proceedings. At the national level, according to the administrative system, the granting of licenses and permits is conditional upon the fulfillment of specific stipulations aimed at preventing environmental damage. Thus, for example, aforementioned permit systems are used for business licensing, planning and building and possession and use of hazardous substances.

The Ministry of the Environment operates a number of inspection bodies to enforce legal and administrative measures. These bodies are staffed by professionals in their respective fields who are also trained to perform inspection procedures and to conduct investigations—and are legally authorized to carry out their tasks. The Environmental Inspection Patrol, operated by the Ministry of the Environment, is authorized by the Ministers of Internal Security and the Environment to conduct formal investigations of suspected violators of environmental laws. Along with the Patrol, the Environment Ministry, along with other government and environmental bodies, operates specialized supervision units in other areas as well including marine and coastal inspection, poisonous substances and river monitoring. Together, these specialized inspection units play an important part in the enforcement of environmental laws as part of a so-called "Green Police."

On the local level, local authorities have their own supervisory infrastructure, with hundreds of inspectors who play an important role in the supervision of business licenses and building permits and the enforcement of municipal legislation on pollution prevention.

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. Moreover, Israel supports the development of a PIC Convention as a way of ensuring equal and effective compliance internationally. Presently, the PIC procedure is voluntarily implemented under existing legislation and all chemicals appearing on the present PIC list are treated as such.

Within the framework of its preparations for participation both in the voluntary procedure and the future convention, two Designated National Authorities serve as focal points for PIC purposes: the Hazardous Substances Division of the Ministry of the Environment and the Plant Protection and Inspection Services of the Ministry of Agriculture. Furthermore, the Ministry of the Environment and the Ministry of Agriculture are currently developing a joint work plan which will enable Israel to implement the procedure fully. In areas which are not yet fully covered, preparations are currently being made to promulgate the necessary regulations under both the Hazardous Substances Law and the Plant Protection

Law. Concurrently, the database is being expanded on industries producing hazardous substances and pesticides and on the production and import of hazardous substances and pesticide formulations within the framework of existing databases in both the Information and Response Center for Hazardous Substances and the Plant Protection and Inspection Services.

4.4 Non -Regulatory Mechanisms for Managing Chemicals

Several Non Governmental Organizations (NGO's) are involved in monitoring the management of chemicals, notably the Israel Union of Environmental Defense (Adam Teva Ve'din) and Greenpeace Israel. These and other NGO's often play a pivotal role in supplementing an understaffed Ministry of Environment in locating pollution sources and "hot-spots". There are at least 30 local and national NGO environmental groups.

Several voluntary actions by industry have been started in cooperation with the Standards Institute of Israel (SII)and the Ministry of the Environment. Green label certification is issued in conjunction between the two aforementioned bodies with the Information and Response Center for Hazardous Substances carrying out professional assessment of environmental impact of the product according to the guidelines laid down by the Global Ecolabelling Network. The center also receives requests for risk and impact assessment for a variety of products used in the public sector, e.g. roadside soil stabilizers. The Standards Institute in cooperation with the International Standards Organization (ISO) issues the ISO 14000 certification according to the pertinent criteria.

4.5 Analysis

Standards for pollutants are revised and updated based on evolving research in economic, technological, health and agricultural effects. Efforts are made in reviewing legislative and methodological developments in OECD countries to amend and update its 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.

In spite of major improvements in the management of chemicals in Israel, one area not adequately dealt with is the lack of sufficient staff for enforcement of the existing legislature. Additionally, as many of the laws are new with stiffer penalties, there is not enough awareness what course of action needs to be taken to abide by the law. There is some level of overlapping of responsibility in some areas of chemical management but these have by and large been traced and redundancy is being diminished.

Chapter 5

Ministries, Agencies and Other Institutions Managing Chemicals

5.1 Division of Ministerial Responsibility for Hazardous Substances

pressing s most'Safe management of hazardous substances is one of Israel
Appropriate safety and control procedures for the import, .environmental concerns
production, storage, use and transport of hazardous substances and their wastes are
.viewed as an integral element in the management of the countryIn June 1985, in the
aftermath of the 1984 Bhopal catastrophe, the Israeli government appointed an ministerial -inter
This committee was charged .committee on hazardous substances and natural disasters
rgency with formulating a plan for hazardous substance preparedness during eme
-ministerial committee established an inter-The inter .conditions and natural disasters
ministerial steering committee for treatment of hazardous substances and natural
The .disasters with representatives of government ministries and other organizations
.present day division of responsibilities is laid out in the following table

Table 5a. Division of Responsibilities

Stage of Life Cycle	Importation	Production	Storage	Transport	Distribution / marketing	Use /Handling	Disposal
Authority Concerned							
Agriculture	x		x		x	x	
Civil Defense		x	x	x		x	
Customs	x						
Environment	x	x	x	x	x	x	x
Foreign Affairs	x						
Health	x	x	x		x	x	x
Interior							
Labor		x	x			x	x
Trade / Industry	x	x			x		
Transport	x		x	x			

Description of Ministerial and other Authorities and Mandates

The relevant aspects of chemicals management are laid out in table 5b.

Ministries Involved in Management of Hazardous Substances .b5Table

Ministry	Areas of Responsibility
Environment	Treatment and supervision of hazardous substances and hazardous wastes and emergency disaster response, in coordination with other government ministries.
Defense	Emergency disaster response, operation of an Information Center for Hazardous Substances in conjunction with Ministry of Environment, and control of hazardous substances in military installations and industries.
Health	Regulation of hazardous substances in medical and pharmaceutical products, cosmetics, food additives, pesticide residues in food, poisons, cumulative health impacts, and poison information center.
Agriculture	Registration and application of agricultural pesticides, fertilizers, and pesticide residues in agricultural produce.
Ministry	**Areas of Responsibility**
Labor and Welfare	Occupational health and hygiene and explosives

Interior	Fire-fighting services and rescue services during accidents, responsibility for population evacuation, oversight of local authorities, treatment of casualties during emergencies.
Transport	Transport of hazardous substances in air, sea and land.
Industry and Commerce	Import and export of materials, administration of the Israel Standards Institute and committee for laboratory accreditation.
National Infrastructures	Gas and fuel
Internal Security	Direct responsibility and command during accidents involving hazardous substances
Prime Minister's Office	Regulation of radioactive facilities and wastes

National Response and Information Center for Hazardous Substances (NRICHS)

To implement the wide range of tasks required during emergencies involving hazardous substances and to facilitate enforcement of laws and regulations, up-to-date information must be available on hazardous materials that are used, produced, imported, exported, transported and disposed of in Israel. Such data must relate to quantities, types, characteristics and concentrations of materials found at all levels—industry and institutions on the local, regional and national levels.

For this purpose, the Ministry of the Environment established an Information and Response Center for Hazardous Substances in 1993, to operate in coordination with the existing information center of the Home Front Command that was set up in 1988. The unified Center supplies data on a 24-hour-a-day basis, in a manner similar to that of 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, treatment and neutralization procedures. Information is derived from importers, suppliers, users, producers and transporters of hazardous substances as well as from the agricultural sectors, government ministries, customs officials, local authorities and licensing authorities.

In addition, the Center follows up on all new development in the area of legislation, regulation and restrictions, both worldwide and in Israel. Such information is vital to support decision making and to improve supervision of the use, transport and disposal of hazardous substances and wastes in Israel.

In order to enable efficient enforcement of both the Hazardous Substances Law and of hazardous waste regulations, information is currently being collected on every facility which uses, produces or stores hazardous substances; all relevant data, including information on key persons and facility layout, are being collected to expedite response capability. Computerized industrial plant files are being prepared, in cooperation with industry, with data on types and quantities of substances in each plant, environmental impact and response to accidents.

The Center is connected to international databases and to the computer of the Customs Bureau. Since the Center serves as the focal point of response during hazardous substances incidents—providing essential information, support and coordination services—efforts are currently being invested in setting up databases on hazardous substances accidents, on risk assessment and on potential scenarios. In addition, the Poisons Permit system (required by the Hazardous Substances Law) is being computerized as are hazardous substances and waste locations in Israel.

The following information is currently maintained at the Center:

- Information needed for the identification and characterization of hazardous substances (e.g., chemical name, trade names and synonyms, hazard classification, CAS number, molecular formula, relative molar mass, UN number, etc.).
- Information on use, production and products (e.g., commercial names, manufacturers, natural sources, main uses, production processes, commercial preparations, purity levels, prevalent pollutants and additives, potential environmentally benign substitutes and alternative processes, consumption in the US, and consumers and handlers in Israel).
- Information on transport, treatment, storage and waste (e.g., UN number, risk category, transport by train, road or pipeline, protective gear, pollution prevention measures, work procedures, storage conditions, shelf life, solid waste disposal methods).
- Regulations and standards relating to exposure (e.g., odor threshold, IDLH, TLV, occupational recommendations, standards for water and drinking water, air and soil, requirements of the US Food and Drug Administration (FDA), hazard classification according to NFPA, etc.).
- Chemical and physical properties (e.g., physical state, color, shape, smell, taste, freezing point, heat of fusion, density, viscosity, surface tension, solubility, heat of dissolution, acidity, boiling point, heat of evaporation, volatility, vapor pressure, critical temperature and pressure, heat of combustion, flash point, flammability limits, explosive limits, etc.).
- Information on reactivity (e.g., hazardous reactants, reaction with water, reaction with prevalent materials, reactivity enhancers, polymerization, neutralizing materials, corrosiveness, decomposition).
- Information on risk management and fire extinguishing (e.g., data on risk factors and their management, fire extinguishing and management, training exercises).
- Environmental information and information on identification and inactivation (e.g., environmental fate, pollution of water sources, soil, air, analysis and monitoring).

- Information on toxicity (e.g., toxicity in water, to waterfowl, plants, animals, humans and range of toxicity).
- Information on medical treatment (e.g., diagnosis and identification in the laboratory, first aid, treatment of severe exposure, absorption and secretion).

Risk Assessment

The Center provides support and assistance to environmental bodies and the industry on the prevention of hazardous substance accidents. Two types of risk analyses are conducted: risk assessment related to accidents in which chemical substances are involved in an industrial plant, a storage site or during transport, and risk assessments related to the routine use of chemicals. The former responds to questions such as possible transfer of a plant to another site, safety measures for the prevention of accidents and emergency response plans.

Both approaches to this type of risk assessment are employed: the deterministic approach that assumes that the worst possible scenario will actually occur, and risk is assessed according to the forecasted outcome; Probabilistic Risk Assessment - (PRA) which is a quantitative approach that assigns probabilities to each one of several scenarios so that the risk is the product of each probability and the respective severity of the forecasted outcome.

Emergency Response

Real time risk assessment analyses carried out during emergencies may provide essential assistance to response teams in the field for the purpose of saving life and reducing damage to both the environment and property. Such analyses are based on data received from first responders, such as location, type of hazardous material, nature of incident (spill, fire, etc.) and, at times, data collected previously on materials held on site and on possible scenarios.

The Information Center uses both computerized databases that include information sheets on response during accidents and software on analysis of accidents in which hazardous substances are involved. Software for calculating the dispersion range of pollutants in the atmosphere is used to provide estimates within minutes. Other types of software facilitate calculation of risk ranges of flammable and explosive materials.

Chapter 6

Relevant Activities of Industry, Public Interest Groups and the Research Sector

6.1 Industrial Organizations:

6.1.1 *The Manufacturers Association*

The Manufacturers Association is comprised of different divisions, amongst which the chemical division features prominently. Members include representatives of all the major heavy and light industries, including the pharmaceutical, veterinary and medical fields. Additionally, the association coordinates the activities of multinational companies in terms of their requirements for environmental management. Several sub-committees are involved in environmental issues.

Hazardous substances:

a) The control of hazardous substances on main routes.
b) Working towards harmonizing the guidelines put out by the local authorities for requiring adherence to environmental regulations.
c) Developing a means by which factories can confidently release trade secrets in order to get poison permits.
d) Preparing factories for hazmat spills
e) Supporting the Center for Hazardous Substances Learning.

Air emissions:

a) Preparation of a document outlining the air quality standards relying upon the German standard T.A. LUFT and based on the EEC directive EEC/609/88.
b) Developing time frameworks for the implementation of the these standards.

Industrial effluents:

a) Funding together with the Ministry of the Environment for research threshold values.
b) Harmonizing values for water quality.
c) developing pricing for sewage costs.

ISO 14000 standard coordination:

a) Developing a means by which factories can confidently release trade secrets within the context of the standards.
b) Negotiating with the Ministry of the Environment for breathing space during the process of ISO 14000 preparation.

Packaging and recycling: Developing better and more environmentally compatible packaging methods.

The institute also holds seminars on a range of pertinent subjects, publishes relevant reports and gives scholarships to young chemists.

6.1.2 *Research in Israel's Academic Institutions*

Israel's academic infrastructure complements government support of technological Research and Development (R&D). The trend in recent years has been for government bodies to channel funds to non-governmental institutions, especially universities, for environmental research, and indeed environmental research is highly developed in Israel's academic institutions. Israel has one of the world's highest ratios of science graduates from its universities and it employs more than 140 scientists and engineers in R&D for every 10,000 people in work. Relative to the size of its labor force, Israel has a significantly larger number of publishing authors in the natural sciences, engineering, agriculture and medicine than any other country. Israel is also an important center for international scientific conferences, hosting over 100 such gatherings annually.

Concomitant with their scientific research activities, the universities continue to play an important and innovative role in Israel's technological advancement and most have set up commercial arms as well. There has been a successful establishment of science-based industrial parks adjacent to university campuses. Universities have also set up 'spin-off' industrial firms for the commercialization of specific products based on their research, often in partnership with local and foreign concerns. Biotechnology is widely promoted where there is a potential alternative to traditional chemical processes. This is especially evident in Agroforestry where biological alternatives are researched to diminish the use of conventional pesticides and fertilizers. The universities' share of research grants and contracts funded by local industry is approximately 9%.

While several universities carry out research in the area of chemical safety, the Unit of Occupational and Environmental Medicine of the Hebrew University of Jerusalem's Hadassah Medical School may serve as one example. This Unit carries out teaching, research and service on the detection and prevention of major toxic and environmental hazards in the workplace and community. Research, risk assessment and intervention projects are being carried out on detection of low level exposures and effects from organophosphate-containing pesticides, work in nickel-cadmium batteries, asbestos, lead in the

workplace and community, ionizing and non-ionizing radiation (including radon), solvent exposures of laboratory research workers, and nitrosamines. Work on organochlorine exposures and the preventive oncology of breast cancer has also been initiated. Projects on the recognition and use of sentinel markers for prevention of chemical disasters, worker's right to know and right to act ("empowerment"), risk assessment of exposures to carcinogens and its application to cancer prevention strategies and policy are underway. The Unit initiates projects and provides consultation for government agencies, municipalities, community and worker groups, and individual patients on policy, legislative and clinical issues, hazards, risk and control of toxic exposures. In several cases, publication of the research findings have led to new initiatives in chemical safety and supervision.

6.1.3 *Non-Governmental Organizations (NGO's)*

There is a large number of NGO's dealing directly or indirectly with chemical management in Israel. More than 26 environmentally concerned groups exist, some at the local and others at the national level. Some are international, e.g. Greenpeace, whilst others are national e.g. the Israel Union for Environmental Defense which focuses largely on legal issues, or the Israeli Society for the Protection of Nature which focus on community or local projects. There are varying levels of involvement in different steering committees as well as at the political level. It is not uncommon for NGO's to give their opinions to Cabinet committees as well as address the parliament. The Ministry of the Environment has made it a fundamental policy to cooperate and share information with NGO's wherever possible.

6.2 Expertise Available Outside of Government

Table 6a: Summary of Expertise Available Outside of Government

Field of expertise	Research Institutes	Universities	Industry	Environment/ Consumer Groups	Labor Unions	Professional Organizations
Data Collection	X	X	X	X	X	X
Chemical Testing	X	X	X	X		X
Risk Assessment	X	X	X	X		X
Risk Reduction	X	X	X	X		X
Policy Analysis	X	X	X	X	X	X
Training & Education	X	X		X	X	X

Research on Alternatives	X	X	X

Field of expertise	Research Institutes	Universities	Industry	Environment/ Consumer Groups	Labor Unions	Professional Organizations
Monitoring	X	X	X	X	X	X
Enforcement				X	X	
Information to workers			X	X	X	X
Information to public	X			X	X	X

Chapter 7

Technical Infrastructure

7.1 Overview of Laboratory Infrastructure

In mid 1997, a law was passed setting up a central accreditation authority: The Laboratory Certification Authority (LCA) which operates under the auspices of the Ministry of Trade and Industry (Law 1624 of 1997 - The National Authority for the Certification of Laboratories Law). The LCA was set up incorporating most international protocols, including the OECD test guidelines. This is the sole body accrediting both the private and public sector laboratories. At present all government laboratories are undergoing or have been given accreditation. The only government operated laboratories not subject to the LCA jurisdiction are those within hospitals under the supervision of the Ministry of Health. Several of the main laboratories operating are defined in table 7a.

Table 7. Overview of Government Laboratory Infrastructure

Name/Description of Laboratory	Location	Equipment/ analytical capabilities available	Accreditation by [2]	Purpose
Ministry of the Environment	University of Tel Aviv	Fully equipped[1]	LCA (in process)	All Environmental pollutants
Ministry of Health	University of Jerusalem, Hadassah, Jerusalem	Fully equipped[1]	LCA	Chemicals in food, residues in different products
Ministry of Health	Abu Kabir, Tel Aviv	Fully equipped[1]	LCA	Chemicals in food, residues in different products
Ministry of Agriculture	Plant Protection Services, Analytical Laboratories	Fully equipped[1]	LCA (in process)	Chemicals in produce, pesticides residues in soil, plants

[1]All major modern analytical equipment including Gas Chromatographs, Gas Chromatograph Mass Spectrometers, Inductively Coupled Plasma, High Pressure Liquid Chromatographs etc.
[2]Although all government laboratories operating are obliged to undergo accreditation, some are still in the process due fact that the LCA has recently been set up. A separate column for GLP has not been include as the LCA certifies only those laboratories operating under the principles of GLP.

In addition to the accreditation that is given by the LCA, the SII gives ISO certification under the ISO 25 and ISO 9000 standard. Many private laboratories have undergone the process in the past as it was a prerequisite for any testing given out by the government bodies.

Note: Information required for this chapter relating to computer capabilities and technical and education programs is dealt with in other chapters (6, 8 and 9)

Chapter 8

Data Access and Use

As previously described, data is collected by different authorities and at different levels of detail. In the following table are summaries of the information regarding both the quantity and quality of available information in terms of the data available and the means by which it is obtained in terms of pesticides for health, sanitation and agriculture, industrial and consumer chemicals and chemical wastes.

8.1 Availability of data for National Chemical Management

Table 8a. Quantity and quality of Available Information

Data needed for/to[1]:	Pesticides (all)	Industrial Chemicals	Consumer Chemicals	Chemical Wastes
Assess Chemical Impact under local Conditions				X
Risk Assessment (environment/ health)				
Classification/ Labeling	X	X	X	X
Registration	X	X	X	X
Licensing	X	X	X	X
Permitting	X	X	X	X
Risk Reduction decisions				X
Accident Preparedness/ Response		X	X	X
Poisoning Control	X	X	X	X
Emissions Inventories				
Inspections and Audits (environment/ health)				
Information to Workers		X	X	
Information to Public			X	

[1]**An X indicates that sufficient information is available for the tasks listed in column 1.**

8.2 Location of National Data

Table 8b. Quantity and quality of Available Information (See key below table 8d)

Type of Data	Data Source[1]	Access is available to[2]	Access gained by[2]:	Format[2]
Production Statistics	MA, MTI, CBS	GPR	IN, TF, P, D	IN, TF, P, D
Import Statistics	C, MTI, MA, CBS	GPR	IN, TF, P, D	IN, TF, P, D
Export Statistics	C, MTI, MA, CBS	GPR	IN, TF, P, D	IN, TF, P, D
Chemical Use Statistics		Insufficient	NA	NA
Industrial Accident Reports	MTI, MA, CBS, MOE	GP	TF, P, D	TF, P, D
Transport Accident Reports	MOE, MOT, MOA, CBS,	GP	TF, P, D	TF, P, D
Occupational Health Data (Agricultural)	MOL, MOH	GP	TF	TF
Occupational Health Data (Industrial)	MOL, MOH	GP	TF	TF
Poisoning Statistics	MOH	GP	TF	TF
Pollutant Release and Transfer Register	MOE	GP	TF, P, D	TF, P, D
Hazardous Waste Data	MOE	GP	TF, P, D	TF, P, D
Pesticides Register	MOA, MOE		TF, P	TF, P
Toxic Chemicals Register	MOE	GP	TF, P, D	TF, P, D
Inventory of Existing Chemicals	MOE	GP	TF, P, D	TF, P, D

Table 8c. Availability of International Literature (See key below table 8d)

Literature	Location	Access is available to[2]	Access gained by[2]:
Environmental Health Criteria Documents (WHO)	MOH	GPR	IN, TF, P
Health and Safety Guides	MOL, MOH	GPR	IN, TF, P
International Chemical Safety Data Cards (IPCS/EC)	MOE, MTI, MA, MOA	Insufficient	IN, TF, P
Decision Guidance Documents (FAO/UNEP)	MOE, MOA	GP	IN, TF, P
(FAO/WHO) Pesticides Safety Data Sheets	MOA, MOE	GP	IN, TF, P
Documents from the (FAO/WHO) Joint Meeting on Pesticide Residues	MOA, MOE	GP	IN, TF, P
Material Safety Data Sheets (industry)	MOA, MOE	GP	IN, TF, P
OECD Guidelines for the Testing of Chemicals	MOE, MOA, MOH	GP	IN, TF, P
Good Manufacturing Practice Principles	MA, MTI, MOA, MO	GP	IN, TF, P
Good Laboratory Practice Principles	MOA, Ministry of , MOS	GP	IN, TF, P
WHO/UNEP Global Environmental Library Network	MOA, MO	GP	IN, TF, P

The Information and Response Center of the Ministry of Environment has the largest set of databases in the country in any one location relating to both the management and properties of chemicals. The center subscribes to all the major databases (Including DIALOG, TOMES and others) and is on-line to all major organizations through the Internet or representatives in the country. Some of the more significant databases are listed below in table 8d.

Table 8d. Availability of International Databases (See key below)

Literature	Access gained by[2]:
IRPTC	IN, TF, P
ILO CIS	IN, TF, P
IPCS, INTOX	IN, TF, P
Chemical Abstract Services Database (CAS)	IN, TF, P
Global Information Network on Chemicals (GINC)	IN, TF, P
STN	IN, TF, P

Keys to table 8b, c and d

Source[1]
C: Customs
CBS: Central Bureau of Statistics
MA: Manufactures Association
MOA: Ministry of Agriculture
MOE: Ministry of the Environment:
MOH: Ministry of Health
MOL: Ministry of Labor
MOT: Ministry of Transport
MTI: Ministry of Trade and Industry
MOS: Ministry of Science

Availability of Data[2]
D: Data
GP: General Public
GPR General Public with Reservations for trade secrets
IN: Internet web site or electronic mail
P: Post
TF: Telephone or Facsimile

Chapter 9

International Linkages

Israel is energetically involved in international cooperation on many levels. Below are a series of tables dealing with membership or affiliation to different organizations, the relevant contact or focal points (Designated National Authorities - DNA's) and agreements or conventions to which Israel is a party.

9.1 Cooperation and Involvement with International Organizations, Bodies and Agreements

Table 9a. Membership in International Organizations, Programs and Bodies7

International Organization/ Program/ Body	National Focal Point	Secondary/ Additional Focal Point
IFCS	Ministry of the Environment: Hazardous Substances Division: Dr. Israel Barzilay	
UNEP	Ministry of the Environment, Division of International Relations and Special Projects: Esther Korn-Ancri	Ministry of Foreign Affairs: Arie Tenne
WHO	Ministry of Health: Pnina Herzog	International Relations Division
FAO	Ministry of Agriculture: Dr. Miriam Freund	
ILO	Ministry of Labor and Welfare, International Relations Division	"Histadrut", Israeli Trade Union Organization
World Bank	Ministry of Foreign Affairs, International Relations Department: Arie Tenne	Bank of Israel
OECD	Ministry of the Environment: Hazardous Substances Division: Dr. Israel Barzilay. Ministry of Foreign Affairs, Economics Division: Zvi Tenne	Ministry of the Environment, Division of International Relations and Special Projects: Esther Korn-Ancri
Regional Economic Commission UNEP/ECE	Ministry of Foreign Affairs: Arie Tenne	Contact: as for OECD
UNEP/MAP	Ministry of the Environment, Division of International Relations and Special Projects: Esther Korn-Ancri	Ministry of Foreign Affairs: Arie Tenne

Table 9b. Participation in International Agreements/Procedures Related to Chemicals Management

International Agreement	Primary Responsible Agency	Relevant National Implementation Strategies
Agenda 21: Commission for Sustainable Development	Ministry of the Environment	11/96 - Began developing national sustainable development policy and planning
Basel Convention of the Transboundary Movement of Hazardous Wastes	Ministry of the Environment	Ratified
FAO Code of Conduct	Ministry of Agriculture	Voluntarily adopted since 1989
ILO Convention 170	Ministry of Labor and Welfare	
Montreal Protocol	Ministry of the Environment	Compliance and reporting according to protocols 11/97
UN recommendations for the Transport of Hazardous Goods	Ministry of Transport and Ministry of the Environment	Adoption of UN codes of transport
UNEP London Guidelines	Ministry of the Environment	Voluntarily adopted since 1989

9.2 Participation in Technical Assistance Projects

Table 9c. Participation as Recipient in Relevant Technical Assistance Projects

Project Name	International Donor Agency Involved	National Contact Point	Relevant Activities
Coastal Areas Management Programme, Israel	UNEP/MAP MAP/ERS/ARC	Valerie Brachya, Director, Planning Division, Ministry of the Environment	Prevention of coastal pollution

9.3 Comments

Cooperation with international organizations, 0ther stases and within the framework of international environmental conventions is an important component of Israel's agenda. Israel has ratified the vast majority of international environmental conventions, including the Basle convention. Israel is also involved in procedures currently underway to finalize a protocol dealing with the prior informed consent as to the movement of certain chemicals. Before ratification of any international convention, Israel must insure that national legislation is in place in order to comply with the obligations set out in the conventions or agreements, thereby insuring national implementation. The activities of international organizations in the field of the environment is relatively well integrated into national environmental programs, particularly the work and activities of UNEP/MAP - the Mediterranean Action Plan, of which Israel is an active member.

The State of Israel ratified the Basel Convention on the Transboundary Movement of Hazardous Waste in 1994 and promulgated regulations on the import and export of hazardous substances in the same year to implement 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. Only permits for the import or export of hazardous wastes for recycling purposes are issued. Permits are not 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 that is not a party to the Basel Convention.
Import is 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 an Israeli laboratory. Moreover, the hazardous waste must be transferred to Israel, stored, maintained and treated in a manner that will not damage the environment. 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.

The granting of a permit is subject to conditions that may be imposed by the Minister of the Environment; the permit may be canceled if the conditions or requirements set forth in the regulations are not met. Permit holders are required to report on quantities of imported or exported hazardous waste according to the requirements of the Minister of the Environment.

Concerted efforts have been made to coordinate the implementation activities of international conventions and agreements with all the concerned agencies within Israel, including relevant governmental organizations. There is room for improvement in the dialogue between these groups and efforts are being made to do just that, in particular between government agencies industry and non governmental organizations.

Annex I

Glossary

Acronym/Term	Description
Biocides	Insecticides: Acaricides, Molluscicides, Nematocides, Herbicides, fungicides, bactericides
CAS	Chemical Abstract Services Database
ERS/ARC	Environmental Remote Sensing / Research and Activity Center
GEN	Global Ecolabelling Network
GINC	Global Information Network on Chemicals
GLP	Good Laboratory Practice
GNP	Gross National Product
HW	Hazardous Wastes as defined by the Basel Convention
IFOAM	International Federation of Organic Agricultural Movements
ILO CIS	International Labor Organization
IPCS, INTOX	International Program on Chemical Safety
IPCS/EC	International Chemical Safety Data Cards
IPM	Integrated Pest Management
IRPTC	International Registry of Potentially Toxic Chemicals
ISIC	International Standard Industrial Classification of all Economic activities, OECD
ISO	International Standards Organization
LPG	Liquefied Petroleum Gas
MAP	Mediterranean Action Plan
NCIC	National Chemical Information Center -Home Front Command
NRICHS	National Information and Response Center for Hazardous Substances
POP	Persistent Organic Pollutant
R&D	Research and Development
SII	Standards Institute of Israel
WHO	World Health Organization

Annex II

Expenditure On Public Services For Environmental Protection

Annex III

Israel Chemical Catalog