ENVIRONMENTAL HEALTH IN ISRAEL: TOWARDS ENHANCING CAPACITY AND CAPABILITIES

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Prepared for Yad Hanadiv
(the Rothschild Foundation)
by an
International Visiting Committee
on Environmental Health

Names of Committee Members

Dr. Peter Preuss, Chairman
Dr. Henry Falk
Dr. Andrew Farmer
Dr. Erik Lebret
Dr. Jaroslav Volf

The experts listed here participated in this Committee in their private professional capacity. Organizational affiliations are provided for background purposes only.

Executive Summary

At the end of May 2005, Yad Hanadiv (the Rothschild Foundation) hosted a Committee of experts in the field of environmental health, invited to Israel for a week of meetings to offer recommendations as to what is needed to improve capacity in the area of environmental health in Israel.

The Committee included Dr. Peter Preuss (chairman), Director of the National Center for Environmental Assessment at the U.S. Environmental Protection Agency; Dr. Henry Falk, Director of the Coordinating Center for Environmental Health and Injury Prevention, United States Centers for Disease Control and Prevention in Atlanta, GA; Dr. Erik Lebret, Head of the Centre for Environmental Health Research at the Dutch National Institute for Health and Environment (RIVM); Dr. Andrew Farmer, Senior Fellow at the London-based Institute for European Environmental Policy; and Dr. Jaroslav Volf, Director of Public Health, Czech Republic.

The Committee met with more than fifty Israeli professionals from the relevant government ministries, the Israel Defence Forces (IDF), the heads of all of the schools of public health and deans of the medical schools, research scientists, academics, representatives of industry, and non-governmental organizations (NGOs) active in environmental issues.

The Committee was asked to address the following questions:

> What areas of scientific expertise are necessary to support the field of environmental health? What is the current status of each of these areas in Israel? What training is needed?
>
> What kinds of research are needed? In which fields? Where and by whom? What kind of funding mechanism best supports such research? How can serious multi-disciplinary research be promoted?

What data and information should be monitored and made available in order to make informed decisions in this field? What organizations or institutions should be responsible for data collection and dissemination?

What are the roles of the Ministry of Health and the Ministry of the Environment with respect to environmental health? Ideally, what should the role of each be and what kind of cooperation or coordination should exist between them?

Are the existing institutions and organizations capable of improvements that will have a marked positive impact on environmental health? Is there a need for the creation of additional institutions?

In response to these questions, the Committee considered the major components necessary for an effective environmental health programme, assessed the Israeli situation in light of these components, and developed a series of recommendations.

The Committee and Yad Hanadiv are fully aware that the charge to the Committee and the scope of its work may not fully incorporate important concepts, areas of expertise, and other important information. We see this report as a first step in encouraging the creation of desirable infrastructure and expertise.

Environmental health comprises those aspects of human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect health.[1] Important sources of environmental health risks include industrial waste, air emissions and water discharges, human waste, consumer products, living conditions, and ionizing and non-ionizing radiation. Health effects with known or suspected environmental etiologies include cancer, cardio-pulmonary diseases, asthma and other respiratory diseases, allergies,

1 World Health Organization, Regional Office for Europe. 1989. *Environment and Health, the European Charter and Commentary: First European Conference on Environment and Health: Frankfurt, 7-8 December 1989.* Copenhagen: WHO Regional Publications, European Series No. 35: *http://www.euro.who.int/Document/WA3095.pdf.*

neuro-toxicity and neurological impairment, gastro-intestinal diseases, developmental and congenital abnormalities, and acute poisonings. The global environmental impact on health is substantial. One study estimates that as much as 25-33 percent of the global burden of disease can be attributed to environmental risk factors.[2]

The institutional components of a national environmental health programme implicate government, communities and NGOs, industry, and academia. **Government** needs to formulate policies and strategies, is responsible for regulation, research and analysis, environmental and health monitoring, outreach, communication, and training, and should effectively coordinate policy on issues related to environmental health. **Communities and NGOs** are instrumental in evaluating, communicating, and preventing environmental health risks and in promoting environmental health awareness. **Industry** is key in consumer product safety testing; practical environmental health and pollution prevention/control research; pollution prevention, control, and monitoring; promotion of occupational health; and environmental staff development and training. **Academia** shares with government and industry the responsibility for research and analysis, and for developing and maintaining the professional capacity necessary to identify and address environmental health problems.

The core functional components of a national environmental health programme include an integrated research strategy, the ability to monitor, assess and reduce environmental health risks and hazards, and academic and technical training for the expertise required to inform policy, develop regulatory standards, and guide decision-making. The Committee concluded that in order to create comprehensive environmental health capacity and a functional environmental health programme in Israel, there is need for improvement across sectors, including academia and research, government, industry and NGOs, as well as coordination and cooperation among these institutions.

2 Smith, K.R., C.F. Corvalán, and T. Kjellström. 1999. "How much global ill health is attributable to environmental factors?" *Epidemiology* 10(5): 573-584.

FINDINGS

The Committee heard many concerns about environmental pollution and suspected health impacts. These include air pollution, surface and ground water contamination, worker and public exposure to hazardous chemicals resulting from industrial leaks and explosions, elevated national and regional cancer rates, elevated asthma rates, possibly higher than normal local birth defects, and more. Although the Committee is not aware of quantified estimates of the environmental-health burden in Israel, given what is known about environmental health in other countries and what the Committee learned about pollution and potentially environmental-related disease in Israel, it concluded that Israel's environmental burden of disease is likely to be significant. However, Israel lacks sufficient expertise to assess this burden and has only limited environmental and health policies designed to reduce it.

Academic Training

Academia has the primary role in developing and maintaining professional expertise. The Committee reviewed existing academic tracks in toxicology, bio-monitoring, epidemiology, relevant aspects of environmental sciences, and environmental and occupational medicine. The Committee concludes:

- There is a lack of capacity and capacity-building resources for environmental health and a shortage of trained scientists capable of conducting necessary environmental health research. This leads to inadequate response capability to environmental health crises as well as routine issues.

- There are several programmes in the schools of public health and medicine in Israel, but there is insufficient coordination and integration of environmental health courses and programmes.

- Very few academics are being trained at the Ph.D. level in any of the relevant disciplines.

- There is a lack of inter-disciplinary environmental health training for professionals from such key disciplines as epidemiology, toxicology, exposure assessment, decision and policy analysis, risk assessment, and medicine.

- There is a lack of environmental health training for professionals in related disciplines such as law, economics, engineering, architecture, and urban planning.

- Professional expertise capable of conducting human health risk and impact assessments needs to be improved, as does the capability to anticipate emerging environmental health problems.

Research

There is inadequate funding and a lack of expertise in both government and academia to support the necessary level of basic and applied environmental health research in Israel. In addition, if research is conducted on environmental health related topics at all, the primary ambition of university-based research groups is on cutting-edge theoretical research rather than applied research. As a result:

- Minimal environmental health research is done.
- There is a lack of continuity of research lines, leading to insufficient return on research investment.

Data - monitoring, analysis and dissemination

In many cases data collection is done well. However, the Committee's concerns include the following:

- There is no integrated database of environmental data with health data, and little sharing of data among government ministries involved in collecting data.

- Researcher and public access to data is limited (and if accessible often costly) and many opportunities to discover and understand the impacts of environmental risks on health are missed.

- There does not appear to be a cohesive and comprehensive policy regarding information sharing.

- Some important environmental data are not systematically collected.

- Laboratory capacity for environmental health training, research and development, and routine analyses is inadequate.

Government

As in most countries, responsibility for environmental health in Israel is divided among government agencies. In Israel, responsibility is divided primarily between the ministries of Health and Environment.

The Committee found gaps in the ability of government ministries in Israel to deal with problems of environmental health. A crisis mentality often pervades the ministries when dealing with these issues, driving priorities for enforcement and applied research, and draining resources that should be allocated for a systematic evaluation of environmental health problems. Israeli government ministries primarily address issues related to pollutant formation and release, exposure and contact, but are not sufficiently equipped to link adverse health outcomes to exposure to environmental stressors and pollutants. This is a result of:

- Fragmented authority and responsibility.

- The lack of an effective coordinating institution or system for environmental health.

- A lack of coherent, transparent environmental health policy and of coordinated planning and implementation in policy, research, and education.

- The absence of environmental health experts in government, as would be necessary to plan, implement, interpret, communicate, and apply the results of environmental health research.

- The absence of a mechanism within ministries to communicate environmental health risks and an inability to communicate issues of risk and health impacts from environmental factors.

- Inadequate laws, regulations, and standards to effectively address contemporary sources of environmental health risks.

Industry

Israeli industry seems to be moving in positive directions, but has not yet fully embraced environmental health responsibilities. However:

- There is a lack of qualified expertise among industry staff and management capable of assessing industry impacts on occupational and environmental health.

- Industry and government do not view one another as partners in protecting environmental health, but are in an adversarial relationship, to the detriment of Israel's environment and the health of its citizens.

Non-governmental organizations

Environmental NGOs are well established and play an increasingly important role in many Israel environmental policy issues, including an important focus on

environmental justice. They have only recently begun to address environmental health issues.

- Lack of professional expertise and funding has precluded NGOs from active and meaningful pursuit of environmental health issues.

- The limited interest that does exist, comes from environmental groups, not from the medical/health NGOs.

In short, the situation in Israel presents both institutional and functional challenges that require a systematic response.

RECOMMENDATIONS

General

- Israel should develop an integrated and inclusive National Environmental Health Action Plan (NEHAP), using the WHO guidelines as a model for addressing environmental health issues.

- Israel should develop a National Environmental Health Research Plan. Its development should be a collaborative process including government, academia, industry, and NGOs, and should culminate in a finite number of priority research areas and clearly identified roles and responsibilities. The Research Plan should guide research funding decisions in government and academia.

- The Committee proposes to create a National Environmental Health Institute (NEHI) to promote and sustain the growth of environmental health programmes and awareness in Israel.

Academic Training

To effectively address environmental health issues it will be necessary to make more efficient use of expertise and capacities for research and training; enhance the scope of Israeli teaching and research institutes; develop/maintain capacity, infrastructure, and expertise to investigate and monitor the scope and scale of specific Israeli problems; and anticipate emerging environmental health problems.

- There is an urgent need to close the expertise gap in relevant academic fields, including: toxicology, environmental epidemiology, occupational and environmental medicine, bio-monitoring and human health risk assessment, through directed doctoral and post-doctoral fellowships abroad.

- Competitive funding should be provided for visiting environmental health scientists and policy experts to teach courses and conduct short-term (six months to one year) research projects at Israeli universities and government ministries.

- The four schools of public health and the four schools of medicine in Israel should develop systems for coordinating teaching, training, and research. A National Public Health Curriculum Coordination and Standards Committee should be established.

- Short-term training both via courses developed in Israel and by sending abroad people in appropriate disciplines is highly recommended. Of particular value are courses for professionals in government, industry, and NGOs in topics such as exposure assessment, toxicology for epidemiologists, and risk communication.

Research

The Committee sees a need for strongly coordinated environmental health research to manage multi-year integrated projects on selected environmental health problems.

- There is a need for better coordination among the many ministries with a responsibility for environmental health with regard to planning and funding research and special studies, staffing, and training.

- A coordinated programme of internships, extended fellowships, and small research grants should be developed, and seed money made available to help young scientists begin their careers.

- A new programme should be created that sends established scientists on targeted visits to other countries to update themselves on cutting-edge issues. Israel should also send scientists to European Union (EU) countries to learn about funding opportunities for research in environmental health.

- A competitive research grant budget should be created at a level sufficient to permit the government and research institutions to implement an agreed-upon environmental health research programme.

- Mechanisms need to be established to leverage industry research funding and to ensure and promote the credibility of industry-sponsored environmental health research through public-private partnerships.

Data-monitoring, analysis, and dissemination

- The framework, geographical extent, and scope of environmental monitoring should be examined, with the aim of developing a more comprehensive and integrated network.

- A review of the capacity of municipalities to undertake basic monitoring functions should be conducted, and a plan developed to close gaps that exist in the monitoring network. Quality control procedures should be guaranteed.

- Systems should be established to ensure more effective coordination of collection and analysis of environmental data and health data, and to inform one another.

- A review of laboratory needs, capacity, and priorities should be undertaken. Based on the results of this review, the Committee recommends the development of a central environmental health laboratory.

- Israel should develop a bio-monitoring programme.

- All of the major institutions and stakeholders involved in environmental health should commit to open access to information.

- Relevant Israeli institutions should give serious consideration to risk communication procedures and strategies, and to their respective roles in dealing with concerns as they arise among citizens. Specialized risk-communication training will be required.

Government

- The Committee recommends that an improved governmental structural framework be created to successfully conduct public programmes in environmental health. Inter-ministerial coordinating groups should be established with clear mandates to eliminate barriers to cooperation.

- Environmental health units should be created in both the Ministry of the Environment and the Ministry of Health. They should be staffed by people with the expertise to effectively address environmental health problems. These two units must be complementary and have coordinated programmes.

- A clear delineation of national priorities in environmental health is needed to guide development of a comprehensive programme. The process should engage the widest possible spectrum of interested parties, including local authorities, academia, NGOs, and industry.

- The Ministry of the Environment should have an increased focus on risk assessment. This process is critical for distinguishing high from low risks, and for setting priorities for action, for research, and for policy. The Ministry of Health should be focusing on environmental health epidemiology, bio-monitoring, and assessment of dose to target tissues.

- The ministries should work together with the Israel Defence Forces (IDF) to transfer the military hazard map to a civilian institution charged with obtaining and integrating environmental data related to environmental health.

National Environmental Health Institute (NEHI)

A central proposal of the Committee is for the creation of a National Environmental Health Institute that would facilitate the National Environmental Health Action Plan, promote cooperation among the ministries of the Environment and of Health and other key partners, and coordinate the development of a National Environmental Health Research Strategy with major academic centres. The National Environmental Health Institute could act as a catalyst and facilitator for the implementation of many of the Committee's recommendations.

The Committee's findings and recommendations presented in this and subsequent chapters are not intended to criticize specific institutions or policies. Rather, they are collectively intended to help Israel develop a comprehensive national programme that enhances the existing roles, responsibilities, and capabilities of local, regional and national government institutions, non-governmental organizations (NGOs), industry, and academia to effectively address environmental health issues.

Introduction and Overview

This report presents the findings and recommendations of an International Expert Visiting Committee on environmental health in Israel (see Annex A: Members of the Yad Hanadiv International Expert Committee on Environmental Health in Israel). The Committee was sponsored by Yad Hanadiv (the Rothschild Foundation) and convened 21 - 26 May 2005 in Jerusalem, Israel. The Committee looked broadly across existing Israeli institutions to identify existing capabilities and roles, and opportunities for improving Israel's ability to effectively address environmental health issues. To orient the Committee, Yad Hanadiv provided the following "Terms of Reference":

1. What areas of scientific expertise are necessary to support the field of environmental health? What is the current status of each of these areas in Israel? What training is needed?

2. What kinds of research are needed? In which fields? Where and by whom? What kind of funding mechanism best supports such research? How can serious multi-disciplinary research be promoted?

3. What data and information should be monitored and made available in order to make informed decisions in this field? What organizations or institutions should be responsible for data collection and dissemination?

4. What are the roles of the Ministry of Health and the Ministry of Environment with respect to environmental health? Ideally, what should the role of each be and what kind of cooperation or coordination should exist between them?

5. Are the existing institutions and organizations capable of improvements that will have a marked positive impact on environmental health? Is there a need for the creation of additional institutions?

As part of its deliberations, the Committee met with and considered advice from more than fifty individuals including leading Israeli academics, local and national government officials, leaders of NGOs, and industry representatives (See Annex B: Israelis with whom the Committee met). Information and opinions these individuals shared with the Committee significantly informed the Committee's findings and recommendations. Except where otherwise noted, these individuals are the sources for information contained in this report about the current environmental health situation and institutions in Israel. The Committee is most grateful for the time, input, and candid advice it received from these individuals. Their selfless cooperation made this project possible.

The Committee also considered background information and how similar programmes are developed and organized elsewhere, such as in the European Union and the United States. The Committee deliberatively integrated what it learned about Israel's current institutions and capabilities with a conceptual framework of what the Committee agreed are the most important institutions and functions associated with environmental health. This conceptual framework is presented in Chapter 1.

The Committee's general findings with regard to the current situation in Israel are presented in Chapter 2.

The Committee's analysis identified four general areas that would be necessary for developing a comprehensive national environmental health programme:

- Academia, education, and training (Chapter 3)
- Research (Chapter 4)
- Data (Chapter 5)
- The role of government and the development of a National Environment and Health Action Plan (NEHAP) (Chapter 6)

Each of these chapters includes the Committee's specific findings, recommendations, and a proposed time-line for implementing the Committee's recommendations.

Chapter 7 discusses the Committee's finding of a need for, and its recommendation to establish, a new National Environmental Health Institute. For reasons discussed throughout this report, the Committee believes a new institute is essential for the development and successful implementation of the NEHAP, and to address many of the specific recommendations discussed in Chapter 3 – 6.

The report concludes with three annexes. Annex A lists the members of the Committee and their affiliations. Annex B lists the Israeli officials and experts with whom the committee met. Annex C provides an explanation and for illustration purposes, an example of a National Environment and Health Action Plan.

Finally, the Committee would like to thank Dr. Nadav Davidovitch from Ben-Gurion University, who participated in many of the Committee's meetings and offered local knowledge and expertise. The Committee also acknowledges the contributions, dedication, vision, and hospitality of the Yad Hanadiv staff in Jerusalem, especially Dr. Ruth Ostrin and Ms. Maya Sadeh.

Challenges and Limitations

The scope of the project and the nature of the charge to the Committee bind this report. The Committee and Yad Hanadiv are fully aware that some important concepts, areas of expertise, and other information are not part of this report. We see this report as a first step that attempts to assist in improving the infrastructure and enhancing expertise. While this report represents core recommendations and findings in response to the terms of reference, the recommendations do not represent the only legitimate way to improve environmental health in Israel. We hope that implementation and further action will bring with them many new areas of activity that are not less important and are not addressed in this report. It is also important to note that in our analysis we considered mainly issues of environmental sickness, i.e. the impact of pollution on health, and did not include in our review lifestyle issues such as smoking or urban health issues such as transport or urban sprawl.

Chapter 1: Definition of Environmental Health and What is Needed for Israel to Function Effectively in this Arena

1-1 Definition and Scope of Environmental Health

According to the World Health Organization (WHO):

> *Environmental health comprises those aspects of human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect health.*[3]

When a pollutant is emitted into the environment, a series of events must occur before the pollutant can have an effect on the health of an exposed population.[4] This series of events, or continuum, can be described as follows:

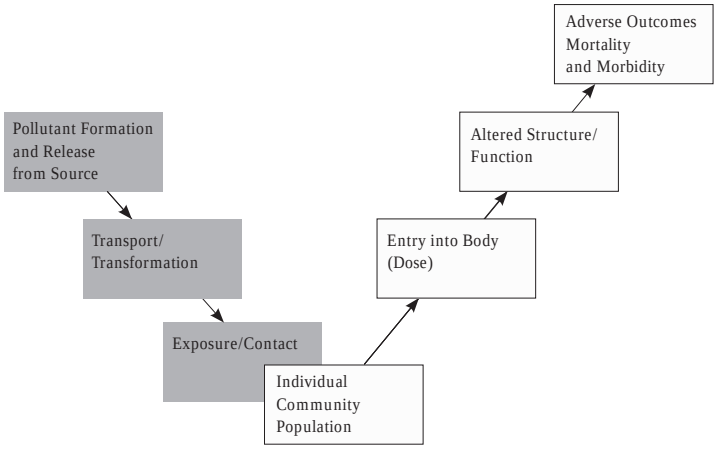


Figure 1: Environmental Health Paradigm (Adapted from National Research Council 1983)

3 World Health Organization, Regional Office for Europe. 1989. Environment and Health, the European Charter and Commentary: First European Conference on Environment and Health: Frankfurt 7-8 December 1989. Copenhagen: WHO Regional Publications, European Series No. 35: *http://www.euro.who.int/Document/WA3095.pdf.*

4 National Research Council. 1983. "Risk Assessment in the Federal Government: Managing the Process." Pp. 191. Washington, DC: Committee on the Institutional Means for Assessment of Risks to Public Health, National Academy Press.

Important sources of environmental health risks include industrial waste, air emissions and water discharges, human waste, consumer products, living conditions, consumption, life styles and behaviour (e.g. exposure to ultraviolet radiation, tobacco smoking, and indoor pollutants such as radon, exposure to environmental [second-hand] tobacco smoke, allergens, and household products that may contain hazardous chemicals, such as cleaning solutions, solvents, and paints). Health effects with known or suspected environmental etiologies include cancer, cardio-pulmonary diseases, asthma and other respiratory diseases, allergies, neuro-toxicity and neurological impairment, gastro-intestinal diseases, developmental and congenital abnormalities, and acute poisonings. The global environmental impact on health is substantial. One study estimates that as much as 25-33 percent of the global burden of disease can be attributed to environmental risk factors.[5] Another study estimates the disease burden from water, sanitation, and hygiene alone to be 4.0 - 5.7 percent of the total worldwide disease burden.[6]

The Committee believes that a comprehensive national environmental health programme must address the full continuum – from emissions to public exposure to clearly adverse health effects – and it should be capable of effectively and efficiently detecting, assessing, preventing, and mitigating environmental health risks from all significant sources. The institutions and systems that comprise a national environmental health programme vary with each country, as does their effectiveness; they depend on a myriad of interacting historical, institutional, cultural, legal, economic, and political factors. In fact, the Committee is not familiar with any country that effectively addresses all components of environmental health, although some countries clearly do so better than others. Like other countries, Israel has institutions and functional capacity that effectively address some environmental health issues; other institutions are less effective.

5 Smith, K.R., C.F. Corvalán, and T. Kjellström. 1999. "How much global ill health is attributable to environmental factors?" *Epidemiology* 10(5):573-584.

6 Prüss, A., D. Kay, L. Fewtrell, and J. Bartram. 2002. "Estimating the burden of disease from water, sanitation, and hygiene at a global level." *Environmental Health Perspectives* 110(5): 537-542.

The following conceptual framework describes what the Committee considers the most important institutional and functional components of a comprehensive environmental health programme. The framework does not describe, nor is it based on, any existing national programmes known to the Committee. It represents, rather, the Committee's collective knowledge, gained from experience with a number of such programmes in a variety of countries.

1-2 Examples of Institutional Components of a National Environmental Health Programme

Academia

Academia shares with government and industry the responsibility for developing and maintaining the **professional capacity** to identify and address environmental health problems. Academic institutions have primary responsibility for **training** environmental health technicians and professionals for work in industry, government, communities, and academia; providing employment for environmental health researchers; sponsoring and promoting **research**; and providing **research and analytical infrastructures** such as laboratories, libraries, and information technology. Academia also advises government, industry, and the public on science, policy, and socio-economic issues, and fosters cross-fertilization of **knowledge across disciplines, sectors, and countries.**

Government

Government has a primary role in promoting environmental health and should maintain the capacity to quickly and effectively respond to emerging environmental health threats and emergency situations, including the capability for exposure/risk assessments[7], disease detection, epidemiology studies, risk communication, and emergency response.

7 Risk assessment in this case is defined as a process whereby toxicological, epidemiological, and other information are analyzed together with data about exposure to estimate the risk that an individual and/or population may face as a result of exposure to specific environmental agents.

Government is primarily responsible for creating **environmental health policies and strategies** that provide general principles, priorities, goals, targets, and means, including a clear articulation of roles and responsibilities. Government has sole responsibility for developing and enforcing **regulations** that protect public health. Government needs to conduct, coordinate, and sponsor applied problem-oriented **research** as a basis for problem identification, priority setting, policy and strategy development, programme design, regulation and enforcement, and evaluation. Government is responsible for **outreach, communication, and training,** and should provide compliance and technical assistance; worker education and training; research grants, graduate training opportunities and visiting scientist positions; and public risk communication. Finally, government and other entities should provide **financial assistance** to ensure that an effective environmental health programme can be successfully implemented.

To ensure their credibility and effectiveness, policies and strategy development should be **grounded in science**, be **transparent and inclusive**, and provide for **meaningful participation** of relevant national, local, and regional authorities and community groups, industry, NGOs, academia, and international organizations. Regulation should be based on the best available science and analyses, consistently and appropriately applied, and should be comprehensive, transparent, implementable, and enforced. Compliance and enforcement information should be publicly available. Regulation and standards developed by other countries or organizations, e.g. the European Union (EU) or the World Health Organization (WHO) can be adapted. However, they should be evaluated to ensure local applicability and consistency with the regulatory framework. **Applied research** should be based on an agreed-upon plan that has been developed with the participation of research scientists, industry, other governmental and non-governmental institutions, and the public. Effective **coordination** among relevant institutions with responsibilities for environmental health issues is necessary to ensure effective use of environmental health resources across all relevant government and non-government institutions and sectors.

To fulfil its role, government needs to ensure that relevant and scientifically valid **environmental and health data** are routinely collected. Data and

analyses should be accessible in readily usable formats to all levels and branches of government, academia, and the public. In addition, relevant government institutions should have available a cadre of **qualified professionals** (with advanced academic degrees and appropriate experience) in disciplines such as environmental medicine, microbiology, environmental science, epidemiology, risk assessment and risk communication, engineering, sociology, statistics, economics, policy analysis, ethics, law, and toxicology.

Communities and NGOs

Many environmental health issues are unique in kind and/or severity to individual populations, communities, or regions. Experience in many countries has shown the value of **sustained and meaningful community involvement** in evaluating and communicating environmental health risks; preventing and mitigating risks; developing policies and strategies; and promoting environmental health awareness. An environmental health programme should promote and sustain the role of local communities and community groups, municipal and regional environmental authorities, and NGOs through education and training; technical, legal and financial assistance; and outreach. Adequate scientific and technical expertise and resources should be available to these institutions to enable them to participate meaningfully in policy deliberations and decision-making.

Industry

Significant sources of pollution and environmental health risks come from the industrial sector including agriculture, chemical, communication, construction, energy, manufacturing, mining, transportation, and tourism. The large number and kind of industrial sources of environmental health risks necessitates the **cooperation and involvement** of industry for an effective national environmental health programme. Industry should participate in consumer product safety testing; community education and outreach; practical environmental health and pollution prevention/control research; pollution prevention, control, and monitoring; promotion of occupational health; and environmental staff development and training.

Chapter 2: Current Strengths and Opportunities to Improve Environmental Health in Israel

2-1 The Environmental Health Burden in Israel

WHO estimates that poor environmental quality contributes 25-33 percent of global ill health.[8] It plays a major role in long-term economic growth and sustainable development. There is increasing evidence showing that it is not so much the cost of health that is high, but rather the cost of ill-health (in terms of healthcare, medicines, sick leave, lower productivity, invalidity, and early retirement). For example, the estimated total annual financial burden of lung disease in Europe is $123 billion, a figure comparable to the Gross Domestic Product (GDP) of Ireland. The relationship between Chronic Obstructive Pulmonary Disease (COPD) and air pollution is widely accepted.[9] COPD is the most costly respiratory disease in Europe, with annual costs estimated at $46.7 billion, of which 74 percent ($34.5 billion) result from lost workdays. The estimated indirect costs in productivity losses are almost three times the costs for direct health care.[10]

The Committee heard about many areas of concern related to environmental health in Israel, some of which are common to most modern industrialized societies and some more specific to Israel and its geographic location and recent history. Sources of environmental exposures and stresses include:

- Air pollution
- Water quantity and quality
- Asbestos

8 World Health Organization, Regional Office for Europe (2006), Environmental Health Policy. Copenhagen, *http:// www.euro.who.int/envhealthpolicy* (updated 20 January 2005)

9 US Centers for Disease Control and Prevention, Department of Health and Human Services. August 2003. *Facts About Chronic Obstructive Pulmonary Disease.*

10 European Respiratory Society and the European Lung Foundation. November 2003. *European Lung White Book.*

- Decline in fish, shellfish and wildlife populations
- Non-ionizing radiation
- Surface and ground water contamination
- Uncontrolled exposure of people to chemicals from hazardous waste sites
- Worker and public exposure to hazardous chemicals resulting from industrial leaks and explosions
- Specific hazardous waste sites and waste from the military (e.g. perchlorate)

Health concerns include:

- Elevated asthma rates
- Elevated national and regional cancer rates, including a 20 percent greater then expected overall cancer burden, 30-60 percent greater than expected non-Hodgkin's Lymphoma rate[11] and higher than average lung cancer rates in the Haifa region
- Possibly higher than normal local birth defects
- Incidences of Legionnaires' Disease
- Water- and food-borne disease outbreaks

The Committee concludes that although it is not aware of quantified estimates of the environmental-health burden in Israel, given what is known about environmental health from other countries together with what the Committee learned about pollution and potentially environmental-related disease in Israel, the Committee concludes that the environmental health burden on Israeli society is likely to be significant.

2-2 Institutional Capacity for Environmental Health in Israel

As previously discussed, the Committee compared what it learned about the current status of environmental health in Israel with what the Committee considered to be core capacities necessary for an effective, comprehensive,

11 After standardization according to place of birth.

national environmental health programme. Importantly, the Committee's findings and recommendations presented in this and subsequent chapters are not intended to criticize specific institutions or policies. Rather, they are collectively intended to help Israel develop a comprehensive national programme that enhances the existing roles, responsibilities, and capabilities of local, regional and national government institutions, NGOs, industry, and academia to effectively address environmental health issues.

Academia

The Committee heard that Israel has several university programmes that include an environmental health curriculum. Several toxicology and epidemiology courses are offered in Israel's four Master of Public Health programmes and medical schools. There are a number of training tracks in environmental and occupational health. The Committee learned that there are few environmental epidemiologists or experts in environmental health, environmental medicine, risk assessment, environmental health policy, environmental health law, or experts in areas such as transport and health and health impact assessment. There is no formal training in environmental medicine for doctors in Israel. Consequently, Israeli universities are producing only a handful of graduates capable of conducting necessary environmental health research.

Although there are some Masters level students being trained in Israel in environmental epidemiology, there are very few Ph.D. level environmental epidemiologists currently being trained, and hardly any faculty to do the training.

The Committee concludes that there appear to be some good programmes in the schools of public health and medicine in Israel. However, there is not sufficient coordination and integration of environmental health courses and programmes among the schools. Available resources could be applied more effectively to produce the environmental health experts that Israel needs.

Research

The Committee learned that most government-sponsored research is focused on industrial research. Environmental health research is rare, primarily due to insufficient environmental health research budgets, lack of specific responsibilities, and little appreciation for environmental health issues by the relevant government ministries. The dean of one of Israel's foremost medical schools told the Committee that there are no leading academics in environmental epidemiology, and another dean commented that it is difficult to attract students to this field without a leading academic research group. The Committee learned of only two monitoring and research projects that could serve as a model for future collaborative research. In one case, a new fund was established by the Israel Electric Corporation to develop methodologies and assess the public health impacts of the Hadera and Ashkelon power plants and new developments. About 25 experts were brought together with the Ministry of the Environment to plan the projects. A second case involved an epidemiological study at the Ramat Hovav hazardous waste facility.

Representatives from some government ministries dismissed the usefulness of environmental health research (e.g., epidemiology) saying these kinds of studies are usually inconclusive and take too long. The Committee feels that this perception is likely the result of competing priorities, limited available funding, and inadequate training in the design and interpretation of environmental health studies, leading to inappropriate and unrealistic expectations. Several ministry representatives, however, expressed a need for risk assessment professionals.

The Committee concludes that there is inadequate funding and a lack of expertise in both government and academia to support a desirable level of basic and applied environmental health research in Israel. Further, there is an inadequate corps of environmental health experts in government necessary to plan, implement, interpret, communicate, and apply the results of environmental health research.

Government

Responsibility, Staffing, and Coordination

There is a significant environmental health problem in Israel, and the Israeli government is not sufficiently equipped to perform the analyses required to link adverse health outcomes to exposure to environmental stressors and pollutants. Israel does not have an integrated governmental policy for environmental health issues, and does not regularly monitor health effects of environmental hazards.

Sufficient resources for a systematic evaluation of environmental health problems and priorities across the country are not available and as a result, a "crisis mentality" often drives enforcement activities and even applied research.

A critical gap which exists in the ability of government ministries to deal with problems of environmental health and to mount a strong environmental health programme results from:

- Fragmented authorities and responsibilities.
- Lack of staff trained in areas of environmental health.
- Lack of government support for environmental health organizations (units) within the ministries.
- The inability of decision makers, research scientists, and the public to find and utilize environmental data.
- An inability to communicate issues of risk and health impacts of environmental factors.
- An almost complete lack of coordinated planning and implementation in policy, research, and education.
- Inadequate funding.

Thus, there cannot be effective governmental response to a breadth of environmental health issues (including evaluating and addressing the sources of air and water pollution and their health impact, addressing urgent environmental threats such as pollutant emissions from Ramat Hovav industrial compound and

national toxic waste site, exposure to the waters of the heavily polluted Kishon River, perchlorate exposure in Ramat Hasharon, vinyl chloride exposures in Haifa, and many others) without significant additional expertise in environmental health.

Responsibilities for environmental health issues are distributed among a number of Israeli government ministries and local government authorities:

The Ministry of the Environment ostensibly manages environmental matters on a national level and plays a major role in environmental health in Israel by setting standards, monitoring ambient air quality, and by enforcement of environmental standards. In practice, the Ministry of the Environment shares environmental responsibilities with other government ministries and local government. The ministry's budget has been in constant decline, from $48 million in 2002, $42 million in 2003, $40 million in 2004, to $38 million in 2005.[12,13] The ministry itself acknowledges that it lacks the resources to meet its current responsibilities:

> "The ministry's budget in 2004 represented only 0.07% of the total ministerial budget and is inadequate to meet the critical environmental needs of Israel. Over the past few years, major cuts were made in the budget of the Ministry of the Environment"[14]

The Committee learned that the Ministry of the Environment has very few people with expertise in environmental health and also suffers from limited capacity in other areas. The Ministry of the Environment has a Chief Scientist's Unit (CSU) which has a staff of only four members (including technical and professional staff) and is responsible for providing the minister and the director general with professional advice. Consequently, the ministry has difficulty in

12 Recently, the Ministry of Environment received an ad-hoc additional $15 million to its operating budget.

13 Israel Central Bureau of Statistics. 2005. "Government Outlays (10-8)." in *Statistical Abstract of Israel 2005-No.56*. Jerusalem: *http://www1.cbs.gov.il/shnaton56/st10_08.pdf*.

14 Israel Ministry of the Environment. 2005. "Structure of the Ministry of the Environment." Jerusalem: *http://www.sviva.gov.il/Enviroment/*.

dealing with environmental health crises, in translating monitoring results into estimates of health impacts, and in assessing the risks of common and new environmental pollutants.

The ministry is currently able to deal effectively only with emissions and ambient monitoring. Most of the ambient air standards that have been set have been health-based, designed to protect people from adverse health effects. The Ministry of the Environment believes that it has made a great deal of progress in reducing air pollution during the past decade by establishing a series of enforceable voluntary covenants with industry to reduce the air pollutant emissions. These covenants were based on 1986 German air standards. The ministry has been working on introducing more stringent standards, based on the updated German standards of 2002, to achieve greater reductions in emissions. Some groups with whom the Committee met stated that these voluntary covenants with industry are insufficient for meeting air quality goals, and have not been adequately enforced. In addition, industry representatives with whom the committee met expressed great concern about the reduced participation of industry in developing newer emission standards. The ministry has not connected these emission standards to public environmental health outcomes, and consequently, there is controversy about the stringency, or lack thereof, of these standards.

The Ministry of Health was largely responsible for environmental health issues prior to the establishment of the Ministry of the Environment. With the creation of the Ministry of the Environment in 1988, major responsibilities for environmentally related health effects were transferred to the new ministry. The Research Institute for Environmental Health under the Ministry of Health consisting of about 60 staff, including an environmental epidemiologist, was also transferred to the Ministry of the Environment.[15] With its environmental health capability severely diminished, the Ministry of Health is limited in its ability to be an effective partner with the Ministry of the Environment, as well as in its ability to initiate surveys, studies, and analyses that are instrumental in dealing with Israel's environmental health issues.

15 The Minister of the Environment closed the institute in 2000.

The Committee was told that the Ministry of Health has a total budget of approximately $3.9 billion, of which the budget of Public Health Services is approximately 3 percent or $120 million. The staff of the Environmental Health Department includes about 160 employees. Two institutions under the authority of the Ministry of Health deal with public health issues: the Gertner Institute, a multidisciplinary research institute, and the Israel Center for Disease Control (ICDC), a monitoring and survey institute. The Gertner Institute has recently established a risk analysis centre, currently staffed by a professor and a secretary.

The Committee heard that the ministry has a number of qualified experts (including a chief environmental health engineer, a toxicologist, a national environmental health inspector, and a number of environmental health and drinking-water engineers) in an environmental health department under the Public Health Services. Most of its capacity, however, is oriented toward drinking- and bathing-water quality issues, regulation and enforcement of water quality and standards, supervision of food quality, and licensing and supervision of sanitation and hygiene in educational and health institutions.

The Ministry of Finance approves ministerial budgets and capital projects, and is therefore one of the key ministries that determines the scope of environmental health programmes in Israel.

The Ministry of National Infrastructure is responsible for the overall management of Israel's water resources and infrastructure, energy resources supply and infrastructure, land resources, and sewage infrastructures, and under the "Vehicle Operation Law," determines vehicle fuel quality. Consequently, the Ministry of National Infrastructure has considerable influence on drinking water and air quality. The Committee heard that the Ministry of National Infrastructure often successfully opposes the positions of the Ministry of the Environment.

The Ministry of Industry, Trade, and Labour is in charge of industrial hygiene, monitoring, and standards of exposure levels in the workplace. The Committee heard that the ministry has a substantial research and development

programme with a budget of approximately $6.5 million. The research and development programme is focused on applied research but has no specific focus on environmental or occupational health. The ministry supports the National Institute of Safety and Hygiene that provides workers with safety and hygiene guidance, but which lacks capacity for a "health investigatory function" to follow-up on occupational diseases. Other officials told the Committee that the Environmental and Occupational Health Research Institute (with a professional staff of about 50), largely funded by the ministry, was disbanded in 2000.

The Ministry of Transport plays a very significant role in reducing the health effects caused by air pollution from vehicles. The ministry is responsible for all aspects of land, maritime, and air transportation in Israel. Among other responsibilities, it is in charge of standard-setting for vehicles (including vehicular emissions) and regular licensing checks.

The Ministry of Agriculture is responsible for pesticides and water consumption for agriculture. The Committee heard that in practice, the Ministry of Agriculture is responsible for water and soil pollution from fertilizers and pesticides, cowsheds and animal pens.

The Israel Defence Forces (IDF) has a Medical Corps that addresses environmental impacts on health within the framework of its activities to maintain soldiers' health. The IDF has public health experts and works in close cooperation with the Ministry of Health. To help protect troops from environmental health stressors both within IDF facilities and those outside IDF facilities, the IDF recently developed an enhanced GIS-based risk hazard map that integrates spatial information on environmental pollutants and other environmental hazards to highlight geographical areas of potentially higher risks. From what the Committee heard, this is the only database of its kind in the country.

The Committee concludes that historically adversarial relations among some government ministries, coupled with severe reductions in their budgets, makes collaboration and cooperation difficult, sporadic, and

frequently ineffective, leaving important gaps in the government's capacity to address environmental health issues or fund important research.

Regulation and Policy

The Committee learned that compared to other Western countries, there are few environmental laws in Israel that specifically address environmental health issues. Most of Israel's existing laws are old and seem to be inadequate, and new environmental legislation relies largely on regulations which supplement existing law. For example, the Abatement of Nuisances Law, Motor Vehicle Operation Law, and Transportation Ordinance date back to 1961, the Drinking Water Law to 1959, and the Public Health Ordinance dates back to 1940, prior to the establishment of the State of Israel. Despite these laws being relatively strict, they do not deal with environmental and environmental health issues in an integrated manner when compared to laws specifically designed to systematically address environmental pollution such as the Clean Air Act[16] in the United States. Because of outmoded legislation, inadequate budgets, and lack of expertise for regulatory development, many of Israel's environmental standards are adopted from other countries without necessarily fully considering the social, geographical, political, economic, industrial, legislative, regulatory, implementation and enforcement structure into which they will be incorporated. For example, the Ministry of Industry, Trade, and Labour adopted the National Conference of Governmental Industrial Hygienists (NCGIH) Threshold Limit Values (TLV), but uses lower standards when consistent with the EU. The Ministry of the Environment based stack emission limits on the 1986 German TA Luft regulations. On a positive note, the Committee heard that a proposal for an Israeli Clean Air Act has received considerable support and has recently successfully passed the first stage of legislation in the Knesset. If this law is fully approved by the Knesset, it can be a major step forward in Israeli environmental legislation.

16 The Clean Air Act is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. *http://www.epa.gov/region5/defs/html/caa.htm*

The Committee heard that despite environmental legislation and recent improvements, environmental enforcement in Israel is weak and many laws are not strongly enforced due to lack of funds, staff, enforcement authority, or ambiguity in the law. In a culture of weak compliance, a lack of strong deterring enforcement is a major problem. Israel has recently begun to incorporate the "polluter pays" principle in environmental legislation.

Although Israel's laws require routine water quality monitoring and reporting, the Committee learned that few cities do so. The Committee also heard that the fractionalization of regulatory and enforcement responsibilities among different and often competing ministries is a significant barrier to a coherent approach to environmental health. For example, under Israel's 1959 Drinking Water Law, the Ministry of the Environment has responsibilities for preventing pollution of water sources, while drinking water standards are set by the Ministry of Health. Responsibility for water monitoring is divided among the ministries of Health and Environment and the Israel Water Commission, and the distribution system is under the control of local authorities. In the area of transportation, vehicle import standards and air pollution control requirements are the responsibility of the Ministry of Transportation under the 1961 Motor Vehicle Operation Law, while the Ministry of National Infrastructure establishes fuel quality under the 1961 Transportation Ordinance.

The Committee concludes that Israel lacks a coherent and transparent environmental health policy and legislative system. The Committee also concludes that existing laws are often out of date, inadequate to effectively address contemporary sources of environmental health risks, difficult to apply, and difficult to enforce.

Environmental and Environmental Health Data

Israel has a modern law that provides citizens with specific rights to access government-held data. However, the Committee heard that some existing data, critical for environmental health research, are not readily accessible because of

confidentiality concerns, differing computer platforms and formats, and/or lack of available staff to respond to legitimate requests. Such data include occupational exposure/history, health/disease data, and industrial emission, discharge, and other pollution-related data. The Committee also heard that there is no comprehensive policy regarding the sharing of these kinds of information, and that there is no integrated database of environmental and health data. The Committee was told that the Haifa regional environmental authorities have a state-of-the-art monitoring network that provides real time public information on air quality on the internet, and uses models to predict pollution concentrations in specific locations. Although the IDF has developed a GIS hazard map, the Committee is not aware of any other instances where risk analysis or other environmental health research has been used to identify or characterize emerging or existing environmental health problems, assess program effectiveness, target additional data needs, or for developing cost-effective strategies for research, policy, or public information.

The Committee concludes that fragmentation of governmental authorities has resulted in fragmentation of data collection and data dissemination. For a variety of reasons, there is little sharing of data among the ministries; data accessibility is limited for researchers and the public; and many opportunities are missed for discovering and understanding the impacts of pollution on health. Israel lacks adequate processes to ensure the timely access to important environmental health information necessary for research, policy, and risk communication. Israel also lacks effective policies regarding the quality assurance of the data, making it difficult to share data and evaluate their appropriateness for specific secondary uses. The Committee also concludes that while some ministries (e.g. the Ministry of the Environment) and the IDF make extensive use of modern information technology (e.g. GIS and Internet), much more transparency and improved access to environmental health data by researchers and the public is needed. This would improve the quality of government desicion-making and enhance public involvment and confidence.

Response Capability

The Committee heard that there is both a lack of capacity and capacity-building resources for environmental health. The Committee learned that most government responses to environmental health issues are driven by local concerns and/or media attention, and that this may be diverting scarce government resources and attention from hazards that pose potentially greater environmental health risks.

In terms of infrastructure, the Ministry of Health has some laboratory capacity, primarily oriented to drinking water and food safety. However, there is no central laboratory with the capacity to deal with all necessary environmental health monitoring. Analytical capacity is also lacking for certain contaminants such as dioxins, PCBs, and specific biological analyses like mutagenicity.

The shortage of trained scientists in relevant disciplines such as environmental toxicology leads to insufficient expertise for conducting quantitative risk assessments using toxicological data, for utilizing and interpreting medical toxicological information, and for establishing adequate facilities for toxicological analysis of environmental and biological samples. Consequently, it is very difficult for the government to respond to a breadth of issues ranging from evaluating ongoing health concerns of air and water pollution to addressing urgent environmental threats.

The Committee concludes that although Israel has excellent universities and some laboratory capacity, existing capacity should be enhanced to support improved environmental health training, research and development, and implementation of environmental health-related laws and regulations. The Committee also concludes that available environmental health expertise in government, NGOs, and industry is inadequate to meet Israel's current or future needs.

Programme[17] promoted by the Israel Manufacturers Association will lead to increased openness, and consequently increase the need for industry-led research to overcome what they believe to be misinformed public perception. Industry representatives told the Committee that they were willing to entertain sponsorship of environmental health research, but were also very sceptical that industry-sponsored research would be accepted as credible by the Israeli public.

The Committee concludes that Israel's industries seem to be moving in the right direction, but have not yet fully embraced their environmental health responsibilities. This is partially due to a lack of qualified expertise among industry staff and management, partially because of their concern that they will not be treated fairly by relevant government ministries and partially because of concern that research findings could contribute to additional and costly regulation. The Committee was encouraged that the representatives with whom it spoke expressed a willingness to expand their research role.

Summary of Findings

The Committee concludes that environmental health policy and regulatory responsibilities are fragmented across multiple national government ministries, regional and local governments. In addition teaching and research fall in between disciplines. Furthermore there is a general lack of advocacy on the part of NGOs because they have failed to make the appropriate linkages between health and environmental issues. No authority or organization believes that it has a specific environmental health mandate. The consequence of Israel's lack of a cogent environmental health agenda results in a passing off of responsibility, amplified by lack of coordination and cooperation within and among various institutions. This situation represents both an organizational and functional challenge that requires a systematic response.

17 Responsible Care is an initiative developed and adopted by chemical companies to continuously improve the environmental, health ,and safety performance of their operations and products in a manner responsive to the concerns of the public.

Chapter 3: The Role of Academia

The committee met with representatives from a variety of academic and research institutions and programmes in environmental sciences, environmental health sciences, medicine, public health, and policy analysis. The opinions voiced were alarmingly consistent on the list of problems and deficiencies in academia:

- Limited capacity and resources.
- Very few people being trained, particularly at the Ph.D. level.
- Poor response capacity for emerging threats.
- Lack of environmental health training for professionals in related disciplines, such as law, economics, public policy, engineering, architecture, and urban planning.
- A lack of coordination and collaboration among existing programmes.

3-1 Training

The one B.Sc. programme in Environmental Health Sciences will graduate its first class in the summer of 2006. There are a number of M.Sc. courses relevant to environmental health that the Committee identified. These courses are typically elective and not mandatory parts of curricula. Graduates of such courses often return to the professional positions they held prior to their M.Sc. training. Depending on institute and programme, graduates from M.Sc. and Ph.D. programmes find employment predominantly in government and industry, or in basic research programmes. The lack of environmental health-related employment opportunities following graduation was also identified as a serious impediment to training and capacity building.

3-2 Expertise

The Committee members were unanimously impressed with the level of expertise of scholars with whom we met. It is very clear, however, that

environmental health expertise in Israel is severely limited. The most obvious needs are in the following areas:[18]

- **Toxicology:** There is no Ph.D. programme in Israel in toxicology, and very few staff members at the Ministry of Health or the Ministry of the Environment are currently trained in toxicology. As a result, there is minimal expertise for conducting quantitative risk assessments using toxicological data, for utilizing and interpreting medical toxicological information, and for establishing adequate facilities for toxicological analysis of environmental or biological samples.

- **Epidemiology:** Although there are some Masters level students being trained in Israel in environmental epidemiology, there are very few Ph.D.-level environmental epidemiologists currently being trained, and hardly any faculty to do the training.

- **Laboratory Capacity:** Programmes are needed to train analytical scientists and technicians necessary to operate a central environmental health laboratory.

- **Other Methodological Gaps:** Other areas where Israel lacks capacity include environmental fate, transport and exposure modelling, exposure assessment, bio-monitoring, risk and impact assessment, GIS and enhanced information technology, psychometric aspects of risk perception, risk communication and (behavioural) decision and policy analysis, environmental health cost-benefit analysis, socioeconomic aspects of environmental health, and the ability to conduct surveillance and tracking of environmental related diseases.

18 The "hazard assessment" fields of expertise (epidemiology, toxicololgy, etc.) were emphasized in the deliberations of the Committee. We are aware that there are many additional fields in which training is important to create more complete and sustainable environmental health capacity such as transport and health, urban planning and health, risk analysis, expertise in environmental health law and policy, etc.

- Occupational Health: The Committee recognizes the close relationship between environmental and occupational health. While these are often considered distinct areas, in many countries there is a closer integration of these programmes than currently exists in Israel. Similarities are obvious: the chemical and physical hazards are often identical, technical expertise overlap, and the health issues across the "two sides of the factory fence-line" are often similar. Although the terms of reference for this Committee are focused on environmental health, the Committee hopes that as the various recommendations in this report are adopted and resulting programmes begin to be established, strong consideration will be given to an early and similar effort in the field of occupational health.

Israel's academic institutions need to develop expertise to address three categories of environmental health problems:

1. Common, recognized, and persistent problems (e.g. air and water pollution, noise, pesticides, and waste management of old dump sites and new facilities).
2. Problems that are relatively specific for a particular nation and/or region.
3. Emerging environmental health problems.

To effectively address environmental health issues in Israel (listed in section 2-1), it will be necessary to:

- Make more efficient and effective use of expertise and capacities for research and training that are currently available in Israel's universities and colleges.

- Enhance the scope and expertise of Israeli teaching and research institutions so that they are able to produce internationally recognized scholars and scientists in environmental health.

- Develop/maintain capacity, infrastructure, and expertise to investigate and monitor the scope and scale of specific Israeli problems. A selection of persistent problems should be studied locally (i.e. within Israel) to generate local data, maintain state-of-the-art expertise and capacity, and to maintain/develop networks with the international scientific community. Developing/maintaining a good breadth of expertise should be a leading principle in the selection of persistent problems for local research projects.

- Develop/maintain capacity to integrate existing knowledge on persistent environmental health problems through risk and impact assessments tuned to the policy needs of national and district authorities. To this end, the capacity for risk and impact assessments needs to be improved.

- Develop/maintain expertise, infrastructure, and capacity to anticipate emerging environmental health problems. This implies timely identification of the problem, appraisal of the potential scope (in terms of number of people affected, severity of the effect, and the potential for public concern/outcry), and scenario approaches to support risk management strategies.

3-3 Recommendations

The Committee has identified three priority recommendations that it believes will most effectively address the need to develop environmental health expertise in Israel:

1. **The four schools of public health and the four schools of medicine in Israel should develop systems for coordinating teaching, training, and research.** A National Public Health Curriculum Coordination and Standards Committee should be established to coordinate and harmonize course offerings, degree

requirements, and standards and to ensure mutual recognition of course offerings toward degree requirements. The Committee feels that such coordination is essential to utilize most effectively the limited expertise available in each school's faculty. This can include shared utilization of specialized resources and information technology for educational programmes.

2. **There is an urgent need to close the expertise gap in relevant academic fields,** including: toxicology, environmental epidemiology, occupational and environmental medicine, bio-monitoring and human health risk assessment, **through directed doctoral and post-doctoral fellowships abroad.**

3. **Competitive funding should be developed for visiting environmental health scientists and policy experts to teach courses and conduct short-term (six months to one year) research projects at Israeli universities and government ministries.**

4. **Short-term training in appropriate disciplines both via courses developed in Israel and by sending people to Europe is highly recommended. Of particular value are courses for professionals in government, industry and NGOs in topics such as exposure assessment, toxicology for epidemiologists, and risk communication.**

3-4 Timeline for Enhancing the Role of Academia

Milestone	
Establish a National Public (environmental) Health Curriculum Coordination and Standards Committee, including the heads of the four Israeli schools of pubic health, the schools of medicine, and representatives of the National Education Commission.	3 months
Conduct review of existing curriculum and degree requirements in Israel and elsewhere and develop minimum Israeli degree standards and model curricula.	6 months
Revise curriculum and degree requirements to achieve harmonization among all Israeli schools of public health and medicine.	3 months
Sign formal cooperative and mutual recognition agreements.	3 months
Total time for harmonization of schools of public health and medicine.	**12 months**
National Public Health Curriculum Coordination and Standards Committee meet twice per year to review progress and address emerging issues.	Every 6 months
Establish internships, extended fellowships, and a small research grant programme.	**3 – 6 months**
Establish programmes for visiting environmental health scientist and for Israeli scientists to study abroad.	**6 months after acceptance of this report**

Chapter 4: Research

The Committee was encouraged by a number of promising research initiatives and efforts and the generally positive attitude toward, and appreciation of, environmental health research. The Committee observed, however, that these initiatives are disjointed and not brought together under a unified, national strategy. There are considerable areas of overlap, gaps, and even competition among initiatives. For example, there are multiple groups and studies on air pollution and electromagnetic fields, while there is little research on other issues that pose potentially more significant risks, such as understanding the relationship between birth defects or cancer and environmental pollution in Israel. Another area of concern is the general sense, voiced by scientists and policymakers alike, that the results of research activities and investigations are not sufficiently focused and implemented to support risk management and environmental health policy, and are therefore under-utilized. In part, this is the result of the often-strong *ad hoc* character of studies undertaken in Israel, in part the result of an inability to apply research results to underlying policy questions and to perform risk and impact assessments.

In general, the Committee found:

- A lack of continuity of research projects and of institutions (e.g. dismantling of the Institute of Environmental Health and the Institute of Occupational Health).
- Minimal environmental health research is conducted.
- The little environmental health research that is conducted is generally reactionary and largely uncoordinated.
- Reduced government funding for environmental (and occupational) health research programmes.
- The burden of environmental disease and national priorities in environmental health is largely undefined.

4-1 Research Funding

For academia, there are two main routes for funding environmental health research:

- Funding through basic science funds.
- Funding through government ministries (e.g. the ministries of the Environment, Health, Interior, and Agriculture).

The Committee heard from leading members of Israel's academic community that the primary (internal) drive among university-based research groups is to either do cutting-edge research, or not to do research on a topic at all. Basic science foundations are generally not keen on funding applied research. In addition, the primary Israel government ministries with environmental health responsibilities have insufficient funds to finance the required infrastructure for either cutting-edge or applied research. One expert told the Committee that at least six times the current annual research budget of the Ministry of the Environment would be necessary to establish and maintain an environmental health research programme that could credibly address Israel's needs. Government ministry-funded projects appear to be predominantly reactionary, driven by high profile incidents and "crises" and public concern. Since the scope of environmental health research is extremely broad[19] and the expertise and funding is lacking, there is a serious gap in topics and methodologies than can be covered. These gaps frequently lead to unsatisfactory results because studies are often too small and limited in scope, lack sufficient statistical power, and consequently provide ambiguous results. This situation is unsatisfactory for policymakers, the investigators, and the concerned public.

Because of this funding structure, the high ad hoc nature of incident-driven research and the driving forces in university research, Israel's environmental health research activities are extremely fragmented and narrow. Lack of continuity in research projects leads to insufficient return on research investment.

19 i.e. the sources of pollutant and exposure to pollution-to-health effect chain are complex and are characterized by multiple sources, multiple pollutants and multiple end-points.

4-2 Recommendations

The Committee sees a need for strongly coordinated environmental health research to manage multi-year integrated projects on selected environmental health problems across the source-effect chain.

1. **Israel should develop a National Environmental Health Research Plan, as part of a National Environmental Health Action Plan discussed in Chapter 6.** This Research Plan should guide research-funding decisions in the government ministries and in the universities. The development of this Research Plan should be a collaborative process among government, academia, industry, and NGOs, and should culminate in a finite number of priority research areas and clearly identified roles and responsibilities.

2. **Research efforts need to be better coordinated among the many ministries with a responsibility for environmental health with regard to planning and funding research and special studies, staffing, and training.**

3. **There should be better utilization of existing research institutions (including industry-sponsored) through coordinated funding decisions.**

4. **A coordinated programme should be developed of internships, extended fellowships, small research grants, and seed money to help young scientists begin their careers and to begin developing the next generation of environmental health scientists in Israel.**

5. **A new programme should be created that sends established scientists on targeted visits to other countries to update themselves on cutting-edge issues.** Israel should also send scientists to EU countries to learn about funding opportunities for research in

environmental health. Several such opportunities currently exist, and cooperative research between Israeli and European scientists should be encouraged.

6. **Most importantly, perhaps, an appropriate research programme cannot be created without research funding and support for both applied and fundamental environmental health research from the government and other sources.** Consequently, the Committee recommends that a competitive research grant budget be **created at a level sufficient to permit the ministries and academic/research institutions in Israel to implement an agreed-upon environmental health research programme.**

7. Mechanisms need to be established to leverage industry research funding and to ensure and promote the credibility of industry-sponsored environmental health research.

4-3 Timeline for Improving Environmental Health Research

Milestone	
Establish National Environmental Health Research Plan as part of a National Environmental Health Action Plan.	concurrent
Establish a competitive basic and applied environmental health research grant programme.	6 months
Send established scientists on targeted visits abroad to update themselves on cutting-edge issues on funding opportunities for research in environmental health.	6 months
Develop agreed-upon process for funding environmental research in Israel.	concurrent

Chapter 5: Data

5-1 Data Collection and Quality

A wide range of data types is necessary to inform and guide an environmental health programme. These include basic information on the sources of health stressors (e.g. pollutants), the nature of their presence in the environment, the way that people are exposed to these, and data on the consequences to health. Data and information on regulatory and policy issues should supplement this in a decision-making framework.

Many of these data come under the heading of monitoring. Monitoring data can be of two types:

a. *Routine monitoring.* This is an ongoing activity not focused on a particular practical decision. It can include the ambient environment (air, water, soil, food) to examine states, trends, and unusual events, and to evaluate the success of mitigation strategies; pollution sources to examine compliance with regulatory requirements; population health to examine trends and identify unusual clusters, etc.

b. *Investigative monitoring.* This is usually a more detailed and focused study (e.g. covering more pollutants than are routinely monitored, or a single pollutant or receptor in more detail). This is usually undertaken where there is cause for concern (e.g. to examine compliance issues or to investigate a disease cluster, etc).

These types of approaches are common in many countries, such as the United States[20] or the United Kingdom.[21] In Israel routine monitoring is relatively widespread in both the environmental and health fields. This includes:

20 U.S. Environmental Protection Agency. 2005a. "Air Pollution Monitoring." Washington, DC and Research Triangle Park, NC: Air Quality Planning and Standards: *http://www.epa.gov/oar/oaqps/montring.html.*

21 U.K. Department for Environment, Food and Rural Affairs. 2005. "e-Digest Statistics about: Inland Water Quality and Use." London: United Kingdom Environment Protection Statistics and Information Management Division. *http://www.defra.gov.uk/environment/statistics/inlwater/iwquality.htm.*

- **Pollutant emissions:** Large industry monitors some of its major pollutants, although there are gaps with certain facilities and overall coverage for total pollutant emissions.

- **Air quality:** The Ministry of the Environment operates a good ambient air quality monitoring network. This focuses on "classic" pollutants (acid gases, ozone, particulates, etc).

- **Water quality:** While there is some monitoring of surface water quality, it is patchy. Drinking water quality is monitored. However, the division of responsibility between the Mekorot water company and the municipalities can lead to sampling gaps.

- **Health:** Israel collects a wide range of routine health statistics and has done so for many years. These form an important basis for environmental health analyses, although they are not easily linked to basic interpretative information, such as occupation.

There are also good cases of investigative monitoring in Israel. These have focused generally upon issues of high profile concern (e.g. the Kishon River and Ramat Hovav). While more widespread investigative monitoring is probably desirable, these cases have served to bring together experts in different areas who might otherwise not have worked together.

Although environmental monitoring data are readily available and adequate for some pollutants and media, other data are not systematically collected. Risk analysis and other environmental health research should be used to target additional data needs and for developing cost-effective strategies that will be useful in research, policy development and implementation and for public information.

It is very important that the data collected (and subsequent analyses and interpretation) are of a known and acceptable quality. Without this, erroneous and costly decisions could be made or important health outcomes not achieved.

Ensuring data quality involves not only the nature (including calibration and use) of monitoring equipment and personnel, but systems for checking accuracy, reliability, integrity, etc. The Committee has seen some examples of quality procedures; however, it is unable to make a firm comment on quality issues as a whole.

5-2 Divisions of Responsibility

No single institution can be responsible for the collection and analysis of all data required for an environmental health programme, in large part because most of these data are also used for other purposes that have their own unique institutional relationships. The basic framework in Israel, whereby polluters monitor their emissions, the Ministry of the Environment is responsible for environmental data, and the Ministry of Health for health data is comparable with other countries. In Israel and elsewhere more institutions than these are involved. Municipalities have an important function in monitoring and the Committee learned that there are examples of good practice in Israel. The Committee also learned that there are local authorities in Israel with limited or no capacity to deliver even basic monitoring functions. There is a fragmented responsibility in the area of water monitoring (surface, ground, and drinking water) that can lead to gaps in spatial and temporal coverage and problems of data integration. The Ministry of Health, drawing upon data collected by ocal hospitals, etc., coordinates the monitoring of health information (disease reporting) in Israel. This health information monitoring system seems to work well.

5-3 Data Availability

The Committee strongly supports the view taken in many other countries that, with very few exceptions, all routine monitoring data should be freely and easily available to researchers and the public. This includes data ranging from permit conditions for polluters to the impacts that such pollutants might have on

health. Such access must be made to all relevant authorities (national and local), to the public, academics, NGOs, and industry. Only with such access can all of these stakeholders make adequate assessments of environment and health issues. A lack of data access often does not prevent public concern; rather it can enhance suspicion and generate additional work for authorities that early provision of information might have prevented.

In Israel, some data are available. The Committee heard, however, that citizens, researchers, NGOs, and even other government organizations need to go to considerable effort and expense to obtain them. Some data seem simply unavailable. This includes information variously related to permits, emissions, and even some monitoring data. Israel adopted a Freedom of Information Law in 1998. Without detailed analysis of its provisions, we must conclude either that it is being insufficiently implemented, or that its provisions are too narrowly established in law to be effective. Increasingly throughout the Western world a commitment to open access to environmental information has been made by individual countries.[22] This has culminated, for example, in the adoption of the Aarhus Convention on freedom of access to environmental information under the UNECE for countries in Europe. Consequently, many nations have altered laws and set procedures in place to deliver its objectives.[23]

The Committee concludes that some existing data, critical for environmental health research (e.g. occupational exposure/history, health/disease data, and industrial emission discharges) are not readily accessible because of confidentiality concerns, formats, and/or lack of available staff to respond to legitimate requests. There does not appear to be an ethical, cohesive, or comprehensive policy regarding the sharing of these kinds of information and, consequently, Israel lacks adequate processes to ensure timely access to

22 For policies and procedures in the United States, see U.S. Environmental Protection Agency. 2005b. "Freedom of Information Act." Washington, DC: Agency Freedom of Information Office: *http://www.epa.gov/foia/* (updated 30 September 2005).

23 For full information, see U.N. Economic Commission for Europe. "Aarhus Convention: Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters." Geneva: Environment and Human Settlements Division: *http://www.unece.org/env/pp/welcome.html.*

such information for legitimate purposes. Israel's lack of policies regarding the quality of the data makes it difficult to share data and evaluate their appropriateness for specific secondary uses.

Accordingly, there needs to be a clear commitment, not just to the *principle* of free and easy access (from ministries, municipalities, industry, etc.), but to *strategies* and *structures* to deliver this. This will need to take account of the sensitivities involved with the provision of data relating to health information. The costs involved in doing this are likely to be covered by the savings to stakeholders, authorities, and academics in their work and potential benefits from improved health.

5-4 Bio-Monitoring

Bio-monitoring (i.e. the monitoring of biological markers of exposure and the monitoring of biological markers of health effects), is playing an increasingly important role in environmental health in the U.S., Europe, and Japan. Israel has not yet developed a capability for bio-monitoring. The capacity and expertise to do bio-monitoring and to interpret the results is an important addition to current programmes.

5-5 Laboratory Capacity

There cannot be effective environmental health investigation without a skilled environmental health/toxicology laboratory; studies will lack precision and accuracy without good environmental and biologic data to correlate with health effects. Israel needs a central laboratory (or laboratories) to provide a foundation for efficient environmental health analysis and to act in support of other institutions.

5-6 Communicating Data and Information

Obtaining good data and performing detailed analyses is often only the first part of using such data. To be effective, scientists and other technical staff must

effectively communicate such information and explain their conclusions to policy-makers (at different levels), to industry, NGOs, and the public. This often requires interpretive skills, not least in the area of risk communication.

It is important to note that while some ministries (e.g. the Ministry of the Environment) make extensive use of modern information technology (e.g. GIS and Internet) for providing some environmental information to the public, much more transparency is needed to improve access to data for the researcher and the public, and to improve public involvement and confidence in government decision-making. This need can be cost-effectively addressed by making better use of currently available information-technology resources in the collection, analysis, quality assurance/quality control, and dissemination of information.

In the current system, the Ministry of the Environment and Ministry of Health should be responsible for most data dissemination and risk communication (both requiring increased capacity to do this). Ideally, these ministries could achieve much through joint communication approaches. It is important to note that such information provision not only concerns the public, but also affects communication with industry. Industry requires accurate information and understanding of not only its regulatory requirements but also the government's rationale, which could legitimately have an environmental health and preventive basis.

It is also important to stress the role of municipalities in data/information provision. They are in close contact with communities and can bring local environmental, health, and social issues together in their local context in a meaningful way. Many municipal authorities would require increased capacity to achieve such communication and specific training, e.g. in data integration and risk communication.

Industry also has an important role in data provision. While Israeli industry has exhibited some good examples of communication and information dissemination (e.g. with its Community Advisory Panels), the sector overall has to be more open. There is a concern that the public does not trust industry information. However, openness is the start of the road to greater public acceptance and should be part of business strategies that seriously seek to be part of future Israeli societal development.

NGOs in Israel have played an important role in data/information provision and have served the cause of environmental health in a number of important cases in the past, sometimes acting as "watchdogs" where governmental bodies should have been operating. They should continue in this role. NGOs must always act responsibly, however, especially when interpreting risks, seeking to present as accurate a picture as possible and, for example, refraining from hyperbole for the sake of media interest.

Academics and academia have a critical role in data dissemination. Academics need to communicate their research results in a clear way to officials and policy makers who can require 'interpretation' from the pure scientific results. Academics can also play an important role in communicating to the public, e.g. via the media, although some may require training to facilitate this.

5-7 Recommendations

Data Collection and Quality

The Committee recommends that in developing a NEHAP (discussed in Chapter 6), the geographic extent and scope of routine monitoring for environment and health indices is reviewed to ensure that exposure routes can be examined and that relevant institutions are supported to fill these monitoring gaps. Such expansion must include procedures for integrating the data from different fields to maximize utility.

To achieve this, the following are necessary:

- The Ministry of the Environment and Ministry of Health should establish a small committee of relevant experts to determine the extent of the review and who should participate (relevant local authorities, academics, etc.). This can be achieved within a few months.

- The results of the review should inform the process of developing a NEHAP, including identifying actions for filling monitoring gaps.

- A priority in the review will be to identify where current data are not utilized to their full potential (e.g. linking environmental and health data).

- Taking forward the strategic results of the review. (Discussed in Chapter 7).

The Committee also recommends that in expanding ambient monitoring, all necessary data quality control procedures are ensured.

Divisions of Responsibility

The Committee recommends that the framework for monitoring in each media is examined with the aim of developing a more comprehensive and integrated network. It also recommends a review of the capacity of municipalities to undertake basic monitoring functions, and a plan developed to close gaps that exist in the monitoring network.

The following needs to be undertaken to implement these recommendations:

- The ministries of the Environment and Health should establish a temporary coordinating committee within a few months that brings together officials from local government, Merkorot and other relevant bodies to identify what monitoring is required, where it is currently undertaken and which gaps exist.

- A costed programme (identifying where resources will come from) to fill these gaps should be developed by the committee and fed into the development of the NEHAP (discussed in Chapter 6) and the individual management plans of the relevant institutions.

- The recommended National Environmental Health Institute (discussed in Chapter 7) will provide a strategic overview of the implementation of these plans to ensure effective delivery.

To undertake analyses of environmental health it is necessary that different monitoring functions interact. To the Committee, it seems that there are barriers to this interaction, although these tend to result from inertia within the system rather than deliberate structural impediments. Good examples of cooperation exist, e.g. between the Environment and Health ministries or in the context of municipal analyses. Often, however, data-sharing is slow and there seems to be little coordination in planning how the initial monitoring networks can interact.

The Committee, therefore, recommends that systems should be put in place to ensure more effective coordination of the development and operation of environmental and health monitoring and the use of the subsequent data. Adoption of joint committees on monitoring (as recommended above) with the possibility of subsequent strategic leadership should a new National Environmental Health Institute be established (discussed in Chapter 7), would assist significantly in achieving this.

Data Availability

The Committee recommends that all of the major institutions and stakeholders involved in environmental health expressly state a commitment to open access to information and how they would implement it. Also, the Committee recommends that the information requirements and the consequences for information access be determined and addressed.

In order to achieve this, the following are necessary:

- A commitment, within six months, to true open access to environmental health information by the relevant institutions. NGOs will play an important role in highlighting deficiencies in this area.

- Each institution, within a year, should identify barriers (e.g. resources, technology, and policy) to delivering open access to data and establish mechanisms to overcome these barriers.

- NGOs should provide on-going scrutiny in this area of all relevant institutions and highlight successes and failings.

Bio-Monitoring

Israel should develop a bio-monitoring programme[24] **as part of the development of a NEHAP (discussed in Chapter 6).** A model for such a programme could be based on that of the National Center for Environmental Health at the Centers for Disease Control and Prevention (NCEH/ATSDR) in Atlanta, which in addition to collaborative studies and developmental research, produces the biennial National Exposure Report for the U.S. population in partnership with the National Health and Nutrition Examination Survey (NHANES) at the CDC.

Laboratory Capacity

The Committee recommends a review of laboratory needs for an effective environmental health programme, as part of the development of a NEHAP (discussed in Chapter 6). Based on the results of this review, the Committee recommends the development of a central environmental health laboratory, possibly within the Ministry of Health. Laboratory needs and function should be coordinated between the ministries of Health and Environment. There should be access to results of tests to relevant officials within the Ministry of the Environment and the ministry should have the option to conduct tests in this laboratory.

24 This includes capacity within the Ministry of the Environment to undertake routine monitoring of pollutants in wildlife as an indicator for human exposure.

Communicating Data and Information

The Committee recommends that relevant Israeli institutions give serious consideration to information (including risk) communication procedures and strategies concerning their particular roles. It is likely that training will be required and could be facilitated.

The following are necessary to implement these recommendations:

- Each institution (government, academia, industry, and NGOs) should review its communication procedures within a year to examine how it delivers and uses information.

- A seminar should be arranged, bringing together relevant officials, NGO representatives (and possibly specialist journalists) to discuss the nature of risk and improve how it is communicated.

- Training should be supported, such as from risk communication experts from other countries, for selected relevant officials in the area of risk communication.

5-8 Timeline for Improving Environmental Health Data

Milestone	Duration/Target
Conduct review of the geographic extent and scope of routine monitoring for the environment and health indices: • The Ministry of the Environment and Ministry of Health establish a small committee of relevant experts to determine the extent and participants for a review. • Feed results into the process of developing a NEHAP, including identifying actions for filling monitoring gaps.	3 months 6 months
Examine the framework for monitoring in each of the media and the capacity of municipalities to undertake basic monitoring functions: • The ministries of Environment and Health establish temporary coordinating committee to identify what monitoring is required, where it is currently undertaken and which gaps exist. • Develop a costed programme to fill these gaps and feed into the development of the NEHAP.	3 months 6 months
Major institutions and stakeholders state commitment to open access to information: • A commitment to true open access to environmental health information is made by the relevant institutions. • Each institution identifies barriers (e.g. resources, policies, technology) to delivering open access to data and mechanisms to overcome these barriers.	6 months 12 months
Develop bio-monitoring programme as part of the development of a NEHAP.	Concurrent
Review of laboratory needs as part of the development of a NEHAP. Develop central environmental health laboratory capacity, possibly within the Ministry of Health.	6 months
Each institution reviews communication procedures to examine how it delivers and uses information. Hold seminar to discuss the nature of risk and how it is communicated. Begin training for selected relevant officials in the area of risk communication.	12 months 6 months 3 - 6 months

Chapter 6: The Role of Government

The current fragmentation of authority and responsibility for environmental health among a large number of ministries has resulted partially from the fact that there is no single ministry or governmental organization with overall, integrated responsibility for environmental health. This fragmentation of authority is reflected further in splintered responsibility for enforcement, research, data accessibility and sharing, training, capacity building and coordination. Furthermore, reductions in government budgets for the ministries have forced a severe curtailment of environmental health related activities, such that today, no ministry has adequate resources to deal with these issues. This has resulted in a lack of government leadership, and a lack of focus and attention to environmental health[25].

6-1 Recommendations

1. **The Committee recommends that Israel develop an integrated and inclusive National Environmental Health Action Plan (NEHAP), using the World Health Organization's (WHO) NEHAP framework as a model for addressing environmental health issues in Israel.** NEHAPs are programmes that are developed in cooperation with a wide range of partners and address environmental health issues in a comprehensive and inter-sectoral way. They are widely recognized as important policy and planning instruments for addressing the kind of environmental health challenges the Committee found in Israel. A detailed explanation of the NEHAP and its objectives is provided in Annex C.

   As part of the NEHAP, the Committee recommends planning an open workshop on environmental health issues and priorities in Israel and producing a preliminary report on environmental health priorities.

25 For detailed information see chapter 2 page 21

2. **The Committee recommends that an improved governmental structural/organizational framework should be created to successfully conduct public programmes in environmental health.** Responsibilities of government ministries, regional and local governments, need to be much better defined. In addition, the current fragmentation of authority for dealing with environmental health issues should be rectified. Inter-ministerial coordinating groups should be established with clear mandates for eliminating barriers to cooperation. These groups should initially meet at least monthly for the first six months to develop approaches and systems for improved coordination, and quarterly thereafter to address emerging issues and to monitor progress.

3. **The Committee recommends that a clear delineation of national priorities in environmental health is needed to guide and develop a comprehensive Israeli programme.** The Committee heard a number of encouraging and promising efforts, but they are disjointed and not brought together under a unified, national strategy. Priorities are needed for addressing urgent environmental threats as well as the burden of disease related to the environment.

   The process for delineation of national priorities and strategies should include the widest possible spectrum of interested parties, including local authorities, academia, NGOs, and industry.

4. **The Committee recommends that environmental health units be created in both the Ministry of the Environment and the Ministry of Health.** People with appropriate expertise to permit these ministries to successfully deal with environmental health problems in Israel should staff these environmental health units. These two units must be complementary and have coordinated programmes.

   The environmental health unit in the Ministry of the Environment should focus on emissions, ambient levels of pollutants, dose to target

tissues, toxicology and risk assessment. The Ministry of Health should develop an environmental health unit that focuses on adverse health effects in relation to environmental exposures and dose to target tissues. In this way, each ministry will focus on one end of the environmental public health continuum, with a common focus on risk assessment (see Figure 1, page 15).

5. **One of the most important areas of environmental health on which the Ministry of the Environment should be focusing is risk assessment.** This process is important for distinguishing high from low risks, and for setting priorities for action and research.

   The Ministry of Health should focus on environmental health epidemiology, bio-monitoring, and assessment of dose to target tissues. This will require extensive expertise in epidemiology, the establishment of additional laboratory capability, and expertise in risk assessment.

6. **The ministries of Health and the Environment should work together with the IDF to transfer the military hazard map to a civilian institution charged with obtaining and integrating environmental data related to environmental health** (see Chapter 5, dealing with public access to environmental data).

6-2 Timeline for Improving the Role of Government

Milestone	Duration/Target
Establish inter-ministerial coordinating groups.	12 months Meet monthly for first year Meet quarterly each following year
Establish clear roles and priorities in a National Environmental Health Action Plan (recommended in Chapter 6) and National Environmental Health Research Strategy (See also discussion in Chapter 4).	25 months
Create environmental health units in the Ministry of the Environment and the Ministry of Health.	6-12 months
Develop capacity for conducting risk assessment at the Ministry of the Environment and for environmental health epidemiology, bio-monitoring, and assessment of dose to target tissues at the Ministry of Health.	12-24 months
Transfer the IDF hazard mapping process to a civilian institution.	12 months

6-3 Timeline for Developing a National Environmental Health Action Plan for Israel

Milestone	Time
Make contacts with European countries that have developed NEHAPs. Consult with the WHO. Arrange for senior officials from government, NGOs and the private sector to visit European countries to learn about the creation of a NEHAP. Environmental Health Action Plan (NEHAP) Committee: • Forms exploratory committee with relevant Israel government ministries (e.g. Ministry of the Environment and Ministry of Health). • Identifies and recruits participants from local and regional authorities, NGOs, and academia. • Invites participation of international contributors.	6 months 6-12 months
Committee holds workshops and meetings to develop NEHAP.	12 months
Committee prepares draft NEHAP for pubic/ministerial review/comment.	15 months
NEHAP revised based on public/ministerial comments.	21 months
Final NEHAP approved by full Committee and forwarded to the Knesset.	25 months
Total time for NEHAP development.	25 months

Chapter 7: A National Environmental Health Institute for Israel

Based on what the Committee learned from various groups with which it met, it has concluded that capacity for environmental health in Israel is currently limited in terms of personnel, institutions, and other resources. In addition, the Committee has concluded that Israel lacks processes or institutions for effectively coordinating the multiple programmes, academic institutions, government, and non-government organizations that are responsible for or associated with environmental health. The Committee also concludes that there is a clear need and desire to augment strongly the existing capabilities and expertise in the area of environmental health, including both environmental health research and the delivery of environmental health services. The Committee is most concerned with how to achieve this broadly supported goal within the context of existing Israeli institutions and programmes, and how to best utilize the expressed interest of Yad Hanadiv in this process.

Although not a prerequisite for progress in other areas, a central proposal of the Committee is the creation of a National Environmental Health Institute (NEHI) that would strongly promote and sustain the growth of environmental health programmes and awareness in Israel.

7-1 Rationale for a New Institution

It is reasonable to ask: Why is a new institution necessary? Why can't existing institutions, including government ministries, implement the Committee's recommendations and undertake the functions proposed for a new National Environmental Health Institute? The Committee deliberated extensively on these questions. Its reluctance to recommend a new institution is based on the predictable resistance such a recommendation would encounter from some existing institutions that would see such a recommendation as a criticism of their effectiveness and an encroachment into their areas of responsibility. In

addition, a significant amount of organization, coordination, funding, political support, and logistics would be necessary to create a new institute.

Despite these important issues, the Committee is concerned that no government ministry has a sufficiently strong political or legal environmental health mandate to initiate and sustain an effective national environmental health programme. In addition, the relevant Israeli government ministries have a history of poor cooperation and competition, inadequate and declining funding, and lack the necessary expertise to lead a national environmental health initiative. The situation is similar among academic institutions with regard to coordination, competition, funding, and expertise. Base resources within both government and academia are inadequate to support a core environmental health research and training programme. Existing NGOs also lack the necessary expertise and funding, and have not yet fully embraced environmental health as a primary issue of concern. For these reasons, the Committee recognized that a new institute might be the best vehicle for shining a light on environmental health issues and infusing sufficient resources, expertise, and information to attract the attention and commitment of existing institutions.

7-2 Roles and Functions of a National Environmental Health Institute

Creating a National Environmental Health Institute (NEHI) would catalyze and facilitate the implementation of many of the Committee's recommendations in this report. The Committee envisions that the NEHI would serve four interrelated functions.

Developing a National Environmental Health Action Plan and a National Environmental Health Research Strategy

First, the Institute would be the focal point to help shape and guide both the development and also the implementation of a National Environmental Health Action Plan and a Research Strategy. As discussed in Chapter 6, in developing the NEHAP, the Institute would join with relevant government ministries and

work closely with the Israeli schools of public health, medicine and environmental sciences, and also with relevant programmes in law, environment, and health policy, and other key social sciences. Importantly, the Institute must ensure the meaningful involvement of industry, local government, and NGOs in the development of the NEHAP.

As part of the overall NEHAP, the NEHI would lead and coordinate the development of a National Environmental Health Research Strategy, in collaboration with major academic centres and other key partners. The NEHI would facilitate better coordination among the many ministries with a responsibility for environmental health with regard to planning and funding research and special studies, staffing, and training. The new National Environmental Health Institute should play a significant role in coordinating the planning, participating in the funding, and overseeing environmental health research in Israel.

As illustrated in the following figure, the Committee envisions that the NEHI, once established, would operate as a hub to facilitate and integrate the participation of key stakeholders and provide funding, logistical, and staff support for the development of the NEHAP and the Research Strategy.

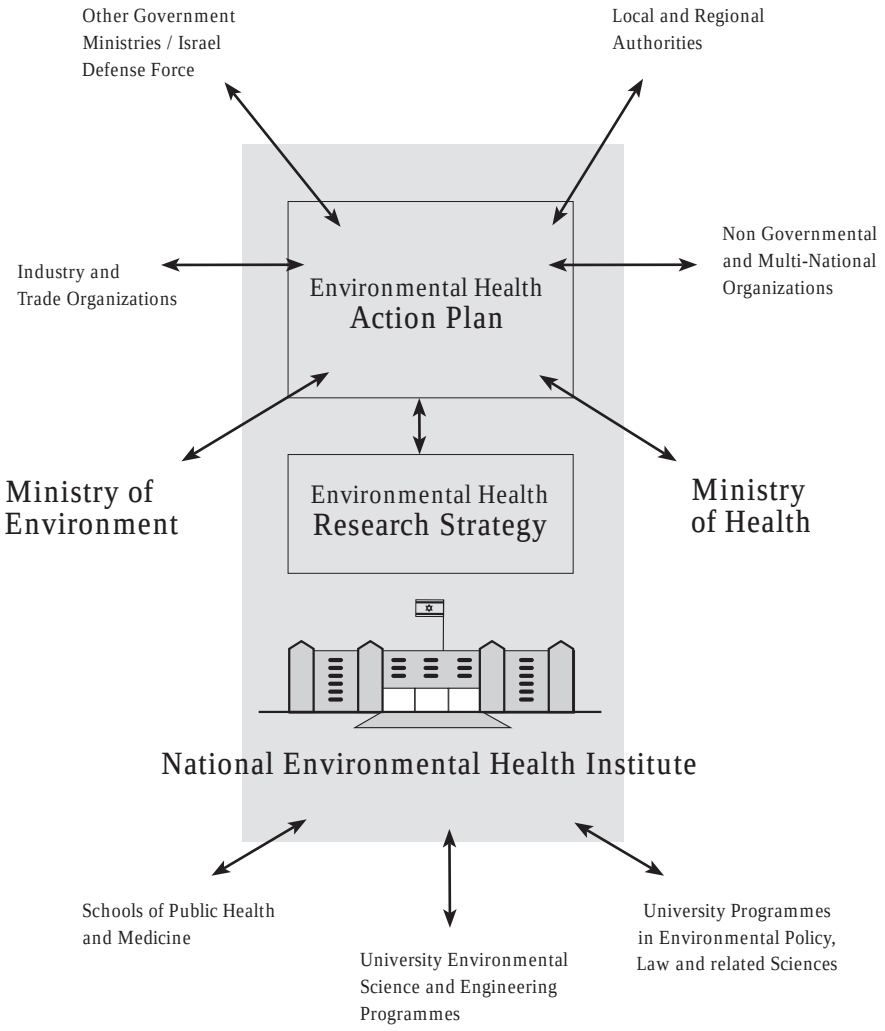
Catalyzing Creative Science and Policy

Second, the Institute would function as a creative unit in the nature of a think tank, which through the judicious use of policy reports, distinguished visiting scholars, fellows, conferences, workshops and training programmes, would catalyze the development of environmental health awareness and expertise in Israel. Ideally, the Institute would be a hub of intellectual, scientific, and educational stimulus that could transform and elevate existing programmes.

Funding Environmental Health Research

Third, the Institute should be the conduit for funding for environmental health research. The Institute would leverage available government, industry,

Figure 2


Other Government Ministries / Israel Defense Force
Local and Regional Authorities
Industry and Trade Organizations
Environmental Health Action Plan
Non Governmental and Multi-National Organizations
Ministry of Environment
Environmental Health Research Strategy
Ministry of Health
National Environmental Health Institute
Schools of Public Health and Medicine
University Environmental Science and Engineering Programmes
University Programmes in Environmental Policy, Law and related Sciences

international and other sources of research funding, and establish transparent mechanisms to target funding on national research priorities (e.g. as articulated in the National Environmental Health Research Strategy), to ensure the quality of funded projects.

The Committee envisions that the Institute would serve as a vehicle for allocating this funding to government ministries, academia, and NGOs to augment what is currently and anticipated to be available for the purposes of achieving the NEHAP and Research Strategy goals. The Committee also hopes that as this process takes hold and grows, the Institute can become a focal point for other potential sources of funding from donors and potential partners interested in these key activities, both in Israel and abroad.

Supporting Government Environmental Health Units and Availability of Information

Fourth, the Institute would facilitate coordination of the work of the environmental health units in the Ministry of Health and the Ministry of the Environment, and help ensure that a central environmental data unit be created that would collect and make available data about the environment and health in Israel. The Institute would have a critical role in communicating information, including synthesized information from many sources. Communication, therefore, should form an important part of its initial corporate development process. In addition, the Institute would publish and encourage the dissemination and utilization of research results.

7-3 Interaction with Government

To ensure the effectiveness and sustainability of the Institute's activities, it is important to create a clear framework defining the nature of the interaction between the Institute and government ministries. The relationship between these entities would be defined in the process of negotiations towards the creation of the Institute.

7-4 Interactions with Academic Institutions

To promote the growth of environmental health in academic centres such as schools of public health and medicine, the Institute should fund educational and training programmes including:

- Distinguished visiting professors (for periods of 6-12 months).
- Prestigious fellowships abroad for future leaders in the field.
- Publicized scholarships for promising students.
- Grants for fellows and students after completing training to assure transition to productive positions.
- Funds for recruitment, development, and retention of key faculty.
- Seed funding to stimulate further development in key research areas.

To the extent possible, given the paucity of specialized expertise, the number of schools involved, and the multi-disciplinary nature of the field, the Institute should strongly consider collaborative efforts among institutions to maximize available resources, including the use of innovative training methods and information technology to share resources and heighten collaboration.

It would be extremely costly and difficult to develop and maintain complete and full-scale environmental health programmes across the board in each institution. The Institute would assist the schools with focussing and specializing in specific disciplines, with particular areas of emphasis and expertise built upon a basic core programme, and then use innovative, shared training methods to enable students from each school to benefit from the specialized resources of other programmes.

The recommended new National Environmental Health Institute, in coordination with Israeli universities and relevant government ministries, should develop a coordinated programme of internships, extended fellowships, and small research grants and seed money to help young scientists begin their careers and to begin developing the next generation of environmental health scientists in Israel.

The recommended new National Environmental Health Institute should provide competitive funding for visiting environmental health scientists and policy experts to teach courses and conduct short-term (six months to one year) research projects at Israeli universities and government ministries. A new programme should also be created that sends established scientists on targeted visits to other countries to update themselves on cutting-edge issues. Israel should also send scientists to countries of the EU to learn about funding opportunities for research in environmental health. Several such opportunities currently exist, and cooperative research between Israeli and European scientists should be encouraged.

7-5 Institute Leadership and Staffing

The director of the Institute should be a distinguished senior scientist or policy leader. The Institute should have a small core staff that includes individuals with expertise in policy development, environmental health sciences, government, academia, and the private sector. This staff should help create a clear and broadly accepted vision for the emerging field of environmental health, and therefore must work collaboratively with the various institutions and the public to guide this vision into reality. The core staff in the Institute should have the ability to draw upon technical expertise through visiting scholars, *ad hoc* panels, and advisory groups to make sure that the best technical advice is available as the NEHAP and Research Agenda are developed and implemented. Similarly the Institute should be able, with outside assistance, to monitor the implementation of the NEHAP and Research Agenda to help guide future allocation of funds.

7-6 Possible Institutional Models for a National Environmental Health Institute

Establishing a National Environmental Health Institute would require an assured, continuing, and consistent budget that is immune from the individual

funding decisions of government ministries. There are several models that can be drawn from in designing the recommended Institute, two of which are described below.

The Regional Environmental Center for Central and Eastern Europe (REC) [26]

The REC was created after the dissolution of the former Soviet Union to help a number of countries in East and Central Europe develop the capacity to deal with and improve public understanding of environmental problems. The REC was created by an endowment provided by the U.S., Japan, and a number of European countries designed to provide an income stream sufficient to support its functions. Over the years since its creation, the REC has played a successful and important role in accomplishing the mission for which it was created. The REC is managed by a board of directors representing each of the donor countries, and an executive director selected by the board.

Health Effects Institute (HEI)[27]

Another model for the research component of a new Israel Environmental Health Institute could be the Health Effects Institute in the U.S. HEI is an independent, non-profit corporation chartered in 1980 to provide high-quality, impartial, and relevant science on the health effects of air pollution. It is supported jointly by the U.S. Environmental Protection Agency (EPA) and the automobile industry. HEI has funded over 170 studies and published over 100 Research Reports, and several Special Reports.

HEI's board of directors consists of public figures in science and policy who are committed to the public-private partnership that is central to the HEI approach. Two independent scientific committees oversee HEI's scientific work. The Health Research Committee works with the Institute's scientific staff to develop and

26 The Regional Environmental Center for Central and Eastern Europe. Hungary: *http://www.rec.org/*.

27 The Health Effects Institute: A Partnership of the U.S. Environmental Protection Agency and Industry. Boston: *http://www.healtheffects.org/*.

manage HEI's research programme. The Health Review Committee, which has no role in selecting or overseeing studies, works with the Institute's scientific staff to evaluate and interpret the results of HEI studies and related research.

7-7 Timeline for Establishing a National Environmental Health Institute

Milestone	Duration/Target
Begin discussions with government ministries, industry and public groups regarding the creation, concept and scope of the NEHI. Establish balanced and representative committee to recommend charter and terms of reference for the NEHI. Consultations with other organizations and experts. Make decisions regarding creation of the NEHI, its affiliation, location, roles and funding. Begin detailed planning for the NEHI. Announce establishment of the NEHI, establish a search committee, and select Executive Director for the NEHI.	3 - 24 months
Begin hiring core NEHI staff. Convene an advisory committee with balanced representation from national and local government, academia, NGOs, international organizations, and industry.	1 month after selection of executive director
Initiate funding for environmental health research, support of government environmental health units, and support of academic training, fellowship, and exchange programmes as soon as possible after establishment of the NEHI.	6 months

Chapter 8: Recommended Implementation of the Report: Actions and Time

8-1 Early Actions to be taken

0- 6 Months	6-12 Months	12-18 months	18-24 months	24+months
	Arrangements for teachers of short courses and logistics. Plan open workshop on environmental health issues and priorities in Israel.	Teach short summer courses. Send to short courses abroad. Hold workshop, and develop report on EH priorities.		

8-2 Establish Postdoctoral Programme

0-6 months	6-12 months	12-18 months	18-24 months	24+months
Begin discussions with stakeholders about postdoctoral fellowships, and agree on scope, institutions and funding.	Plan postdoctoral needs and opportunities with government ministries and academic institutions. Arrange for receiving institutions. Develop agreement about positions and locations of postdoctoral recipients when they return.	Send postdoctoral fellows to receiving institutions.		

8-3 Create Environmental Health Units in the Ministries of Health and Environment

0-6 months	6-12 months	12-18 months	18-24 months	24+months
	Begin consultations with the ministries of Health, Environment, Finance, Transportation, Energy and Infrastructure regarding creation of Environmental Health Units in the Health and Environment ministries.	Begin detailed planning for EHUs in the ministries of the Environment and Health. Obtain agreement of ministries regarding roles, coordination with each other; relation to a potential future NEHI; and sources of funding for the EHUs.	Create EHUs in the two ministries, hire staff and leader.	

8-4 Create the National Environmental Health Institute and the Israel National Environmental Health Action Plan

0-6 months	6-12 months	12-18 months	18-24 months	24+months
Begin discussions concerning the NEHI concept, and refine. Consult with experts regarding the creation of an Israel Environmental Health Institute.	In consultation with all sectors, develop plan for the NEHI, and obtain general agreement on concept and scope. Make decisions regarding creation of the NEHI: affiliation, location, role, and funding.	Begin detailed planning for the NEHI, including organizational location, funding, staffing.	Meet with foundations, Ministry of Treasury, Industry and others to develop funding plan for the NEHI. Create NEHI, hire staff and leader.	Formally inaugurate NEHI.
Begin Discussions concerning the creation of an Israel NEHAP. Make contacts with European countries that have developed NEHAPs. Consult with WHO.	Arrange for several senior people from government, NGOs and the private sector to visit a country(s) to learn about the creation of a NEHAP. Form exploratory NEHAP with relevant government ministries, identify and invite other Israeli and international participants.	Holds workshops and meetings to develop NEHAP. Prepare draft NEHAP for public/ ministerial review.	Revise NEHAP based on public/ ministerial comments.	Approve NEHAP and forward to Israeli Knesset.

8-5 Monitoring, Data collection, Data Accessibility

0-6 months	6-12 months	12-18 months	18-24 months	24+months
Begin discussions with IDF and others regarding data, accessibility, and GIS. Obtain commitment of government bodies to open access to information. Determine practical consequences. Hold risk communication seminar. Support training in risk communication.	Develop plan for integrated, open-access, environmental health data information system. Establish group from health and environment ministries to review environmental and health monitoring and reporting. Review laboratory needs for an environmental health programme. Review communication procedures of environmental health data and hazards in each institution.	Obtain agreement on EH data information system. Prepare monitoring plan to fill gaps relating to health and exposure.	Establish EH data information system and public access to data and information. EHUs prepare plan to ensure coordination of monitoring efforts. EHUs prepare plan to meet laboratory needs.	

8-6 Teaching, Training and Research

0-6 months	6-12 months	12-18 months	18-24 months	24+months
Discussions with Israeli schools of public health and schools of medicine regarding: Teaching coordination, specialization, staffing and training; acceptance of credits across schools; Internships and extended fellowships of senior staff; and small developmental research grants, and seed grants. Discuss with above schools development of research funding opportunities through collaborative research with European institutions.	Develop integrated plan for coordination across schools, and developmental grants. Send selected senior researchers to Europe to learn about funding opportunities.	Begin small grant programme. Send senior researchers for targeted visits to other countries to update themselves on cutting edge issues. Begin discussions about long-term funding of environmental health research with government, industry, foundations and other funding sources. Begin development of a National Environmental Health Research Plan (NEHRP) in coordination with development of NEHAP.	Revise NEHRP based on review from scientific and public health bodies and public/ ministerial comments.	Implement funding plan, and begin funding highest priority environmental health research in conjunction with the creation of the NEHI. Complete NEHAP.

Annex A: Members of the Committee on Environmental Health*

Committee Members

Peter Preuss – Committee Chairman
Director, National Center for Environmental Assessment, United States Environmental Protection Agency

Henry Falk
Director, Coordinating Center for Environmental Health and Injury Prevention, United States Centers for Disease Control and Prevention (CDC)

Andrew Farmer
Senior Fellow, Institute for European Environmental Policy, United Kingdom

Erik Lebret
Head of the Center for Environmental Health Research, The Netherlands National Institute for Public Health and the Environment

Jaroslav Volf
Director, National Institute of Public Health, Czech Republic

Project Coordinators

Maya Sadeh
Environmental Health Project Coordinator
Yad Hanadiv

Joseph M. Greenblott (on behalf of the chairman)
Office of the Chief Financial Officer, Office Planning, Analysis and Accountability, United States Environmental Protection Agency

* The experts listed here participated on this Committee in their private professional capacity. Organizational affiliations are provided for background purposes only. The findings and recommendations in this report represent the personal opinions of the Committee members. This report has not been reviewed or approved by the Committee members' affiliated organizations.

Annex C: National Environmental Health Action Plans

In advocating the development of National Environment and Health Action Plans (NEHAPs) in Europe, the WHO recognized the need for effective implementation and legislation that assigns responsibilities for "coordination between environmental and health sectors and ensuring that levels of pollutants in air, water, soil, and food are monitored for the purpose of achieving and sustaining reductions in exposure."[28]

The development of NEHAPs across Europe was first agreed to in Helsinki in 1994, following the publication of the Environmental Health Action Plan for Europe (EHAPE). In June 1999, environment and health ministers committed themselves to endorsing and strongly supporting the implementation of NEHAPs at the Third Ministerial Conference on Environment and Health in London (the "London Declaration"). By 2002, 43 countries had developed NEHAPs and were beginning to implement them.[29]

NEHAPs are developed in cooperation with a wide range of partners, including professional and technical experts, national, regional and local authorities and nongovernmental organizations. As general guidance, most NEHAPs address the following subject areas in terms of policy and planning:

- **Environmental health management**, including information systems, environmental health services, public information, consultation and participation, environmental health education, economic instruments, and research agendas.

28 World Health Organization and the Commission of the European Communities. 20-22 June 1994. *Declaration on Action for Environment and Health in Europe; Second European Conference on the Environment and Health.* Helsinki, Finland: *http://whqlibdoc.who.int/euro/1994-97/EUR_ICP_CEH_212.pdf.*

29 Annex B of this report summarizes an example of a NEHAP from Finland. Additional information and examples of more than 30 NEHAPs can be found on the WHO-Europe website: World Health Organization, Regional Office for Europe. 2005. "Environmental Health Policy: National Environmental Health Action Plans." Copenhagen: *http://www.euro.who.int/envhealthpolicy/plans/20020807_1* (updated 21 January 2005).

- **Environmental health hazards and media**, including ambient air, drinking and bathing water, soil and waste, noise and vibrations, ionizing and non-ionizing radiation, food safety, housing and human settlements, chemicals, and workplace.

- **Economic sectors**, including industry, agriculture, transportation, energy, and tourism.

As part of the NEHAP process, the WHO also recommends the development of policy tools and activities that have relevance to the whole risk assessment, risk management, and risk communication process, and that can be based on simple steps and policy actions.[30] These activities include:

- Developing an environment and health information system (EHIS) that helps identify and prioritize environmental health problems and facilitates prompt assessment and management of emergencies.
- Improving and expanding the range of scientific tools.
- Increasing the transparency of decision-making.
- Expanding the range of stakeholders involved in the decision-making processes.
- Increasing the ability to identify early warnings of risks.
- Establishing research and education programmes to address gaps in knowledge.
- Developing and implementing safer and cleaner production and sustainable consumption patterns.
- Developing guidelines aimed at balancing the distribution of benefits and costs of environmental health measures and weighing up the health improvements and other benefits against anticipated costs, legal constraints, and impediments to free trade.
- Affirming the importance of communication with the public on environment and health.

30 World Health Organization, Regional Office for Europe. 23-25 June 2004. Fourth Ministerial Conference on Environment and Health. Budapest: *http://www.euro.who.int/budapest2004* (updated 31 May 2005).

- Developing risk communication guidelines for bringing environmental health considerations to the attention of different sectors and for public awareness.
- Ensuring that the training and information received by environment and health professionals and decision-makers incorporate modern knowledge, methods and concepts on health and the environment, especially in the education and training of all medical professionals.

C-1 Sample NEHAP - Finland

The NEHAP developed by Finland, and the process for developing it, may be instructive for Israel.[31,32] On 23 February 1995, the Finnish government established a committee to draw up a Finnish National Environmental Health Action Plan. The Action Plan was to be based on the decisions and action plans endorsed by the WHO's Conference on Environment and Health in Helsinki in June 1994, but with a specific focus on the state of the Finnish environment, the health of the Finnish population, and areas adjacent to Finland and other relevant international issues. The Committee was charged with:

- Characterizing the central problems pertaining to environmental health.
- Identifying means of ensuring an environment conducive to health.
- Drawing up a programme of action that would help prevent and rectify environmental health problems.

31 Finish Environmental Health Committee. 1997. *Finnish Environmental Health Action Plan*. Helsinki: *http://www.euro.who.int/document/peh-ehp/nehapfin.pdf.*

32 For comparison, Finland's population is estimated at approximately 5.2 million people, compared with Israel's 6.9 million people. Finland 2004 Gross Domestic Product (GDP) is estimated at $151 billion, with a per capita GDP of $29,000. Israel's 2004 GDP is estimated at $129 billion with a per capita GDP $20,800. For additional comparative information, see: U.S. CIA. 2005. "The World Factbook." Washington, DC: United States Central Intelligence Agency. Available on the Internet at: *http://www.cia.gov/cia/publications/factbook/index.html.*

Development Process

This Environmental Health Committee was chaired by Director of the Ministry of Social Affairs and Health, and included representatives from across Finnish society, including: six government ministries, secretariats for the environment and for public health, the Academy of Finland, the National Environmental and the National Health Research Institutes, the Institute of Occupational Health, the National Mental Health Association, several trade unions and trade union organizations, five cities and an organization of local authorities, regional environmental authorities and centres, the Finnish Society for Housing and Planning, an industrial and an agricultural and forest owners association, a nature conservation association, several local and regional associations and centres for environmental protection and health, and Helsinki University.

To conduct its work, the Committee held more than 30 meetings, including 12 local meetings. The Committee also held two seminars attended by outside experts to discuss the present status of Finnish environmental health and weigh actions that should be taken to promote environmental health - including the order of priority of these actions. During the Committee's term, Finland also participated in regional (Baltic) environmental conferences and WHO meetings on NEHAPs. A first draft of the Committee's report was circulated for comments among experts in the organizations represented by the Committee members. The final 184 page report was submitted on 20th December 1996 to the Finnish government (Council of State).

C-2 Content

The objective of the Finnish Environmental Health Action Plan is "to assess the current state of environmental health and to evaluate its future trends. The plan proposes measures that are needed to ensure a healthy environment and to foster a favourable trend in environmental health, and presents means for studying, analyzing and remedying environmental health hazards." The plan is broad in scope and includes introductory sections on the history of

environmental health in Finland, a review of other national programmes, the state of the environment and health in Finland, and principles and objectives. The main body of the document provides background information, objectives, specific actions, and identifies responsible institutions for each topic. Topics covered by Finland's NEHAP include:

- Basic factors of environmental health (water, air, food, solid wastes and soil pollution, radiation, ambient noise, chemicals, environmental accidents, climate change, and depletion of the ozone layer).
- Promotion of environmental health in communities.
- Production, products, commerce and consumption.
- Energy.
- Environmental health awareness and possibilities to exert influence.
- Research, development, and education.
- Environmental health monitoring and data systems.
- Assessment of environmental health risks and hazards.
- Environmental health policy.
- International cooperation.

The Action Plan concludes with a listing of central principles, objectives, and priority actions. The specific details regarding the topics, objectives, and actions that are included in the Finnish plan are informative. However, they are not necessarily appropriate for Israel, and are beyond the scope of the present document.

The Committee suggests that knowledge of the experiences and documentation associated with the development of NEHAPs from nations, like Finland, would be useful in undertaking a similar effort in Israel. To this end, if Israel decides to develop a NEHAP (or similar effort), the Committee suggests that a selection of such documents be translated into Hebrew and be made available within Israel, especially to local governments and NGOs. The Committee also suggests that if Israel decides to pursue this path, it consult with and involve representatives from other nations that have experience in the development of NEHAPs.

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Yitzhak Shamir (Prime Minister of Israel) and William A. Brown (Ambassador of the United States of America). 20 February 1991. "Memorandum of Understanding Between the United State Environmental Protection Agency and the Israel Ministry of the Environment." Jerusalem, Israel.

- יש להקים יחידות בריאות וסביבה במשרד לאיכות הסביבה ובמשרד הבריאות. ביחידות אלה יעבדו אנשים בעלי המומחיות הנדרשת לטיפול יעיל בבעיות בריאות וסביבה. על שתי יחידות אלה להשלים זו את זו ולערוך תכניות משותפות.
- יש צורך ברשימה ברורה של סדרי עדיפות לאומיים בתחום בריאות וסביבה, שתנחה פיתוח תכנית כוללת. ברשימה יהיה ביטוי לספקטרום נרחב ככל האפשר של גורמים בעלי עניין, ביניהם רשויות מקומיות, האקדמיה, ארגונים לא ממשלתיים והתעשייה.
- על המשרד לאיכות הסביבה למקד את מאמציו בהערכת סיכונים. עניין זה קריטי לאבחנה בין סיכונים גבוהים ונמוכים וכדי לקבוע סדרי עדיפות לפעולה, מחקר ומדיניות. על משרד הבריאות להתמקד באפידמיולוגיה סביבתית, ניטור ביולוגי והערכה של כמות המזהם וטיבו ביחס לאיבר/רקמה הנחשפת.
- על המשרדים לעבוד בשיתוף עם צבא ההגנה לישראל כדי להעביר את מפת הסיכונים של צה"ל למוסד אזרחי האחראי להשגה ולשילוב מידע סביבתי הרלוונטי לסיכוני בריאות וסביבה.

מכון לאומי לבריאות וסביבה

אחת מהצעותיה המרכזיות של הוועדה היא לייסד מכון לאומי לבריאות וסביבה, שתפקידו לקדם את תכנית הפעולה הלאומית לבריאות וסביבה, לקדם את שיתוף הפעולה בין המשרד לאיכות הסביבה, משרד הבריאות ושותפים נוספים, ולתאם את הפיתוח של אסטרטגיה לאומית לחקר בריאות וסביבה. אם יוקם, יוכל המכון לפעול כזרז ליישום רבות מהמלצות הוועדה.

הערה:
אין בממצאים ובהמלצות הוועדה המוצגים בפרק זה ובבאים אחריו מתיחת ביקורת על מוסדות ודרכי פעולה מסוימות. ההמלצות נועדו לסייע לישראל לפתח תכנית לאומית משולבת המדגישה את התפקידים, תחומי האחריות והיכולת של מוסדות ממשלתיים מקומיים, אזוריים ולאומיים, ארגונים לא ממשלתיים, התעשייה והאקדמיה, לטפל ביעילות בנושאים של בריאות וסביבה.

- יש להקים תכנית חדשה שתשלח מדענים פעילים לביקורים בחו"ל כדי להתעדכן בנושאים חדשניים. על ישראל לשלוח מדענים לארצות האיחוד האירופי כדי להחשף להזדמנויות מימון למחקר בתחום בריאות וסביבה.
- יש להקצות לממשל ולמוסדות המחקר תקציב נדיב דיו למענקי מחקר כדי שיוכלו ליישם תכנית מחקר בבריאות וסביבה, שתהיה מקובלת על הממשל ומוסדות המחקר.
- יש להגביר את שיתוף הפעולה בין המגזר העסקי למגזר הציבורי ולפתח מנגנונים שימנפו את מימון המחקר מהתעשייה, תוך כדי הבטחת אמינותו של מחקר בנושא בריאות וסביבה.

מידע, ניטור, ניתוח, דיווח והפצה

- יש לבחון את המסגרת, המרחב הגיאוגרפי וההיקף של הניטור הסביבתי כדי לפתח רשת ניטור כוללת ומתואמת יותר.
- יש לסקור את יכולתן של הרשויות המקומיות לקבל על עצמן תפקידים של ניטור בסיסי, ויש לפתח תכנית לצמצום פערים ברשת הניטור. יש להבטיח הליכים של בקרת איכות.
- יש לפתח מערכות לתיאום יעיל יותר של איסוף וניתוח מידע סביבתי ובריאותי, כדי לאפשר העברת מידע בין שני התחומים.
- על בסיס סקירת הצרכים, המשאבים הנדרשים וסדרי העדיפות, יש לפתח מעבדה מרכזית לבריאות וסביבה.
- על ישראל לפתח תכנית לניטור ביולוגי.
- על כל הארגונים ובעלי העניין המעורבים בתחום בריאות וסביבה להתחייב על הענקת גישה נוחה למידע שברשותם.
- על מוסדות ישראליים רלוונטיים להתייחס ברצינות להליכים, לאסטרטגיות ולמסירת מידע על סיכונים פוטנציאליים לציבור, ועל תפקידם בהתמודדות עם בעיות שאזרחים מציגים. יש צורך בהכשרה מקצועית למסירת מידע על סיכונים סביבתיים לציבור.

ממשל

- הוועדה ממליצה על הקמת מסגרת ממשלתית משופרת שתנהל בהצלחה תכניות בתחום בריאות וסביבה. יש להקים קבוצות תיאום בין–משרדיות עם מנדט ברור לסילוק המחסומים הקיימים בפני שיתוף הפעולה.

הכשרה אקדמית

לטיפול מיטבי בנושאי בריאות וסביבה יהיה צורך ליעל את ניצול המומחיות והמשאבים למחקר והכשרה; להגדיל את היקף הפעילות של מוסדות המחקר וההכשרה בישראל; לפתח את המשאבים, התשתית והמומחיות הנדרשת למחקר ולמעקב אחר היקף הבעיות הספציפיות לישראל; ולחזות בעיות בריאות וסביבה פוטנציאליות.

- קיים צורך דחוף לצמצם את פער המומחיות בתחומים האקדמיים הרלוונטיים, בין השאר בתחומים האלה: טוקסיקולוגיה, אפידמיולוגיה סביבתית, רפואה תעסוקתית וסביבתית, ניטור ביולוגי והערכת סיכוני בריאות האדם, והיבטים סוציו–אקונומים של בריאות וסביבה. צמצום הפער ייעשה באמצעות מענקי מחקר מכוונים לדוקטורט ופוסט דוקטורט בחו"ל.
- יש להציע מימון על בסיס תחרותי למדענים אורחים העוסקים בתחום בריאות וסביבה ולמומחי מדיניות שיוזמנו לישראל כדי ללמד בקורסים ולבצע מחקרים קצרי טווח (שישה חודשים – שנה) באוניבריסטאות ובמשרדי הממשלה.
- ארבעת בתי הספר לבריאות הציבור וארבעת בתי הספר לרפואה בישראל צריכים לפתח מערכות לתיאום הוראה, הכשרה ומחקר. יש להקים ועדה לאומית שתעסוק בתיאום תכנית לימודים בתחום בריאות וסביבה.
- מומלץ להכשיר אנשים מהדיסציפלינות המתאימות בקורסים קצרים שיפותחו בישראל ובקורסים הקיימים בחו"ל. חשיבות רבה נודעת לקורסים לאנשי מקצוע בממשל, בתעשייה ובארגונים הלא ממשלתיים בנושאים כגון הערכת חשיפה, טוקסיקולוגיה לאפידמיולוגים ודרכי מסירת מידע על סיכונים לציבור.

מחקר

כדי לנהל עבודות מחקר רב–שנתיות רחבות–היקף שיעסקו בבעיות של בריאות וסביבה נבחרות, יש צורך במחקר משולב ומתואם היטב, על פי ההנחיות האלה:

- יש צורך בתיאום טוב יותר בין משרדי ממשלה שפעילותם קשורה בבריאות וסביבה בתחומי תכנון, מימון, מחקר ועבודות מחקר מיוחדות, גיוס והכשרה.
- יש לפתח תכנית להכשרה ולמימון מענקי מחקר ומלגות מחקר קטנות. יש להשקיע במימון כדי לעזור למדענים צעירים בתחילת דרכם המקצועית.

- התעשייה והממשל אינם רואים זה בזה שותפים במניעת תחלואה מגורמים סביבתיים. במקרים רבים אין ביניהם שיתוף פעולה מספק וזה משפיע לרעה על הסביבה ובריאות התושבים בישראל.

ארגונים לא ממשלתיים

הארגונים הסביבתיים הלא ממשלתיים מבוססים היטב בחברה והם ממלאים תפקיד חשוב בנושאים סביבתיים רבים בישראל, תוך הדגשת נושאים הקשורים בצדק סביבתי. ארגונים אלה החלו רק לאחרונה לעסוק בנושאי בריאות וסביבה.

- הארגונים הסביבתיים נמנעו מלעסוק באופן פעיל ומשמעותי בנושאי בריאות וסביבה בגלל העדר אנשי מקצועי ומחסור במימון.
- ארגונים המייצגים חולים וארגונים רפואיים/בריאותיים כמעט ואינם מגלים עניין בנושא בריאות וסביבה.

לסיכום, המצב בישראל מציב אתגרים אירגוניים ומעשיים הדורשים תגובה שיטתית.

המלצות

כללי

- על ישראל לפתח תכנית פעולה לאומית, מאוחדת וכוללת לבריאות וסביבה בהתאם להנחיות ארגון הבריאות העולמי
(NEHAP – National Environment and Health Action Plan)
- על ישראל לפתח תכנית מחקר לאומית בנושא בריאות וסביבה. פיתוחה צריך להיעשות בשיתוף פעולה של הממשל, האקדמיה, התעשייה וארגונים לא ממשלתיים. הפעילות תכלול מספר מוגבל של תחומי מחקר מועדפים, של תפקידים ושל תחומי אחריות מוגדרים. תכנית המחקר תנחה את קבלת ההחלטות באשר למימון מחקרים בתעשייה ובאקדמיה.
- הוועדה מציעה להקים מכון לאומי לבריאות וסביבה כדי לקדם את המודעות והתכניות לטיפול בנושא בריאות וסביבה בישראל.

ממשל

בדומה למרבית המדינות, האחריות לבריאות וסביבה בישראל מתחלקת בין משרד הבריאות והמשרד לאיכות הסביבה.

הוועדה גילתה פערים ביכולת משרדי הממשלה בישראל להתמודד עם בעיות של בריאות וסביבה. לעיתים קרובות מדיניות של משבר היא שמנחה את המשרדים העוסקים בעניינים אלה. מצב זה גורם לכך שבראש סדר העדיפויות עומד הטיפול במשבר על חשבון משאבים שאמורים להיות מוקצים להערכה ולטיפול שיטתיים בגורמי תחלואה הנובעים ממפגעים סביבתיים. משרדי הממשלה עוסקים בעיקר בנושאים הקשורים ליצירת מזהמים ושיחרורם, חשיפה ומגע, אך אין בידיהם הכלים לקשר בין ממצאים בריאותיים מטרידים ובין מפגעים ומזהמים סביבתיים. הסיבות לכך הן אלה:

- הסמכויות מפוצלות בין משרדי ממשלה ורשויות למיניהן.
- אין בארץ גוף תיאום יעיל לבריאות וסביבה.
- אין מדיניות עקבית ושקופה בנושא בריאות וסביבה ואין תכנון ויישום מספקים ומתואמים של מדיניות, מחקר וחינוך.
- חסרים בממשל מומחי בריאות וסביבה הנחוצים לתכנון, לפירוש, לפרסום וליישום תוצאות מחקרים.
- חסר מנגנון תוך משרדי שיכול למסור לציבור מידע בדבר סיכוני בריאות סביבתיים. חסרה יכולת מקצועית להסברת הסיכונים של גורמים סביבתיים והשפעותיהם על הבריאות.
- החוקים, התקנות והסטנדרטים הקיימים אינם מספיקים לטיפול יעיל במקורות עכשוויים של סיכוני בריאות הנובעים ממפגעי סביבה.

תעשייה

נראה שהתעשייה בישראל מתקדמת בכיוונים חיוביים, אך היא עדיין לא קיבלה על עצמה את מלוא האחריות בתחום בריאות וסביבה.

- בקרב הסגל וההנהלה בתעשייה חסרים אנשי מקצוע המסוגלים להעריך את השפעת הפעילות התעשייתית על בריאות הציבור ועל בריאות העובד.

- קיים מחסור בהכשרה בין-תחומית בתחומים חשובים של בריאות וסביבה כגון אפידמיולוגיה, טוקסיקולוגיה, הערכת חשיפה, ניתוח קבלת החלטות ומדיניות, הערכת סיכונים ורפואה.
- יש מחסור בהכשרת אנשי מקצוע ואקדמיה בתחומים משיקים כגון משפט, כלכלה, הנדסה, אדריכלות ותכנון עירוני.
- המומחיות המקצועית הנדרשת להערכת סיכונים והשפעת הסביבה על בריאות האדם טעונה שיפור. כן יש לשפר את היכולת לחזות מקרים של תחלואה הקשורה באיכות הסביבה.

מחקר

בממשלה, כמו גם באקדמיה, קיים מחסור במימון ובמומחיות הדרושים לתמיכה ברמה הנדרשת במחקר בסיסי ומעשי. גם במקרים שבהם נערך מחקר בנושאים הקשורים לבריאות וסביבה, השאיפה העיקרית של קבוצות המחקר באוניברסיטאות היא לבצע מחקר חדשני. התוצאות של מצב זה הן אלה:

- בתחום בריאות וסביבה מתבצע רק מחקר מינימלי.
- חסרה המשכיות בקווי מחקר ועל כן החזר ההשקעה במחקר אינו מספק.

מידע: ניטור, ניתוח, דיווח והפצה

איסוף המידע מתבצע בדרך כלל כהלכה. עם זאת, בתחום הזה קיימות הבעיות האלה:

- אין מאגר נתונים משולב של מידע סביבתי ומידע בריאותי. שיתוף הפעולה בין המשרדים המעורבים באיסוף המידע אינו מספק.
- גישת החוקרים והציבור הרחב למידע מוגבלת. גם אם המידע זמין, לעיתים קרובות מחירו יקר. כתוצאה מכך מוחמצות הזדמנויות רבות לגלות ולהבין את ההשפעות של סיכונים סביבתיים.
- לא נראה שקיימת מדיניות כוללת ומשולבת בשיתוף מידע.
- נתונים סביבתיים חשובים אינם נאספים באופן שיטתי.
- האמצעים המעבדתיים להכשרה ולמחקר ופיתוח בתחום בריאות וסביבה אינם מספקים.

ממצאים

הוועדה שאבה מידע רב על זיהום סביבתי בישראל ועל השפעותיו האפשריות על בריאות הציבור. המידע עסק, בין השאר, בזיהום אוויר, זיהום מים עיליים ומי תהום, חשיפה של עובדים ושל הציבור לכימיקלים מסוכנים המשתחררים בעת דליפות ותאונות בתעשייה, על שיעור גבוה של מקרי סרטן באוכלוסיית אזורים מסוימים ובישראל כולה, על שיעור גבוה של לוקים באסטמה ועל חששות לרמה גבוהה מהממוצע של מומים מולדים. בידי הוועדה לא נמצאו נתונים כמותיים על הקשר שבין תחלואה וגורמים סביבתיים בישראל, אך בהתייחס לידע הקיים במדינות מפותחות, למידע על זיהום סביבתי ולמידע חלקי על תחלואה מגורמים סביבתיים בישראל, הוועדה מעריכה כי קיים בישראל קשר משמעותי בין תחלואה וגורמים סביבתיים. הוועדה סבורה שבישראל חסר הניסיון הנדרש לכימות רמת התחלואה הנובעת מגורמים אלו, וחסרה המומחיות הרצויה ומדיניות סביבתית ובריאותית מקיפה לצמצום נזקים בריאותיים הנגרמים ממפגעים סביבתיים.

הוועדה למדה את הכישורים והידע בתחום בריאות וסביבה של ארגונים ומוסדות בישראל, ומסקנותיה מובאות במסמך זה.

הכשרה אקדמית

לאקדמיה נכון תפקיד עיקרי בפיתוח ובשימור ידע ומומחיות מקצועית. הוועדה בחנה את המסלולים האקדמיים הקיימים בטוקסיקולוגיה, ניטור ביולוגי, אפידמיולוגיה, היבטים רלוונטים של מדעי הסביבה ושל רפואה סביבתית ותעסוקתית.

המסקנות:

- קיים מחסור במשאבים ובתשתיות להכשרה בתחום בריאות וסביבה. קיים מחסור במדענים שעברו הכשרה הנחוצה לעריכת המחקר הנדרש בנושא זה. הדבר מוביל ליכולת תגובה בלתי מספקת במקרים של התפרצויות תחלואה הנגרמות ממפגעים סביבתיים, כמו גם לנושאים שבשגרה.
- בבתי הספר לרפואה ולבריאות הציבור בישראל קיימות כמה תכניות לימוד, אולם אין תיאום מספק ואינטגרציה של קורסים ותכניות בנושא בריאות וסביבה.
- דוקטורנטים מעטים מאוד עוסקים בדיציפלינות הרלוונטיות.

סביבתיים העשויים להשפיע על הבריאות.[3] גורמים חשובים המהווים סיכונים בריאותיים סביבתיים, כוללים: פסולת תעשייתית, זיהום אוויר, שפכים תעשייתיים וביתיים, מוצרי צריכה, תנאי מחייה, סגנון חיים וקרינה מיננת ובלתי מיננת. השפעות בריאותיות החשודות או ידועות כבעלות אטיולוגיה סביבתית כוללות סרטן, מחלות לב–ריאה, אסטמה, אלרגיות ומחלות נוספות של דרכי הנשימה, נוירוטוקסיות ולקויות נוירולוגיות, מחלות קיבה ומעיים, מומים התפתחותיים ומולדים והרעלות אקוטיות. מחקר שנערך בתחום זה מייחס כ– 33–25 אחוזים מהתחלואה העולמית לגורמי סיכון סביבתיים.[4]

הגורמים המוסדיים של תכנית לאומית לבריאות וסביבה כוללים את הממשל, ארגוני אזרחים וארגונים לא ממשלתיים, התעשייה והאקדמיה. **הממשל** צריך לנסח מדיניות ואסטרטגיות בנושאים הקשורים בבריאות וסביבה. הוא אחראי לחקיקה, למחקר, למתן סיוע והסברה, למסירת מידע לציבור ולהכשרה. **ארגונים אזרחיים וארגונים לא ממשלתיים** חיוניים לצורך הערכה, הסברה ומניעת סיכונים סביבתיים בעלי השלכות בריאותיות, ולקידום המודעות לקשר שבין בריאות וסביבה. **התעשייה** היא גורם מרכזי בבדיקת בטיחות מוצרי צריכה, בפעילות בנושא בריאות וסביבה בתחום המפעל, במחקר על מניעת זיהום סביבתי, מניעה, פיקוח ובקרה של זיהום, קידום נושא הבריאות התעסוקתית ופיתוח והכשרה של סגל עובדים מקצועי לטיפול בענייני סביבה. **האקדמיה** שותפה לממשל ולתעשייה באחריות לפיתוח ושימור היכולת המקצועית הנדרשת לצורך זיהוי וטיפול בבעיות הקשורות בבריאות וסביבה.

המרכיבים הפונקציונליים המרכזיים של תכנית לאומית לבריאות וסביבה כוללים תכנית אסטרטגית למחקר משולב בתחום זה ופיתוח יכולת לעקוב, להעריך ולהפחית את הסיכונים והסכנות הקשורים לבריאות וסביבה. רכיב חשוב נוסף הוא הכשרה אקדמית וטכנית לצבירת המומחיות הנדרשת לקביעת מדיניות, לפיתוח תקנות ולהנחיית מקבלי ההחלטות. הוועדה הסיקה שכדי ליצור יכולת מקיפה בנושא ולפתח תכנית לקידום בריאות וסביבה בישראל, יש צורך בשיפור בכל הסקטורים שנזכרו, בכלל זה אקדמיה ומחקר, ממשל, תעשייה וארגונים לא ממשלתיים, וביצירת שיתוף פעולה ביניהם.

3 World Health Organization, Regional Office for Europe. 1989. *Environment and Health, the European Charter and Commentary:* First European Conference on Environment and Health: Frankfurt 7-8 December 1989. Copenhagen: WHO Regional Publications, European Series No. 35: *http://www.euro.who.int/Document/WA3095.pdf*

4 Smith, K.R., C.F. Corvalán, and T. Kjellström. 1999. "How much global ill health is attributable to environmental factors?" Epidemiology 10(5):573-584

חברי הוועדה נפגשו עם למעלה מ־50 אנשי מקצוע ישראלים ממשרדי הממשלה הנוגעים בדבר, עם נציגי צבא ההגנה לישראל, ראשי בתי הספר לבריאות הציבור, הדיקאנים בבתי הספר לרפואה, מדענים, אקדמאים, נציגי התעשייה ונציגי ארגונים לא ממשלתיים (NGOs) הפעילים בנושאים בריאותיים וסביבתיים.

הוועדה התבקשה להתייחס לשאלות האלה:

1. אלו תחומי מומחיות מדעית נדרשים כדי לחזק את נושא בריאות וסביבה? מה מצבו של כל אחד מתחומי מומחיות אלה? איזו הכשרה נדרשת להשגת המטרה הזו?

2. אלו סוגי מחקר נדרשים לקידום הנושא ובאלו תחומים? היכן ובידי מי לבצע את המחקרים? איזה מנגנון מימון יסייע בצורה הטובה ביותר למחקר מסוג זה? כיצד ניתן לקדם מחקר בין־תחומי מעמיק?

3. מהם סוגי המידע והנתונים הנדרשים לקבלת החלטות מבוססות בתחום זה? אלו ארגונים או מוסדות צריכים להיות אחראים על איסוף המידע והפצתו?

4. מהם תפקידי המשרד לאיכות הסביבה ומשרד הבריאות בתחום בריאות וסביבה? מהו תפקידו הרצוי של כל אחד מהמשרדים ואיזה שיתוף פעולה, או תיאום, צריך להתקיים בין שני הגופים?

5. האם לארגונים ולמוסדות הקיימים כיום יש יכולת להביא לשיפורים בעלי השפעה חיובית ניכרת על תחום בריאות וסביבה? האם יש צורך בהקמת גופים נוספים?

בתגובה לשאלות אלה בחנה הוועדה את המרכיבים העיקריים הנדרשים לפיתוח תכנית יעילה בתחום בריאות וסביבה. הוועדה העריכה את המצב בישראל לאור ממצאיה והמליצה את המלצותיה.

יד הנדיב והוועדה מודעות לכך שבשל הגדרת תפקיד הוועדה והיקף העבודה המוגדר שלה, ייתכן שהוועדה אינה מתייחסת לכמה נושאים חשובים, לתחומי מומחיות מסוימים ולמידע חשוב אחר. אנו רואים בדוח זה צעד ראשון לעידוד יצירת התשתית ותחומי המומחיות הרצויים בתחום בריאות וסביבה.

בריאות וסביבה הינו תחום העוסק בהיבטי התחלואה ובריאות האדם הקשורים בגורמים סביבתיים. תחום זה עוסק בצדדים התיאורטיים והמעשיים של הערכה ובקרה של גורמים

בריאות וסביבה בישראל:
המלצות לשיפור התשתית המקצועית
תקציר דו"ח ועדת מומחים בינלאומית

רקע

בסוף מאי 2005, אירחה יד הנדיב (קרן רוטשילד) ועדת מומחים בנושאי בריאות וסביבה[1].
הוועדה שהתה בישראל שבוע כדי להביא את המלצותיה לשיפור תחום בריאות וסביבה בישראל.

חברי הוועדה[2] היו ד"ר פיטר פרוס (יושב הראש),
מנהל המרכז הלאומי להערכת השפעה על הסביבה במשרד לאיכות הסביבה האמריקני
The National Center for Environmental Assessment at the
US Environmental Protection Agency

ד"ר הנרי פאלק, מנהל מרכז התיאום לבריאות וסביבה ולמניעת מפגעים,
המרכז האמריקני לבקרת מחלות באטלנטה, ג'ורג'יה
The Coordinating Center for Environmental Health and Injury Prevention
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1 למונח Environmental Health אין תרגום רשמי בשפה העברית. במסמך זה תרגמנו אותו כ"בריאות וסביבה", שלמיטב הבנתנו קרוב מאוד למקור. ניתן להשתמש במונחים דומים כגון "בריאות הציבור ואיכות הסביבה".

2 הבהרה: ציון תפקידיהם ושיוכם הארגוני של חברי הוועדה, כפי שמופיע במסמך זה, נועד להבהרת תחום התמחותם בלבד. לארגונים האלה אין כל קשר לדוח זה או לתכניו. הממצאים וההמלצות בדוח זה מייצגים את דעותיהם הפרטיות של חברי הוועדה.

בריאות וסביבה בישראל:
המלצות לשיפור התשתית המקצועית

תקציר דו"ח ועדת מומחים בינלאומית