



EUROPE

Environment and health performance review

Environment and health performance review

Estonia

Estonia Estonia Estonia Estonia Estonia
Estonia Estonia Estonia Estonia Estonia
Estonia Estonia Estonia Estonia Estonia
Estonia Estonia Estonia Estonia Estonia

Environment and health performance review

Estonia



Environment and health performance review

Estonia



ABSTRACT

This report describes and evaluates the current environment and health situation in Estonia. It evaluates the strong and weak points of the national environment and health status and presents recommendations from independent experts. The conclusions and recommendations are based on a detailed environment and health performance review carried out in the country. The review identified the most important environment and health problems, evaluated the public health impact of environmental exposure and reviewed the policy and institutional framework taking into account the institutional set-up, the policy setting and legal framework, the degree and structural functioning of intersectoral collaboration and the tools available for action.

The WHO Regional Office for Europe developed this project to follow up the commitments made by Member States at the Fourth Ministerial Conference on Environment and Health in Budapest in June 2004 to reduce children's exposure to environmental hazards. The project was designed to provide the evidence base for developing and implementing such action. The environment and health performance reviews are country-based interdisciplinary assessments the WHO Regional Office for Europe carries out at the request of Member States. Through the environment and health performance reviews, Member States receive support in reforming and upgrading the overall public health system.

Keywords

ENVIRONMENTAL HEALTH
HEALTH STATUS INDICATORS
PROGRAM EVALUATION
HEALTH POLICY
PUBLIC HEALTH ADMINISTRATION
ESTONIA

Address requests about publications of the WHO Regional Office for Europe to:

Publications
WHO Regional Office for Europe
Scherfigsvej 8
DK-2100 Copenhagen Ø, Denmark

Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office web site (<http://www.euro.who.int/pubrequest>).

© World Health Organization 2009

All rights reserved. The Regional Office for Europe of the World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. The views expressed by authors, editors, or expert groups do not necessarily represent the decisions or the stated policy of the European Commission or the World Health Organization.

Text editing: David Breuer

Cover design: Sven Lund

Printed in Denmark by Panthera Design

CONTENTS

Contributors	vii
Abbreviations.....	xi
Foreword.....	xiii
Executive summary: main conclusions and recommendations	xv
Introduction.....	1
1 Health priorities.....	8
2 Environment and health priorities	13
3 Institutional set-up	28
Socio-political situation, political system and infrastructure	29
Health sector.....	32
Environment sector	47
Other sectors	54
4 Tools for management.....	59
Health policies related to environment and health	60
Environmental policies	64
Transport policies	67
Other relevant policies	69
Soft law	71
Economics and funding.....	72

5	Intersectoral collaboration.....	75
6	Tools for action	82
	Environmental impact assessment and health impact assessment	83
	Monitoring	86
	Communication	98
	Capacity-building.....	100
7	Assessment of the chemical safety strategies and actions.....	103
	General management of chemicals	104
	Policy setting and institutional framework	105
	Specific chemical issues	110
	Tools for action: information on chemicals	112
	Emergency preparedness and response	113
	Conclusions and recommendations	116
	References	119
	Annex 1. Additional information by regional priority goal	136

Contributors

Project coordination

Nathalie Röbbel, WHO Regional Office for Europe

Lucianne Licari, WHO Regional Office for Europe

Authors

Nathalie Röbbel, WHO Regional Office for Europe

Nida Besbelli, WHO Regional Office for Europe

Reviewers

Jarno Habicht, WHO Regional Office for Europe

Agris Koppel, WHO Regional Office for Europe

Lucianne Licari, WHO Regional Office for Europe

National contributors

Leena Albreht, Head, Planning and Monitoring Department, Health Protection Inspectorate

Tiiu Aro, Director General, Health Protection Inspectorate

Irina Filippova, Chief Specialist, Health Protection Inspectorate

Tiit Gorinov, Labour Inspector, Jõgeva County Government

Evelin Hillep, Head, Plant Protection Bureau, Ministry of Agriculture

Janno Järve, Deputy Secretary General on Labour Policy, Ministry of Social Affairs

Katrin Kaarma, Director, National Labour Inspectorate

Marina Karro, Head, Environmental Health Expertise Department, Health Protection Inspectorate

Kuido Kartau, Environmental Impact Assessment Expert,
Environmental Impact Assessment Company Hendrikson & Co

Kitty Kislenko, Chemicals Expert, NGO Baltic Environmental Forum

Aivar Kokk, Governor, Jõgeva County Government

Vahur Kukk, Advisor to the Governor, Jõgeva County Government

Kai Künis-Beres, Chief Specialist of Strategy Bureau in the
Development Department, Ministry of the Environment

Maila Kuusik, Adviser, Planning Department, Ministry of the Interior

Heli Laarmann, Head, Environmental Health and Chemical Safety
Unit, Department of Public Health, Ministry of Social Affairs

Nele-Kai Loorits, Head, Building Division, Building and Housing
Department, Ministry of Economic Affairs and Communications

Merle Lust, Director, Radiation Protection Centre

Jaak Maandi, Adviser, Planning Department, Ministry of the Interior

Marek Maasikmets, Ministry of the Environment

Tiina Mällo, Head, Office for Food of Animal Origin, Veterinary and
Food Board

Mihhail Muzõtsin, Deputy Director General, Health Protection
Inspectorate

Irma Nool, Head, Labour Health Care Department, Health Care Board

Ivi Normet, Deputy Secretary General on Health, Ministry of Social
Affairs

Toivo Novandi, Deputy Secretary General for Food Safety, Ministry of Agriculture

Ülla Karin Nurm, Head, Department of Public Health, Ministry of Social Affairs

Mare Oder, Senior Specialist, Poison Information Centre, Chemicals Notification Centre

Pavel Ojava, Inspector, Environment Department, Environmental Inspectorate

Hans Orru, Lecturer of Environmental Health, Department of Public Health, University of Tartu

Karin Pachel, Estonian Environment Information Centre

Heli Paluste, Head, Health Care Policy Unit, Health Care Department, Ministry of Social Affairs

Ago Pelisaar, Executive Officer, Quality Infrastructure Division, Department of Internal Market, Ministry of Economic Affairs and Communications

Tagli Pitsi, Expert, Department of Prevention of Noncommunicable Diseases, National Institute for Health Development

Kristiina Põld, Head, Poison Information Centre, Chemicals Notification Centre

Natali Promet, Chief Specialist, Environmental Health Expertise Department, Health Protection Inspectorate

Reet Pruul, Chief Specialist, Environmental Management and Technology Department, Ministry of the Environment

Ivar Raik, Head, Work Environment Unit, Working Life Development Department, Ministry of Social Affairs

Rene Rajasalu, Inspector, Environment Department, Environmental Inspectorate

Rein Reisberg, Department of Surveillance, National Labour Inspectorate

Liis Rooväli, Head, Health Information and Analysis Department, Ministry of Social Affairs

Rivo Salong, Head, Planning and Analysis Bureau, Rescue Board

Anneli Sammel, Head, Department of Prevention of Noncommunicable Diseases, National Institute for Health Development

Madli Sarv, Chief Specialist, Water Department, Ministry of the Environment

Pille Strauss-Raats, Chief Specialist, Working Life Development Department, Ministry of Social Affairs

Reet Talkop, Adviser, Investment and Strategy Department, Ministry of the Environment

Ain Tatter, Director, Road and Railways Department, Ministry of Economic Affairs and Communications

Madis Tiik, Estonian Society of Family Doctors

Jüri Truusa, Adviser, Environmental Management and Technology Department, Ministry of the Environment

Rainis Uiga, Director, Jõgeva County Environmental Department

Katrin Väljataga, Head, Monitoring Bureau, Estonian Environment Information Centre

Enda Veskimäe, Director, Chemicals Notification Centre

Abbreviations

BMI	body mass index
CEHAPE	Children's Environment and Health Action Plan for Europe
DALY	disability-adjusted life-years
EHPR	environment and health performance review
ENHIS	European Environment and Health Information System
EU	European Union
EURATOM	European Atomic Energy Community
GDP	gross domestic product
HBSC	Health Behaviour in School-aged Children
IMPEL	Implementation and Enforcement of Environmental Law
INECE	International Network for Environmental Compliance and Enforcement
NEHAP	National Environment and Health Action Plan
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
PM	particulate matter
RAPEX	EU rapid alert system for dangerous consumer products
REACH	registration, evaluation, authorization and restriction of chemical substances (EU programme)
SAICM	Strategic Approach to International Chemicals Management
SE21	Estonian National Strategy on Sustainable Development: Sustainable Estonia
TB	tuberculosis
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations Children's Fund
USSR	Union of Soviet Socialist Republics
WHO	World Health Organization

Foreword

The purpose of this report is to convey a clear picture of the current environment and health situation in Estonia. It evaluates the strong and weak points of environmental and health status in Estonia. It also brings recommendations from independent experts on the key areas that could be considered for improvement.

The process of preparing the environment and health performance review began in January 2008. The evaluation mission took place from 25 February to 4 March 2008 in Jõgeva County, Tallinn and Tartu. During this field visit, the WHO team, comprising two environment and health experts, Nida Besbelli and Nathalie Röbbel, met 50 representatives from 26 institutions from various sectors involved in environment and health. Additional information has been collected from national counterparts as needed during the preparation of the report. The national contributors are acknowledged at the beginning of this report. The cut-off date for the information summarized in this report is 3 December 2008. The report does not reflect changes in the structure of the various institutions occurring since then.

The environment and health performance review for Estonia was carried out thanks to the efforts and support of Estonia's Ministry of Social Affairs, under the supervision of the Head of the Public Health Department, Ülla-Karin Nurm. Special thanks are due to Heli Laarmann, Head of the Environmental Health and Chemical Safety Unit, Public Health Department, who organized the visit, contacted all relevant sectors, provided background information and shared valuable time. We are very grateful to all national specialists and experts who shared their knowledge about environment and health issues in the country.

Special thanks are extended to the WHO Country Office for Estonia and especially to Jarno Habicht, Head of the Country Office, and to Agris Koppel, Health Policy and Systems Officer, who supported the preparation and implementation of the mission and the preparation of the report since the beginning.

We acknowledge Grant Agreement 2005156 from the European Commission, Directorate-General for Health and Consumers for support in implementing this project and preparing this report.

The current report is also an integral part of the Biennial Collaborative Agreement between the WHO Regional Office for Europe and the Government of Estonia for 2008–2009 to support health systems development.

Lucianne Licari
Regional Adviser for Environment, Health Coordination and
Partnerships
Partnership and Communications
WHO Regional Office for Europe

Executive summary: main conclusions and recommendations

Conclusions

- Environment and health has been further officially recognized within the health sector through the establishment of the Environmental Health and Chemical Safety Unit within the Public Health Department of the Ministry of Social Affairs and is a core element of the five key pillars of the new National Health Plan 2009–2020.
- The new National Health Plan 2009–2020, including environment and health, addresses issues of human health related to environmental factors: it is an opportunity to operationalize the environment and health approach in Estonia.
- The Health Protection Inspectorate is responsible for enforcing legislation relevant to environment and health through its Environmental Health Expertise Department.
- Compared with the Environmental Strategy of 1997, the new Environmental Strategy 2030 adopted in 2005 contains a chapter focusing on the need for strengthening the integrated activities related to environment and health.
- To ensure an effective response to environment and health issues, specific and appropriate human and financial resources should be allocated to environment and health as one of the key elements of the health system addressing public health services.
- Environment and health appear to be mainly considered from the perspective of sanitary surveillance and inspection in relation to preventing communicable disease. The broader definition of environment and health is often not sufficiently recognized.
- Intersectorality in developing national legislation and regulations is well-functioning and institutionalized process in Estonia.
- Several intersectoral committees have been set up to manage ongoing policy processes.

- Health impact assessment requirements are not clearly enough expressed in environmental impact assessment reports, and the results of environmental impact assessment are not accessible on the Internet, although the Ministry of the Environment plans to do this in 2009.
- Estonia has focused on chemical safety more than other topics in environment and health, and the Ministry of Social Affairs has a dominant role in chemical safety.
- The Environment and Health Unit within the Public Health Department of the Ministry of Social Affairs has insufficient human resources to cover all relevant environment and health issues.

Recommendations

- The Environmental Health and Chemical Safety Unit within the Public Health Department of the Ministry of Social Affairs should be strengthened with additional human resources to address all relevant environment and health risks.
- A clear institutional leader (specific ministry) should be assigned to be responsible for overseeing, coordinating and strategically driving the environment and health process in Estonia.
- The priorities defined within the Children's Environment and Health Action Plan for Europe (CEHAPE) should be integrated into the action plans that will be developed for implementing the National Health Plan 2009–2020. Appropriate legal, organizational and financial mechanisms need to be ensured for these plans and activities.
- The responsibility and representation of the various sectors need to be better streamlined to improve their accountability.
- Given the increasing importance of primary health care, family doctors and nurses should be trained in environment and health to support preventive action. In addition, the occupational health services should be developed further from their weak position in the current health system.

- The epidemiological knowledge of all health institutions should be strengthened, and especially the Health Protection Inspectorate should be further empowered to be responsible for epidemiological surveillance.
- A supportive environment should be provided to foster the further development of nongovernmental organizations (NGOs) related to environment and health, and current NGOs should be included in the policy development process in a systematic and regular way.
- Health impact assessment requirements within the environmental impact assessment requirements should be stated more clearly in the appropriate regulation.
- Local authorities should be provided additional human and financial resources to undertake health impact assessment.
- Toxicological training and risk assessment need to be strengthened.
- Exposure data in health risk and impact assessment should be better collected and used.
- Education in environment and health issues, promotion of research and development in environment and health should be made mandatory within the training of health professionals.

Environment and health issues are essentially intersectoral. Human health can only be protected from the risks posed by a hazardous or contaminated environment through the coordinated input of different sectors and greater capacity within the health sector to enlist the support of these actors in developing a high level of targeted activities and in ensuring consistency and synergy with other relevant commitments made by Member States. Through a detailed environment and health performance review, the WHO Regional Office for Europe provides a country-based analytical description of the environment and health situation in Estonia. The major areas of this strategic analysis are the institutional set-up, the policy setting and legal framework, the level and structural functioning of intersectoral collaboration and the tools available for action. This interdisciplinary assessment objectively examines the relevant policy and institutional framework and gives guidance for strengthening environment and health policy-making, planning preventive interventions, ensuring service delivery and conducting surveillance in environment and health.

The review has the aim of strengthening the health system, which has been highlighted in the recent Tallinn Charter: Health Systems for Health and Wealth adopted in June 2008. In the framework of this report, two commitments of the Tallinn Charter are particularly important: (a) investing in health systems and fostering investment across sectors that influence health, using evidence on the links between socioeconomic development and health; and (b) promoting transparency and being accountable for health system performance to achieve measurable results. Thus, the investment related to the environment has to be evidence based, and performance needs to be measured to ensure continual improvement.

Estonia's health system has clearly recognized the role of health promotion and disease prevention as an integral part of and as an addition to traditional health care services. Further, the holistic approach to people and population health is increasingly applied in everyday practice, but this report clearly highlights areas for improvement.

The Ministry of Social Affairs is the steward of Estonia's health system. As of 2008, the organizational structure in the health system comprises numerous actors, including various agencies under the Ministry of Social Affairs (such as the State Agency of Medicines, Health Care Board, National Institute for Health Development and Health Protection Inspectorate); public independent bodies such as the Estonian Health Insurance Fund; private primary health care units and (mainly publicly owned) hospitals under private regulation; and various NGOs and professional associations. In recent years, non-health sectors (such as transport, economy, agriculture and environment) have started to become more actively involved in health system activities due to the development and implementation of intersectoral public health strategies, such as those tackling HIV, cardiovascular disease prevention and cancer prevention. In recent years, regulations have been further adjusted to harmonize the national legislation with European Union (EU) legislation and to respond to emerging needs in health care. To bring the various initiatives under one umbrella and set a clear vision for the future, a long-term overall National Health Plan for 2009–2020 covering the whole health system

was launched a few years ago and finally approved by the Government in July 2008.

The report shows that the main environment and health issues in Estonia include bathing-water quality, access to the public water supply and exposure to indoor air pollution from the combustion of solid fuels. Besides specific environmental health risks, concerns focus on structural aspects. The main problem raised during the review was which institution should be responsible for environment and health. Generally, the review has shown that environment and health does not seem to have high institutional recognition.

Environment and health has been a focus of various departments of the Ministry of Social Affairs for a decade. Nevertheless, it has gained too little attention for a long time. The main focus has been on health care. The new National Health Plan 2009–2020 and its chapter on environment and health show that more attention is being given to environment and health. In addition, the Plan integrates health care and public health (including environment and health) into one system. Improving the understanding of environment and health at the institutional level can improve the population's health and quality of life.

Knowledge on environment and health and the availability of human resources in environment and health also need to be improved. At the university level, environment and health is less well covered than in the past.

At least two people have been responsible for environment and health since the Public Health Department was established within the Ministry of Social Affairs. Due to a lack of human and financial resources, however, environment and health has never been considered a priority. The reason behind the low importance attributed to environment and health is mostly that the same department was responsible for politically high-priority topics such as HIV, drugs, alcohol and smoking. Most of the resources and attention were allocated to these topics.

During the past three years, a special unit dealing with chemical safety was established in the Public Health Department. In 2008, with the

aim of strengthening and improving the coordination of environment and health within Estonia, the Chemical Safety Unit of the Public Health Department was enlarged to become the Environmental Health and Chemical Safety Unit to cover a large variety of environment and health determinants. Six chief specialists focus on chemical safety and environment and health topics. The Head of the Environmental Health and Chemical Safety Unit supervises the work of the chief specialists. The recognition of the importance of chemical safety for Estonia has been a positive achievement, and in future the Unit will aim to improve the risk management of all other relevant environment and risk factors.

A positive development is the obligation of the Ministry of Social Affairs to comment on and review all legislation prepared by other sectors to increase the intersectoral approach. Nevertheless, this task is considered to be difficult to implement due to a lack of human resources. Staff members trained and specializing in this within the Ministry of Social Affairs would be very beneficial for ensuring that other non-health policies adequately cover health aspects.

In addition, existing institutions with well-developed experience need to be used better, and the responsibilities of each sector and institution need to be clearly defined. In environment and health, the Health Protection Inspectorate could be empowered with new implementation responsibilities mainly in monitoring and data collection and controlling the implementation of guidelines and directives, while the Ministry of Social Affairs could further focus on strategic and policy planning.

Although environment and health are considered to be an integral part of public health in Estonia, there is no explicit strategy on environment and health. Nevertheless, a chapter of the new National Health Plan 2009–2020 covers environment and health, and other specific programmes and strategies cover specific environment and health risks and determinants. Thus, the National Strategy for Prevention of Cardiovascular Diseases 2005–2020 covers such areas as physical activity, food and nutrition, smoking and the prevention of cardiovascular diseases by the health care sector. The second important strategy is the Cancer Prevention Strategy 2007–2015,

covering such risk factors as tobacco, alcohol consumption, nutrition, physical environment and raising awareness, screening and early detection, diagnosis, treatment and care. The third strategy currently under development is the Injury Prevention Strategy. In addition, many institutions within the health sector have specific activities aiming at preventing ill health arising from environmental determinants. The challenge is that, although the public health strategy and other strategies cover many risk factors and issues, they often lack a comprehensive overview and approach from an environment and health perspective. Further, the terms of environment and health are limited and sometime controversial and not systematically used in regulations and strategies for health.

Compared with the Environmental Strategy of 1997, the new Environmental Strategy 2030 adopted in 2005 contains a chapter focusing on the need for strengthening the integrated activities related to environment and health.

In summary, both the health and environment sectors recognize environment and health, but one common strategic approach and better coordination are needed. The National Health Plan 2009–2020 including environment and health addresses issues of human health related to environmental factors and presents an opportunity to operationalize the environment and health approach in Estonia.

An important achievement is the recognition of children as a national priority. This vulnerable group is especially recognized in the context of physical activity, nutrition, injury prevention, radiation and allergies but also care activities and policy development.

Estonia has made progress in compiling and providing access to information on the environment and health of the population. The Public Information Act stipulates the right of access to information. Although many data have been collected, the collection mechanisms and processing procedures need to be standardized. Monitoring is conducted from a health or an environment perspective, and these perspectives tend not to be linked. Although access to information about environmental conditions and the health status of the population is a basic right in Estonia, there is still little awareness of environmental risk factors in society. A national environment and

health information system needs to be further developed and implemented, and knowledge of and the methods used for health impact assessment need to be improved. The health authorities, through the Ministry of Social Affairs and its Department of Public Health, should be more closely involved in the national and subregional implementation of the European Environment and Health Information System (ENHIS). The legislation for strengthening health impact procedures within environment impact assessment needs to be changed. On the one hand, the methods for including health impact assessment in environmental impact assessment reports need to be strengthened; on the other hand, the number of specialists in health impact assessment need to be increased and the development of training and education in this field needs to be strengthened further.

Estonia has made significant progress in developing an intersectoral approach in environment and health policy-making. Indeed, intersectorality is an institutionalized process in developing national legislation and regulations. Many working groups have been established to improve and enhance cooperation with other sectors. However, the review shows that the responsibility and representation of the sectors need to be better streamlined. Estonia is a small country and does not have enough human resources to equally cover all these working groups at the national level. In general terms, intersectoral cooperation seems to be more effective at the county level, where the organization of the work is predominantly based on closer personal contacts between the institutions. Many of the reviewed institutions have extensive cooperation at the international level. A large network of cooperation is available between the Baltic countries and with the Nordic countries.

Nevertheless, although cooperation between sectors has substantially improved, there is still no real health in all policies approach at the national and local levels, with few examples of good practices in recent years. The sectors tend to deal with each component of environment and health individually rather than adopting a truly intersectoral approach. Other sectors do not take health arguments into consideration in their decision-making processes or when drafting regulations. Health costs resulting from exposure to environmental hazards are very seldom considered.

The review has focused on evaluating the chemical safety strategies and actions. The National Environmental Health Action Plan, approved by the government in 1999, addressed environmental health and chemical safety. The Ministry of Social Affairs and its administrative area has a prominent role in environmental health as well as in chemical safety in the country.

The Chemicals Notification Centre is well established and functions well. The Centre is responsible for evaluating the dossiers compiled by the producers on the testing of biocides. The Chemicals Notification Centre has to rely on the expertise of experts abroad. Estonia collaborates well with Baltic and Nordic countries on chemical work. Training and knowledge have been provided, especially on toxicology and for the establishment of the Poison Information Centre.

However, the newly established Poison Information Centre under the Chemicals Notification Centre needs to be strengthened with more trained personnel, especially if it is to respond to health care personnel and the public 24 hours, 7 days a week. Toxicological training of physicians needs to be strengthened. Data on exposure to hazardous chemicals are limited to the indoor environment (dwellings) and working environment. Physicians often do not record health problems caused by chemicals properly. Care based on symptoms and possible causes from the environment are usually ignored.

The International Health Regulations are an important commitment to avoid risks from infectious, chemical and biological factors. Estonia adopted the International Health Regulations in 2005, and they came into force in 2007. They have been translated into Estonian as a draft, but there is no official translation yet. However, preliminary results show that Estonia has performed well in selected areas, and the progress has been good compared with other EU countries. Further, an interministerial commission to prepare the implementation plan for the International Health Regulations for 2009 was convened in the middle of 2008. However, further technical guidance, training of staff at national level and simulation exercises on chemical safety response are clearly needed.

Overall, Estonia is increasingly targeting health risks related to the environment through numerous preventive approaches. However, environment and health policy-making needs to be further institutionalized through a coordinated policy approach involving all relevant sectors.

Introduction

The main objectives of the environment and health performance reviews are:

- to assist Member States in building up a national institutional framework that will make it possible to draft national action plans addressing children's health and environment;
- to provide a country-based analytical description of the environment and health situation; and
- to determine whether health policies are well designed to prevent ill health caused by environmental determinants.

Background

According to the Tallinn Charter: Health Systems for Health and Wealth (1):

Preventing disease and injury is at the heart of public health and health systems. Within the political and institutional framework of each country, a health system is the ensemble of all public and private organizations, institutions and resources mandated to improve, maintain and restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.

The environment is responsible for as much as 20% of the total burden of disease (2,3).

Environment and health comprises the 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. According to the definition used by the WHO Regional Office for Europe, environment and health includes both the direct pathological effects of chemicals, radiation and some biological agents, and the effects (often indirect) on health and well-being of the broad physical, psychological, social and aesthetic environment (4). In this report, the relationship between environment and health covers all human health issues that are related

to environmental factors and all environmental factors that may (possibly) affect health (either negatively or positively).

In 1989, the WHO Regional Office for Europe launched the Environment and Health Process through a series of ministerial conferences, with the aim of eliminating the most significant environmental threats to health as rapidly as possible, based on the premise that prevention is better than cure.

Environment and health issues are essentially intersectoral, and human health can only be protected from the risks posed by a hazardous or contaminated environment through the coordinated input of different sectors and greater capacity on the part of the health sector to enlist the support of these actors to develop a high level of targeted activities and to ensure consistency and synergy with other relevant commitments made by Member States (5,6).¹ The importance of coordinated input from different sectors was recognized by the ministers attending the Second Ministerial Conference on Environment and Health in Helsinki (7) and endorsed in the commitments of the framework action plan the 'Environment and Health Action Plan for Europe' (EHAPE). This plan called for the development of national environment and health action plans (NEHAPs). The theme of the Third Ministerial Conference on Environment and Health held in London in 1999, 'Action in Partnership' (8) continued to promote this key message and relevant

¹ The Budapest Declaration (6):

- recognizes "the relevance of national environment and health action plans (NEHAPs) ... and commend the continuing efforts to implement and evaluate them" (paragraph 6);
- calls on organizations to establish mechanisms "for coordinating technical and financial assistance to the newly independent states and countries of south-eastern Europe, in order to stimulate legislative and institutional reforms, strengthen countries' capacities and effectively reduce exposures to environmental hazards and their health impacts" (paragraph 20c); and
- invites the WHO Regional Office for Europe "to support the initiative of the newly independent states and some countries of south-eastern Europe to reform and upgrade their sanitary/epidemiological services and set up public health systems" (paragraph 20d).

commitments. Following the Fourth Ministerial Conference on Environment and Health in Budapest in June 2004, the Member States refined their action plans to addressing vulnerable populations, most especially children and committed to reducing children's exposure to environmental hazards, countries are now seeking support for implementation work. To provide assistance to member states, the WHO Regional Office for Europe ensured implementation of a DG Sanco funded project that would provide the evidence base for developing and implementing such actions.

Objectives

Through detailed environment and health performance reviews (EHPRs), the WHO Regional Office for Europe provides country-based analytical descriptions of the environment and health situation in Member States. The major areas of this strategic analysis are the institutional set-up, the policy setting and legal framework, the level and structural functioning of intersectoral collaboration and the available tools for action. This interdisciplinary assessment objectively examines the relevant policy and institutional framework and gives guidance for strengthening environment and health policy-making, planning preventive interventions, ensuring service delivery and conducting surveillance in environment and health. The most important environment and health problems in the country are identified and the public health impact of environmental exposure is assessed. The national performance review is conceived as an integral part of the planning and management of environment and health services and is performed at the request of the Member State concerned.

The EHPR process

The EHPRs are based on the programme of environmental performance reviews launched in 1991 by the Organisation for Economic Co-operation and Development (OECD) to help OECD member countries improve their individual and collective performance in environmental management. The programme was mandated to the

United Nations Economic Commission for Europe (UNECE) in 1993 in order to ensure coverage of the whole region of Europe (9,10). In the period 1997–2004, the WHO Regional Office for Europe contributed to the environmental performance reviews, providing a review of the health aspects related to the environment.

Since the environmental performance reviews focus on environmental management, the Regional Office recognized the benefits of such country-specific tools and expanded the methods to better explore the relationship between human health and the environment and between the environment and health policy management (11–13).

The EHPRs are in line with and draw on the national profiles of children's health and environment developed by WHO headquarters (14) and are strongly linked to ongoing Regional Office environment and health programmes. The European Environment and Health Information System (ENHIS) records information on national implementation and hence progress in achieving targets set through international action programmes (15).

The ENHIS provides reliable and standardized information about the health status of children, its determinants and its trends. It uses internationally available data sources and monitors and evaluates the effectiveness of policies.

The ENHIS is a standardized approach within the EHPRs to analyse the situation from a European (Region-wide) perspective. The analysis is then further complemented by the information gathered in the review process.

As in the case of ENHIS, the EHPRs focus on the risk factors that most affect the health of European children. At the Fourth Ministerial Conference on Environment and Health in 2004, ministers agreed to give priority to four regional priority goals for Europe (5):

- regional priority goal 1: prevent and significantly reduce the morbidity and mortality arising from gastrointestinal disorders and other health effects, by ensuring that adequate measures are taken to

improve access to safe and affordable water and adequate sanitation for all children;

- regional priority goal 2: prevent and substantially reduce health consequences from accidents and injuries and pursue a decrease in morbidity from lack of adequate physical activity, by promoting safe, secure and supportive human settlements for all children;
- regional priority goal 3: prevent and reduce respiratory disease due to outdoor and indoor air pollution, thereby contributing to a reduction in the frequency of asthmatic attacks, in order to ensure that children can live in an environment with clean air;
- regional priority goal 4: reduce the risk of disease and disability arising from exposure to hazardous chemicals (such as heavy metals), physical agents (such as excessive noise) and biological agents and to hazardous working environments during pregnancy, childhood and adolescence.

The implementation of EHPRs is made possible by the European Commission through its Directorate-General for Health and Consumers. In support of the European environment and health process, the European Commission identified the need to develop and strengthen policy actions to reduce the risk of disease and disability arising from agents in the environment in Europe and is co-funding this activity of the WHO Regional Office for Europe.

Methods

A team of WHO technical experts carries out each EHPR at the request of the health ministry of the country concerned or the responsible national authority for health, such as the Ministry of Social Affairs in Estonia. It takes the form of semistructured interviews with national technical representatives and policy-makers.

The EHPR comprises the steps described below.

1. The standardized method for the review developed at the beginning of the process is applied to all Member States.

2. Consultations are held with the head of the WHO country office, and assistance and advice are sought on timing and the personnel involved.
3. Prior consultations are held with the environment and health focal point or project counterpart within the Member State.
4. Relevant policies, information, evidence and data are collected and analysed; and the national counterpart organizes the WHO field visit.
5. The field trip by the WHO technical team to the country takes place; interviews are conducted with preselected representatives of sectors and institutions.
6. A draft report is compiled, summarizing the information collected during the field visit.
7. A final report with recommendations for action is submitted back to the counterpart, the head of the WHO country office and interviewees.
8. Final conclusions are presented to policy-makers at a national workshop.

All the EHPR final reports will be collated into a single report to be presented at the WHO Fifth Ministerial Conference on Environment and Health to be held in Parma, Italy in 2010.

Structure of the report

The status of the environment and health situation in Estonia summarized in this report reflects the situation in the first decade of the 21st century and can be considered as a national baseline analysis after the commitments made at the Fourth Ministerial Conference on Environment and Health in Budapest in 2004. The cut-off date for the information and data summarized is 3 December 2008.

The report has six chapters. The first two chapters describe the health characteristics of Estonia's population and the major environment and health risks in Estonia. Chapters follow on the institutional set-up in environment and health, the legal framework under which environment and health policy is implemented, the degree and functioning of intersectoral collaboration mechanisms and the tools available for the operation of environment and health services (monitoring, environmental health impact assessment, capacity-building and communication). Recommendations are formulated depending on the background situation and are clearly set out at the beginning of each chapter.

1 Health priorities

Conclusions

- Cardiovascular diseases are the main cause of death in Estonia, followed by cancer and unintentional injuries.
- Death rates from cancer are increasing among men.
- There are many positive trends, but HIV and TB remain concerns for public health.
- The proportion of the population that is overweight has increased since 1998.
- WHO estimates that the environmental burden of disease for Estonia is 20%.

Life expectancy at birth in Estonia has improved with few setbacks from 69.6 years in 1991 to 2007, when it reached 73 years. Nevertheless, in 2007, there was a large gap between the life expectancy for men (67.1 years) and women (78.7 years) (16). These differences are even larger and continue to deepen when socioeconomic factors are taken into account. In 2000, the average life expectancy for men with higher education was 13.5 years higher than that of the men with lower secondary education. The life expectancy for women with higher education in 2000 was 19 years higher than for men with lower secondary education (17).

Infant mortality has fallen steadily in recent years. Data from the WHO Health for All database and Statistics Estonia show a decline from 12.3 per 1000 births in 1990 to 5.0 in 2007. The infant mortality figure of 4.4 in 2006 is higher than the average for countries that were EU members before May 2004 (EU15) (4.0 in 2006) but lower than the average of the countries joining the EU in 2004 or 2007 (7.9 in 2006).

Table 1. Infant mortality 1970–2007

	1970	1980	1990	2000	2005	2006	2007
Infant deaths per 1000 live births	17.7 ^a	17.1 ^a	12.3 ^b	8.4 ^b	5.4 ^b	4.4 ^a	5.0 ^a

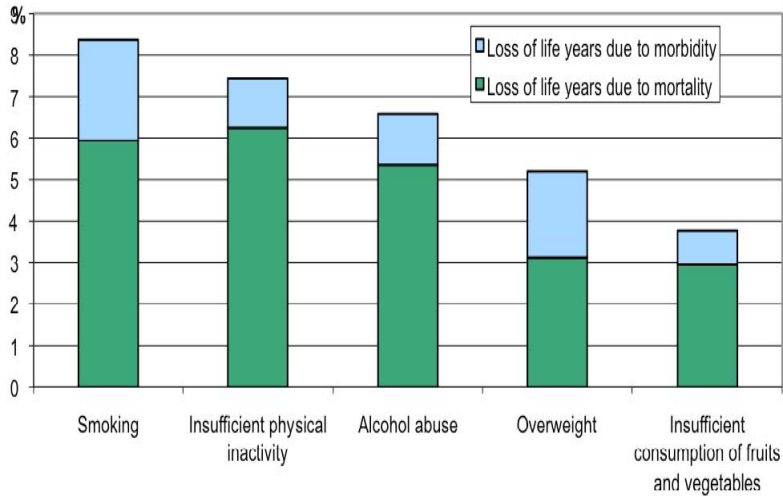
Sources: ^aStatistics Estonia and ^bEuropean Health for All database (18).

Cardiovascular (circulatory) diseases are the main cause of death in Estonia, accounting for 47.1% of deaths among men and 54.9% among women (2005). Although the cardiovascular mortality rate is declining for both men and women, it still is a significant cause of premature death, and in 2005 was twice as high as the EU15 and Nordic averages. Cardiovascular diseases are followed by cancer (malignant neoplasms), accounting for 20.9% of deaths for men and 19.9% for women. A worrying indication is that the death rate from cancer is increasing among men, whereas these rates are declining in the EU as a whole. Although declining over recent years, death due to external causes (13.9% for men, 6.7% for women) comprises the third leading cause of death (19). According to Lai et al. (20), almost 400 000 healthy life years (as measured by disability-adjusted life-years (DALYs)) are lost annually among the 1.3 million people living in Estonia. The major sources of the burden of disease are cardiovascular diseases, injuries and cancer, which cause more than two thirds of all loss of life-years (18). More than half the burden of disease is concentrated in the working-age population, up to 58% among men; the population older than 65 years has a lower burden (39%), and young people 0–19 years old account for 8%. The risk factors such as smoking and alcohol consumption are mainly concentrated among men, both causing more than 12% of the disease burden; smoking alone causes 40% of the cardiovascular disease and 40% of cancer in Estonia.

The incidence of cardiovascular diseases and cancer is increasing, and the number of injuries is decreasing, although Estonia still has almost three times more preventable deaths from injuries than the EU average. External causes of morbidity (injury and poisoning) comprised 9.4% of all deaths in 2006 (4.5% among women, 14% among men). In 2005, Estonia had 123 deaths per 100 000 population

due to external causes versus 42 per 100 000 in the EU countries as a whole (18). The most common causes of death by external causes in Estonia are suicide, road traffic injury, alcohol poisoning, fire death and freezing death.

Fig. 1. Causes of morbidity and mortality, 2002



Source: *An overview of health status in Estonia* (21).

The incidence of tuberculosis (TB) was high in the 1990s but has decreased since 1999. In 2007, there were 50% fewer new cases of TB (29.8 per 100 000 population) than in 1998, when the incidence rate peaked at 59.2 cases per 100 000 population (22). However, beside these positive trends a concern for public health remains, as multidrug-resistant TB cases and coinfection with HIV are increasing in Estonia as in many other European countries.

Another threat to population health is the spread of HIV infection, which has not yet spread to the general population and is still concentrated among injecting drug users (23). In 2007, there were 47.3 new HIV cases and 4.2 newly diagnosed AIDS cases per 100 000

population. Although the decrease in the HIV incidence is mainly due to preventive services being implemented, AIDS is increasing pressure on the capacity and funding of the health system.

As in all European countries, overweight and obesity remain major public health concerns in Estonia. The proportion of overweight residents (body mass index (BMI) 25–29.9) has been increasing since 1998. In 1998, 31.4% of men and 23.7% of women aged 16–64 years were overweight, and in 2006 the proportions of overweight men and women increased to 36.1% and 25.4% respectively. The proportion of obese residents (BMI \geq 30) has been increasing since 1998. In 1998, 11.6% of men and 14.7% of women were obese, but in 2006, the proportions of obese men and women were 14.5% and 15.8% respectively (24). In 2006, 15% of boys and 6% of girls 13 years old were overweight. The proportions of 15-year-old overweight boys and girls were 10% and 4% respectively (25). Socioeconomic characteristics strongly influence overweight and obesity. Men with higher income are more at risk, whereas the opposite applies to women.

Table 2. Combined overweight and obesity (BMI \geq 25) rates (%) among adults 16–64 years old according to family income (age standardized), 2006

	Men	Women	Total
Monthly income <EEK 2000 ² per family member (%)	42.8	41.5	42.1
Monthly income EEK 2000–6999 per family member (%)	52.7	43.7	48.1
Monthly income > EEK 7000 per family member (%)	52.9	32.4	43.5

Source: Veideman & Tekkel (24).

WHO estimates for 2004 for the burden of disease in Estonia show that 38.7 DALYs per 1000 population per year were lost due to

² The national currency, the Estonian Kroon (EEK), has a fixed exchange rate of 15.6466 to the euro (€).

environmental risk factors, which accounted for 20% of deaths (26). In accordance with this, Estonia's profile of the environmental burden of disease is characterized by a major burden of cardiovascular diseases, cancer and unintentional injury (26). In addition, Estonia has the world's highest rate of DALYs lost per 1000 population due to musculoskeletal disorders, which mainly reflects problems in occupational health (2).

2 Environment and health priorities

Conclusions

- According to the ENHIS analysis, bathing-water quality, access to the public water supply, exposure to indoor air pollution from the combustion of solid fuels and unintentional injuries among children are the main environment and health concerns in Estonia.
- The principles laid down in the WHO Framework Convention on Tobacco Control and EU regulations have been implemented, including a ban on smoking in public places since 2007, specific labelling and access.
- Exposure to environmental tobacco smoke is still high in home environments.
- Estonia has met the requirements for microbiological parameters in all drinking-water supply systems.
- No waterborne diseases have been reported since 1993.
- Many road safety measures have been well implemented, but the number of deaths in road crashes is still very high. Policies to prevent leisure and home accidents are inadequate.
- Health and environment data are not sufficiently combined and regularly analysed.

Recommendations

- A monitoring programme should be launched to ensure the safety of the water in coastal bathing sites.
- More effort should be put into developing and implementing policies for preventing home and leisure injuries.
- Energy policies to promote affordable energy are necessary to allow all residents to heat their homes.
- The energy efficiency of housing should be improved to reduce the cost of heating and maintaining healthy and comfortable temperatures.

- Developing information brochures by the health sector in cooperation with other relevant ministries on health risks arising from the combustion of solid fuels would help to raise awareness.
- Additional efforts should be made to raise awareness on tobacco smoke in home environments through various means such as brochures and television spots.
- Identification of environment and health priorities should be strengthened at the national and regional levels by implementing the ENHIS.

With the support of the European Commission and in collaboration with partners from 18 Member States, including Estonia, the WHO Regional Office for Europe has developed the ENHIS (15), which has enhanced the availability and comparability of information on environment and health across the Region.

The system focuses on the health issues identified in the Children's Environment and Health Action Plan for Europe (CEHAPE) as priorities for pan-European action, particularly its four regional priority goals. The information covers health issues related to environment, environmental issues affecting children's health and action aimed at reducing or preventing health risks (2,27,28).

Access to safe and affordable water and adequate sanitation

Access to a regular, clean and safe drinking-water supply, to improved wastewater treatment and sanitation and to safe bathing water are essential factors in public health. According to the official data reported by Estonia to the WHO/UNICEF joint monitoring programme and used in the ENHIS fact sheet, 73% of the population in rural areas had access to an improved water supply in the home in 2004, and 72% of the population was connected to public water supply in 2002 (29). The latest data from 2006 show that the percentage of Estonia's population connected to public waterworks rose to 77%. The coverage for the urban population was 86% versus 59% for the rural population. Most of the waterworks use

groundwater; only two waterworks in Tallinn and Narva use surface water. Despite the increasing percentage of the population connected to public waterworks, Estonia still ranges among the countries of the European Region with a low proportion of population with access to public water supply.

Microbiological parameters in all drinking-water supply systems in Estonia have constantly met the requirements, and no waterborne outbreaks have been reported since 1993. However, chemical parameters have been exceeded due to high fluoride levels in groundwater. In 2006, 2.3% of the population used drinking-water that did not correspond to the limit values set for fluoride. The 15 waterworks supplying children's establishments and nursing homes (total population of about 3170) had to follow binding instructions to use only bottled water, which served as a temporary solution in these waterworks.

In the past two years, trihalomethanes did not meet the limit values in the public water supply of Narva City (67 497 people).

Failure of drinking-water to conform to quality requirements is mainly related to excessive concentrations of iron, manganese, ammonia and chloride. These mainly result from their natural occurrence but are often related to poor condition of the distribution pipes.

Data from the health protection services show that indicators exceed limit values in the water from 474 waterworks (38% of all waterworks), which serve 348 556 people (26% of the population).

The Cambrium-Vend groundwater aquifers of western and northern Estonia have increased effective doses of radiation.

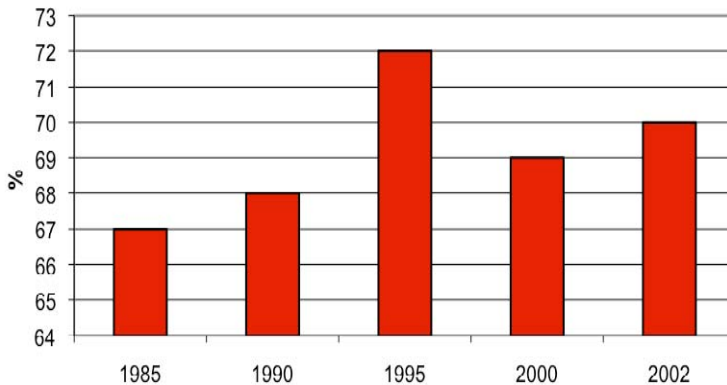
The percentage of the population served by a sewerage system connected to a wastewater-treatment facility and a safe wastewater disposal system indicates the potential level of pollution to be expected from domestic point sources into the aquatic environment. This is important because this pollution adversely affects the health of inhabitants. Data from 2006 indicate that 75% of the population is connected to wastewater-treatment facilities, but 51% of the

population is connected to such facilities in rural areas (Fig. 2 and 3) (30). Sixteen per cent of the population receive drinking-water from individual wells, which are not under official surveillance.

Estonia has successfully implemented the EU Bathing Water Directive (76/160/EEC). During 2004–2006, the quality of bathing water in freshwater zones fully complied with directives. Mandatory requirements in coastal zones were met in 76.5% of the bathing areas. In the international comparison within the WHO European Region and following the above-mentioned figures from 2005, Estonia was successful in complying with the mandatory requirements for the freshwater zones but ranged in the lower percentiles regarding the requirements to fulfil for coastal water (Fig. 4 and 5).

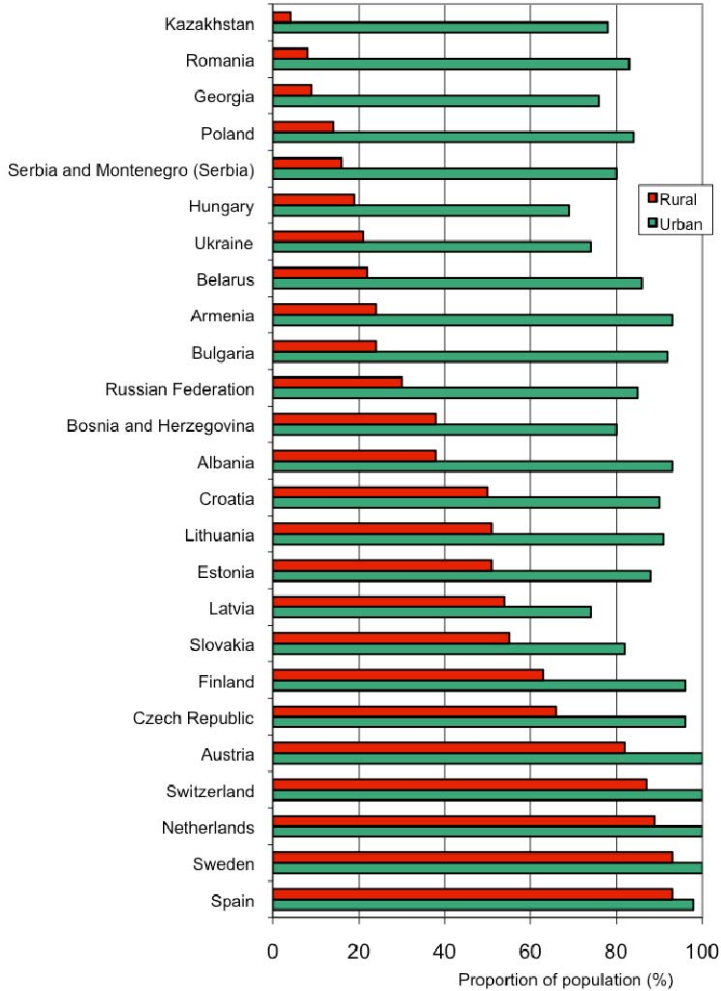
The new Bathing Water Directive (2006/7/EC), which is based on new principles of bathing water management, poses new challenges for Estonia.

Fig. 2. Proportion of the population connected to wastewater-treatment facilities, 1985–2002



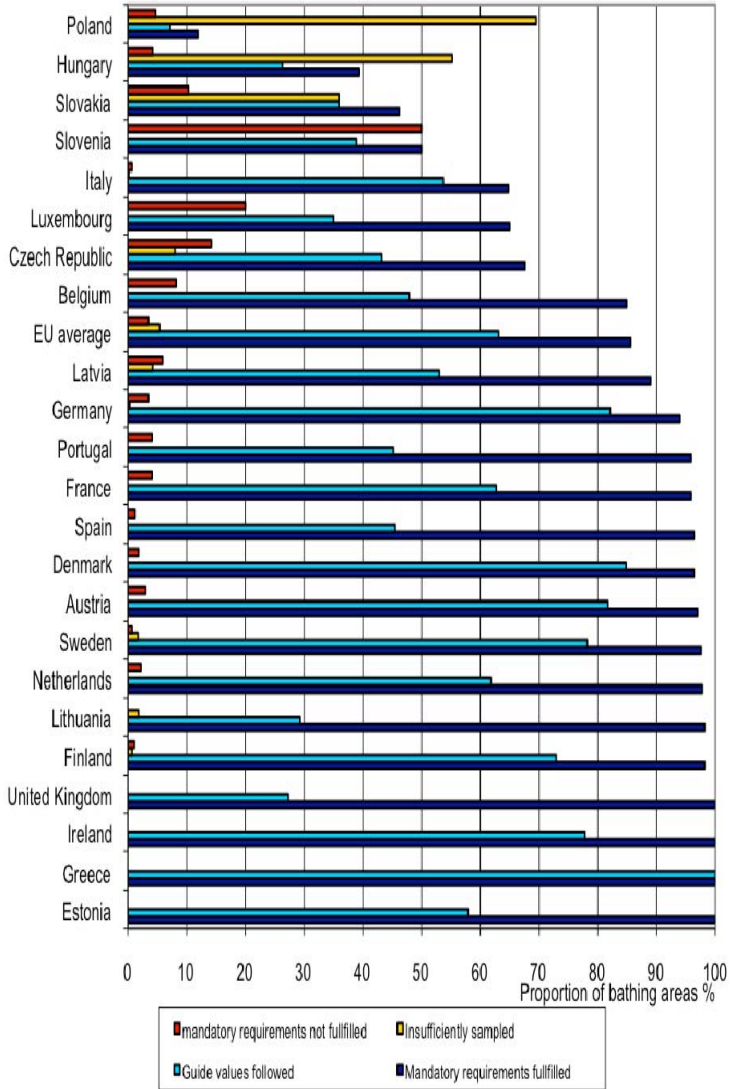
Source: *Wastewater treatment and access to improved sanitation* (20).

Fig. 3. Percentage of the population connected to sanitation facilities in urban and rural areas, selected countries in the WHO European Region, 2004



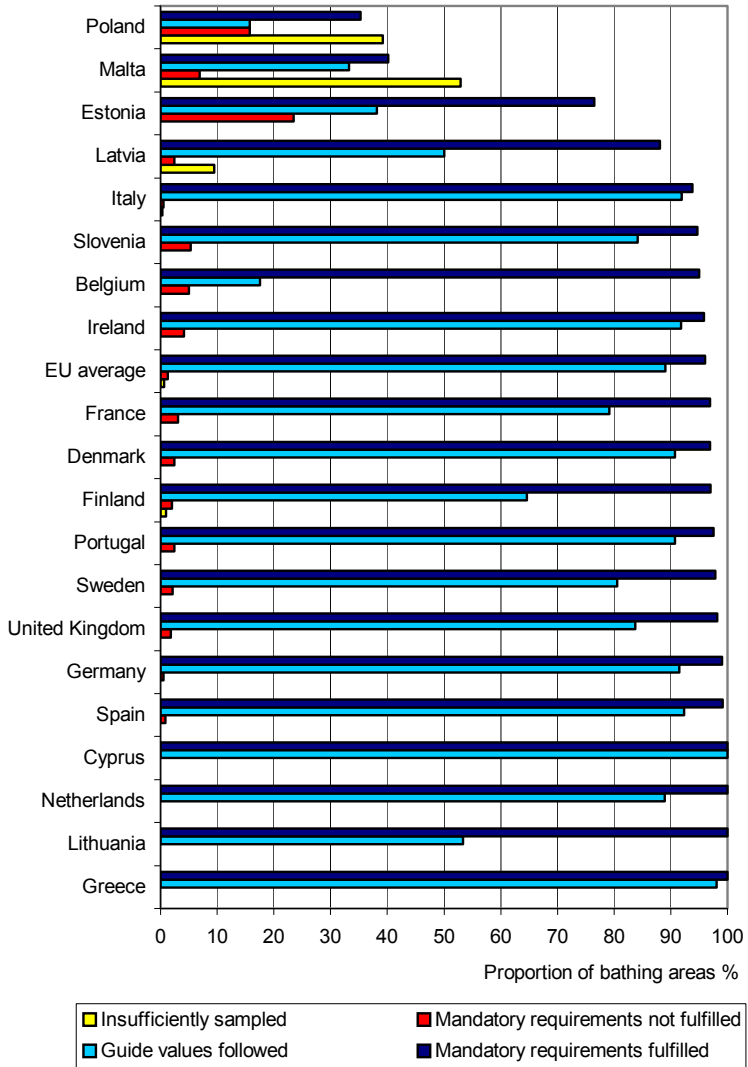
Source: *Wastewater treatment and access to improved sanitation (20)*.

Fig. 4. Bathing water quality for freshwater zones in the EU, 2005



Source: Bathing water quality (31).

Fig. 5. Bathing water quality for coastal zones in the EU, 2005

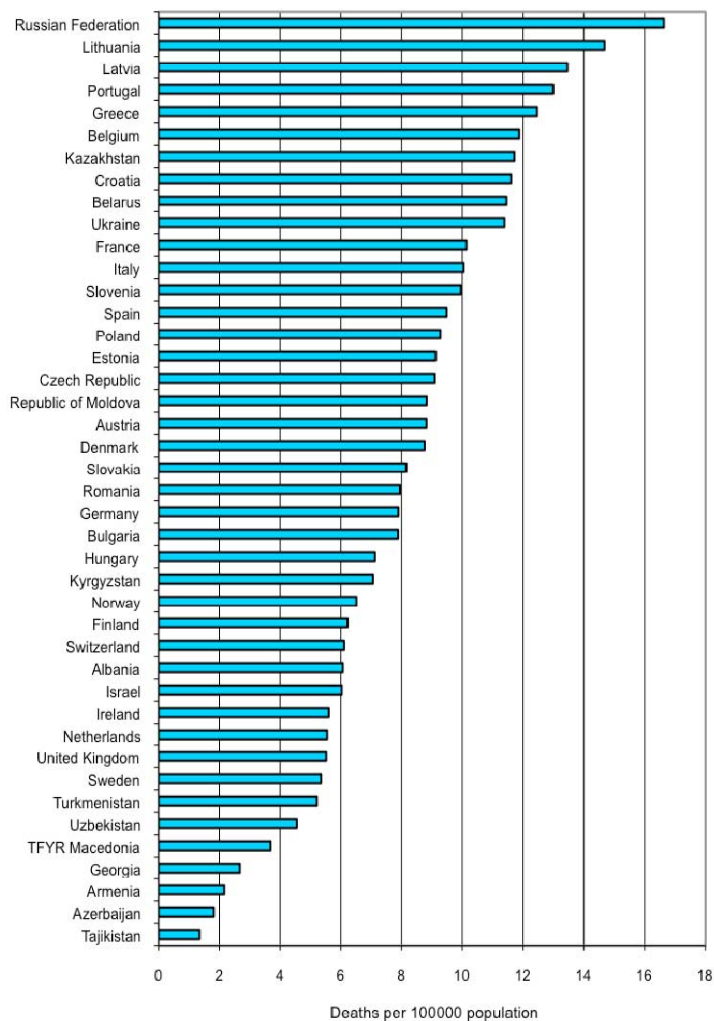


Source: *Bathing water quality* (31).

Reducing the health effects of accidents and injuries and enhancing physical activity

As mentioned in the previous chapter, unintentional injuries are a leading cause of morbidity and mortality among children and adolescents in the WHO European Region. In Estonia, the mortality rate due to road traffic injuries among people 0–24 years old is 9.12 per 100 000 population (Fig. 6) and the mortality rate due to unintentional injuries (except road traffic injuries) among people 1–19 years old is 6.85 per 100 000 population, both of which are above the European averages. The mortality rate for unintentional injuries is especially unacceptably high.

Fig. 6. Standardized mortality rates for road traffic injuries among people 0–24 years old in selected countries in the WHO European Region, as averages for 2002–2004 or the most recent three years



*TFYR Macedonia: The former Yugoslav Republic of Macedonia
 Source: *Mortality from road traffic injuries in children and young people (32)*.

The ENHIS analysis shows that the high prevalence of unintentional injuries and road traffic injuries is increasingly being recognized as a priority at the European level, and country efforts should be further strengthened and improved. ENHIS has formulated an indicator used for monitoring the implementation of 12 policies on preventing injury (other than road traffic injury) based on information from 23 Member States. The indicator reveals that Estonia is within the range of countries with moderate to low commitment to preventing unintentional injury (33). National efforts to address road traffic injuries have been more successful. Here Estonia scored higher than the average European level. This is probably the result of the National Road Safety Programme 2003–2015 (34). The last five years show a significant decrease in traffic deaths, but still there is long way to go compared with the EU15. One example is the impact of the programme promoting the use of reflectors in the dark. The number of people using reflectors in the dark has increased by 45%.

The health sector initiated several campaigns to prevent alcohol consumption and to enhance children's safety. In 2008, the Framework for Injury Prevention Strategy (35) was prepared, which outlines the need to harmonize the fragmented activities in injury prevention in Estonia.

A safe environment that encourages personal mobility and physical exercise is important for health and preventing obesity and excess body weight (36). Policies to reduce and prevent excess body weight and obesity among children and adolescents have been developed in Estonia. Nevertheless, Estonia scores at the average of all countries of the WHO European Region. The most recent (self-reported) data in the Health Behaviour in School-aged Children (HBSC) survey for 2005/2006 show that Estonia ranges below the average of countries with 11-year-old boys and girls who were physically active at the level recommended by the moderate-to-vigorous physical activity guidelines. On the other hand, the prevalence of excess body weight (including obesity) among 11-, 13- and 15-year-old boys and girls in Estonia is lower than the average in the European Region (37).

The level of physical activity of adolescents and adults did not change very much between 1994 and 2006, as one third of the population

older than 16 years performs 30 minutes of physical activity at least once per week. The level of physical activity is higher among population groups with higher education and income (singles and one-person households, especially 16–24 years old). According to the HBSC study in 2006, 17% of people changed their eating habits (less fat and more vegetables and fruits) and 13% of the population increased their sports and physical activity for health reasons.

Ensuring environments with clean air to reduce respiratory diseases

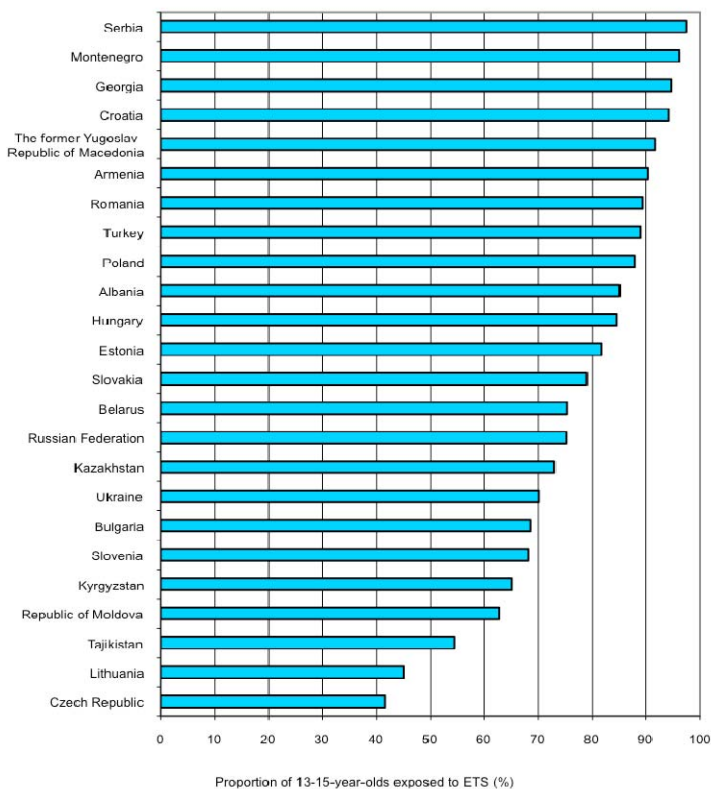
Multiple factors interact to determine respiratory health, including indoor and outdoor air pollution. With a rate of 0.16 postneonatal deaths per 1000 live births due to respiratory diseases, Estonia is in the overall range of countries with medium levels of mortality but still greater mortality than the countries in the western part of the European Region (18). Estonia's asthma prevalence is below or at the average level of the countries most affected.

The WHO tobacco control database (38) and the information summarized in ENHIS fact sheet 3.7 (39) nevertheless show that Estonia is implementing all policies to ensure smoke-free public places in accordance with the ratified WHO Framework Convention on Tobacco Control. The Tobacco Act was changed according to the EU directives. Tobacco advertising was banned in 1998, followed by strict rules for the sale of tobacco products to young people enforced in 2001 and the introduction of a smoking ban in public places, such as restaurants and pubs, in June 2007.

About 82% of children 13–15 years old are exposed to environmental tobacco smoke at home. Adults are also exposed to environmental tobacco smoke. Figures from 2006 show that 41% of men 16–24 years old and 36% of women 16–24 years old were exposed to environmental tobacco smoke in the home environment. In recent years, smoking at home has decreased by 10%, as the proportion of people who spent time in homes in which inhabitants smoke declined from 35% in 2004 to 32% in 2006. However, there are socioeconomic differences between these groups, as people with higher education, employment and higher income are less exposed to environmental

tobacco smoke in home environments. The high level of environmental tobacco smoke exposure in homes (Fig. 7) shows the need for further strengthening health promotion and raising awareness about the effects of environmental tobacco smoke. More activities and programmes promoting behavioural change among the population are necessary.

Fig. 7. Proportion of 13- to 15-year-olds exposed to environmental tobacco smoke in their homes in selected countries in the WHO European Region, 2002–2005



Source: *Exposure of children to environmental tobacco smoke (40)*.

Although environmental tobacco smoke exposure at home is high in Estonia, 18% of the children 0–14 years old live in homes burning solid fuels, and this is by far the most significant indoor air quality issue in health terms in Estonia (41).

The mean concentration of particulate matter with an aerodynamic diameter of less than 10 µm (PM₁₀) calculated for cities in Estonia is 17.6 µg/m³, putting Estonia among the countries of the European Region, for which data are available, with relatively low levels of outdoor air pollution in urban areas. The city centre of Tallinn and the areas in Kohtla-Järve with a high concentration of industry are the most affected areas. The PM₁₀ limit values are often exceeded in the monitoring stations of Tallinn and Kohtla-Järve.

In recent years, concentrations of nitrogen dioxide have increased in Tallinn and Kohtla-Järve (Ida-Viru County) due to increasing road transport. The concentration of sulfur dioxide has remained low and shows a decreasing trend as a result of the use of sulfur-free fuels and cutting of emissions from point sources.

Reducing disability and disease arising from exposure to hazardous chemicals, physical and biological agents and hazardous working environments

Leukaemia is the most frequent type of malignancy among children in industrialized countries. It is a subject of considerable public concern, especially in the areas perceived as having excessively high incidence of leukaemia and in relation to putative environmental causes such as radiation and chemicals. In Estonia, the standardized incidence of leukaemia is 40 per million population per year, about the average in the European Region (41).

Children are particularly vulnerable to damage from ultraviolet radiation. Considerable exposure to ultraviolet radiation occurs in childhood and thus determines the risks for severe diseases such as malignant melanoma and skin cancer. It is particularly important to increase efforts to promote protection from the sun and banning the use of sun-beds for young people. The age-standardized rates of melanoma among people younger than 55 years in Estonia are lower than in many other countries, especially in countries in the northern part of the Region. Little action has been implemented to reduce the exposure of the population to ultraviolet radiation in Estonia.

Summary

According to the ENHIS indicators, bathing-water quality and access to the public water supply, exposure to the combustion byproducts of solid fuels at home and unintentional injuries among children are the main environment and health concerns in Estonia.

According to professional (public health) opinion, other environmental risk factors are also relevant to the health of the population of Estonia. These include food safety risks, pesticide residues in non-animal products and, rarely, *Salmonella*. High nitrate levels due to agriculture have been registered, indicating that limit values on fertilizers are necessary. The Ministry of Agriculture and Ministry of the Environment work together on implementing Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (42).

The identification of environment and health priorities should be strengthened at the national and subnational levels. Environment and health data need to be combined. One example mentioned is the need for getting more information on the relationship between environment and health in the industrial area in the north-eastern part of Estonia. Increasing efforts have been directed towards identifying all data sources according to the methods underlying the ENHIS system. The establishment of a framework for the access and exchange of this information to ensure its use for health needs assessment would strongly support public environment and health policy-making.

3 Institutional set-up

Conclusions

- Environment and health has been further officially recognized within the health sector through the establishment of the Environmental Health and Chemical Safety Unit within the Public Health Department of the Ministry of Social Affairs and a separate chapter within the new National Health Plan.
- The Health Protection Inspectorate and its Environmental Health Expertise Department are responsible for enforcing legislation relevant to environment and health.
- The Chemicals Notification Centre is well established.
- There is a relative lack of nurses in primary care to ensure sufficient attention to prevention at the primary health care level.
- Occupational health services are currently weak.
- In 2007, the Ministry of the Environment officially recognized environment and health as a priority by appointing a health and environment focal point.
- Cooperation between the Environmental Inspectorate and the health sector seems to be limited.
- Landscape protection forms part of the spatial plan, but environmental management is not considered from a health perspective.
- No NGO deals with environment and health. Most NGOs focus on environmental management or specific environmental topics.

Recommendations

- The Environmental Health and Chemical Safety Unit within the Public Health Department should be strengthened with additional human resources to address all relevant environment and health risks.
- Health risk assessment and epidemiological knowledge and surveillance of the Health Protection Inspectorate should be further empowered.

- The University of Tartu, National Institute for Health Development and other institutions providing training to health professionals should further include environment and health issues in their priorities.
- The National Institute for Health Development should improve and strengthen the coordination related to environment and health with the Health Protection Inspectorate and the Environmental Health and Chemical Safety Unit of the Public Health Department.
- Given the increasing importance of primary health care, family doctors and nurses should be trained in environment and health to support preventive action.
- Occupational health services need to be strengthened by reviewing and discussing the technical and educational support and bolstering the core institutional capacity and human resource capability for dealing with the special health needs of working populations.
- The Ministry of the Environment should ensure that the county environmental departments have sufficient capacity in staff specialized in environmental impact assessment.
- The organizational structure between the Health Protection Inspectorate, the Environmental Inspectorate and the Labour Inspectorate needs to be streamlined.
- Cooperation in awareness-raising should be strengthened further based on the good cooperation between the Estonian Radiation Protection Centre and the Ministry of Social Affairs in preparing a brochure on the risks of radon in drinking-water.
- NGOs should be an integral part of intersectoral committees dealing with environment and health issues.
- The Ministry of the Environment should give municipalities further financial and technical support for implementing the requirements of EU regulations at the local level.

Socio-political situation, political system and infrastructure

Estonia lies on the eastern side of the Baltic Sea. Its nearest neighbours are Finland to the north across the Gulf of Finland, Latvia

to the south and the Russian Federation to the east. The capital is Tallinn, 85 km from Helsinki (Finland) and 310 km from Riga (Latvia). Estonia covers 45 227 km² and has a population of 1.3 million (as of 1 January 2008).

Estonia has been a member of the EU and of the North Atlantic Treaty Organization since 2004. Estonia has been a member of WHO since 1993 (43).

Estonia is a democratic parliamentary republic. It first gained independence on 24 February 1918. In 1940, after the beginning of the Second World War, the USSR occupied Estonia. Independence was restored on 20 August 1991. A unicameral parliament (Riigikogu) of 101 members elected for four years exercises legislative and supervisory power over the government.

Between 1920 and 1940 and since 1991 there have been 11 Riigikogu Plenary Assemblies. The government exercises executive power pursuant to the Constitution and the laws of the Republic. Since 1992, when the first elections in independent Estonia were held, all governments have been coalition governments of two or three political parties. Although no coalition has governed for a full term, they have been stable enough to launch and implement economic and social reforms.

Administratively, Estonia is divided into 15 counties, with populations ranging from about 10 000 to 400 000. A governor and county government run each county. Both the governor and the county government staff members are civil servants of the central administration. However, many state agencies, including those engaged in health care administration and finance, operate not on a county basis but through regional departments that cover two to six counties.

The second political tier in Estonia consists of 227 municipalities (including 33 cities). Municipalities have on average 5500 citizens but range in size from about 70 to 100 000 people (16). Municipalities have budgetary autonomy and local tax-raising powers. The state is legally obligated to transfer 11.9% (2007) of the personal income tax

paid by the people living in a particular municipality to that municipality (19).

In 2007, 69% of the population (931 000 people) lived in urban areas, a proportion that has been constant since 2000. The population of Tallinn is 397 000, or 30% of the total population, with this proportion also constant since 2000.

Estonia's population mainly consists of Estonians (69%), with the next most frequent ethnic group being Russians (26%).

According to the Office of the United Nations High Commissioner for Refugees, the number of refugees was 4 in 2000 and 7 in 2005. The official estimate of internally displaced people is 0. There are no official or unofficial statistics about migration.

Estonia embarked on significant economic reforms in the early 1990s, and by 1993 the country had succeeded in reversing the declining trend of its gross domestic product (GDP), using conservative fiscal policy combined with a liberal economic policy and a simple taxation system. By 2006, the GDP per capita was US\$ 18 378 in purchasing power parity, about 35% below the average for the entire EU27 but higher than Latvia and Lithuania. The annual inflation rate in consumer prices, which had been 47.7% in 1994, fell to a low of 1.3% in 2003 (19).

However, recent data reflect decreasing economic activity and increasing inflation pressure, with an inflation rate of 11% and GDP growth of 7.3% in 2007 (16). Economic reforms have positively affected the labour market. The unemployment rate peaked in 2000 at 12.8% and declined to 4.7% in 2007, lower than the average for the EU15 of 7.0% in 2007. The working-age population has stabilized and increased slightly as the "singing revolution" generation (born in 1988–1990) enters the labour market. In the mean time, workers are migrating to other EU countries. Compared with other EU countries, the proportion of women and elderly people actively participating in the labour market is higher in Estonia, partly because age limits for working in the health and education sectors no longer apply. Since 2002, salaries have increased by at least 10% per year, reaching 25%

in 2006. High salary growth has been an important factor in inducing the high inflation rate.

Estonia was one of the 10 countries that joined the EU in 2004. This has significantly affected economic development in these countries. Estonia's GDP has since grown by more than 10% annually, which resulted in an increase in the incomes of residents and a booming property market (19).

Housing and living conditions did not change significantly from 2000 to 2006. According to the Population and Housing Census 2000, occupied housing units had 2.48 people per room. In 2000, each person occupied 33.1% of a room on average; this was virtually unchanged at 33.7% in 2006 (44).

Access to primary and secondary education is universal in Estonia, and the literacy rate among adults exceeds 99%.

Health sector

The Ministry of Social Affairs is the steward of the health system in Estonia. The organizational structure in the health system is advanced and comprises numerous actors, including various agencies under the Ministry of Social Affairs (such as the State Agency of Medicines, Health Care Board, National Institute for Health Development and Health Protection Inspectorate); public independent bodies such as the Estonian Health Insurance Fund; private primary care units and (mainly publicly owned) hospitals under private regulation; and various NGOs and professional associations. Other non-health sectors such as transport, economy, agriculture and environment have started to be more actively involved in health system activities due to the development and implementation of intersectoral public health strategies, such as those tackling HIV and cardiovascular diseases (19).

Fundamental reforms aiming to develop a modern health system took place in the early 1990s. These were followed by a legislative review during 2000–2003 that addressed various areas including health care

funding, service provision and regulation of relations between actors (such as purchasers, providers and patients). Since 2004, intersectoral public health strategies have been prepared, launched and implemented. In recent years, regulations have been adjusted further to harmonize the framework with EU legislation and to respond to emerging needs. To bring the various initiatives under one umbrella and set a clear vision for the future, a long-term overall National Health Plan 2009–2020 covering the whole health system was launched a few years ago and finally approved by the government in July 2008.

Estonia's health care system is mainly publicly funded through solidarity-based mandatory health insurance contributions in the form of an earmarked social payroll tax, which amounts to almost two thirds of total health care expenditure. The Ministry of Social Affairs is responsible for funding emergency care for uninsured people, ambulance services and public health programmes. The role of the local municipalities in health care funding is relatively small and yet diverse. Private expenditure comprises about one quarter of all health expenditure, mostly direct out-of-pocket payments in the form of co-payments for pharmaceuticals and dental care. This growing out-of-pocket expenditure may hinder access to health care for low-income population groups, and health funding has therefore become more regressive over recent years. The core purchaser of health care services for insured people is the Estonian Health Insurance Fund (45). The health insurance system is mandatory, covering about 95% of the population. Contributions are related to employment and salaries, but non-contributing individuals (such as children and pensioners) represent almost half of the insured people. Health services purchasing builds on a contractual relationship with providers as well as financial incentives. Among other services, the Estonian Health Insurance Fund supports disease prevention (including various screening programmes, health services in schools and services for targeted population groups) and health promotion activities (including health promotion at the local level and mass-media campaigns). Further contracts and payment schemes are based on incentives to prevent disease. In primary health care, an additional voluntary quality-based bonus system has been introduced since 2006 to provide financial incentives for monitoring and providing services to special

age groups (such as children) and managing chronic conditions. The financial incentives are designed to support the implementation of clinical and practice guidelines.

Estonia has developed a well-equipped infrastructure for primary care that builds on family doctors and nurses. Estonia inherited a large, ineffective hospital network with poor facilities from the Soviet era. Various structural and managerial reforms in the 1990s reduced the number of hospitals (and beds) and restructured the providers' network. The reforms aim to modernize the network and enable the provision of high-quality services while also ensuring sufficient access to health services. This process of modernizing the current facilities is ongoing and is supported by various resources, including those from the EU Structural Funds. The University of Tartu provides medical training for physicians, and for other professionals (including nurses) this has been centralized to a few medical schools to ensure higher quality of training. The curricula for health specialists and workers were reviewed in the 1990s and were brought into accordance with EU legislation in anticipation of Estonia joining the EU in 2004. Since the health care sector has a general lack of human resources, long-term planning and increasing training for nurses and physicians has been strongly emphasized. EU membership in 2004 led to temporary migration of physicians and nurses to neighbouring EU countries. In recent years, however, migration has decreased and the main challenges are to retain qualified professionals in the health care sector along with the ageing of the current workforce.

Health care reforms that started in the early 1990s introduced the principles of a split between purchasers and providers; strengthening primary care; a free choice of provider; and a high level of provider autonomy. As a result, the current health care system is built around countrywide primary care, which is centred on family medicine, with specially trained physicians and nurses. The aim is to provide both curative and preventive services by teams led by family doctors. Further primary care is supported by ambulance services with health care teams (including a physician) available all over Estonia. Specialized care has increasingly been provided in outpatient settings, and care involving high technology has been increasingly centralized to key hospitals. Further, over the years, availability of and access to

pharmaceuticals has increased significantly. The increasing importance of public health services has led to the development of services and standards, raised the awareness of the population and led increasingly to a public health approach to health care services. In relation to both access and quality, the coordination of and approach to tackling chronic conditions are continual concerns.

Given the strengthened role of primary health care especially through family medicine, training and knowledge in environment and health need to be increased. Family doctors should cover noncommunicable risk factors to health to ensure preventive services.

The following sections will focus on the health institutions most relevant for environment and health. The main public health institutions at the national level relevant for environment and health are the Ministry of Social Affairs, the Health Protection Inspection, the National Institute of Health Development, the Health Care Board, the Labour Inspectorate and the Chemicals Notification Centre. The following section also describes other institutions (such as the Estonian Health Insurance Fund) and actors (such as physicians and representatives at various levels of administration at the county and municipal levels) involved directly and indirectly.

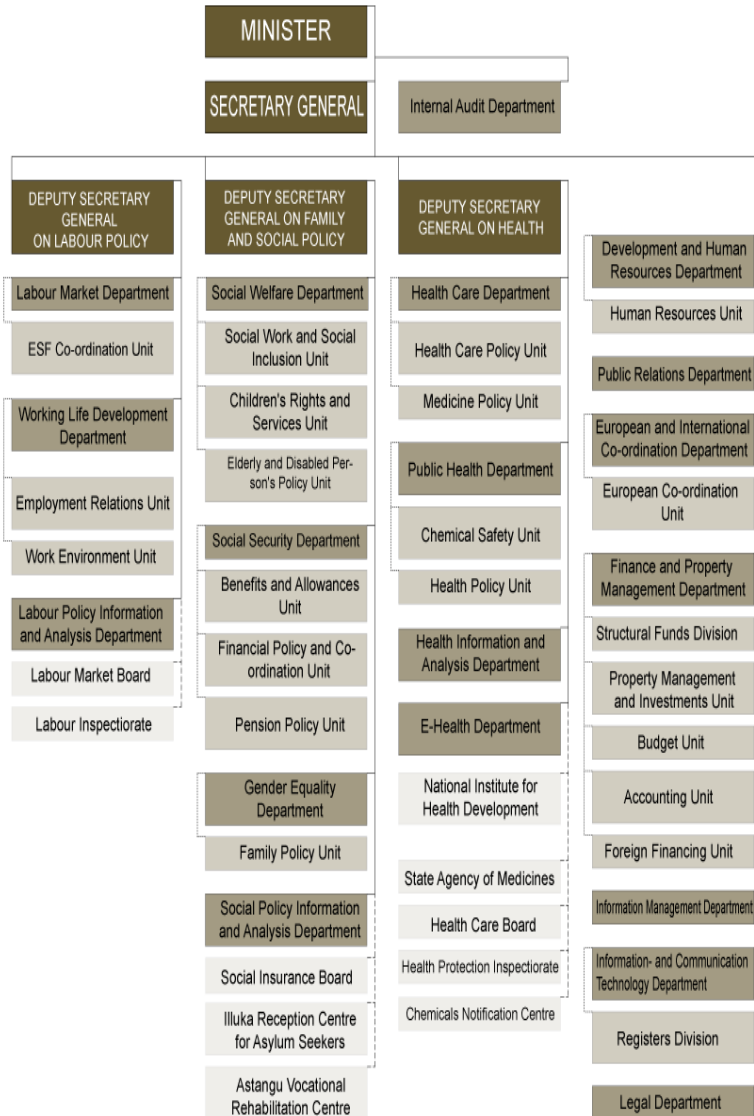
Ministry of Social Affairs

The Ministry of Social Affairs (46) has been responsible for providing health care in Estonia as well as health insurance since 1993, when the formerly separate Ministries of Health, Social Welfare and Labour were merged.

The Ministry of Social Affairs has three major policy divisions: health care, social services and employment. The health division is divided into four administrative departments: the Health Care Department, responsible for health care, investment and drug policy; the Public Health Department, responsible for public health policy, disease prevention and health promotion programmes, health protection, environmental health and chemical safety policy and legislation; the Health Information and Analysis Department, responsible for coordinating the system of health statistics and conducting policy

analysis; and the E-health Department, responsible for management, coordination planning and implementing of e-health projects (47). Responsibility for health care includes formulating health policy, analysing the health of the population, executing general organization and surveillance of health care, determining the scope of primary, secondary and tertiary care, planning and organizing tertiary care and developing and enacting standards and licences for health care providers.

Fig. 8. Organizational structure of the Ministry of Social Affairs



Source: Ministry of Social Affairs (46).

Public Health Department

At the Ministry level, the Public Health Department is responsible for developing and implementing overall health policy, which is aimed to ensure health protection and a healthy environment, promote health and prevent diseases. It is the key department dealing with environment and health as well as chemical safety issues. The department has a leading role in health policy development and coordinating implementation especially in the following areas: HIV, preventing drug and alcohol abuse, mental health, vaccination, preventing smoking, nutritional diseases and health risks influenced by environmental factors (such as drinking-water and chemical safety), controlling infectious diseases, preventing noncommunicable diseases and the health of children and adolescents. The Public Health Department collaborates with other sectors relevant to environment and health such as updating and formulating legislation in tobacco and alcohol, but also in the fields of food and chemicals.

For many years, the Public Health Department has developed and implemented the national health strategies, which affect environment and health. The National Strategy for Prevention of Cardiovascular Diseases 2005–2020 (48) deals with food and the promotion of adequate environments for physical activity. The National Cancer Prevention Strategy 2007–2015 (49) covers various environment and health components (such as chemicals and physical activity). The Framework for Injury Prevention Strategy (35) deals with injury prevention.

Currently, the Public Health Department is responsible for implementing the National Health Plan 2009–2020 (50), which the government approved in July 2008. The National Health Plan is a general strategy covering five areas:

- social inclusion and equal opportunities;
- secure development of youth and children;
- healthy living, working and studying environments;
- healthy lifestyles; and
- developing the health care system.

Environmental Health and Chemical Safety Unit

In 2008, the responsibility of the former Chemical Safety Unit was expanded to cover environmental health topics. Accordingly, the name of the Unit was changed. Historically, the Ministry of Social Affairs has always covered environment and health, but inadequate attention and resources have been allocated.

The major tasks of the Environmental Health and Chemical Safety Unit are a) formulating environmental health and chemical safety policies and strategies, b) drafting and reviewing acts and regulations and c) transposing EU regulations into national policies dealing with environmental risk factors to health (such as chemical safety, noise, drinking-water and bathing water). The Ministry of Social Affairs is also responsible for biocides. Currently, one priority of the Unit is to prepare all documents regarding chemical safety obligatory for entry into the OECD. In this regard, environment and chemicals have been defined as priorities.

The Unit consists of six senior chief specialists and the head of the unit. The Unit has specific responsibilities: Chemicals Act, Biocides Act, coordination with different sectors, the Globally Harmonized System of Classification and Labelling of Chemicals and the EU REACH regulation (registration, evaluation, authorization and restriction of chemical substances), drinking-water and bathing water, noise and health protection requirements and standards.

Health Protection Inspectorate

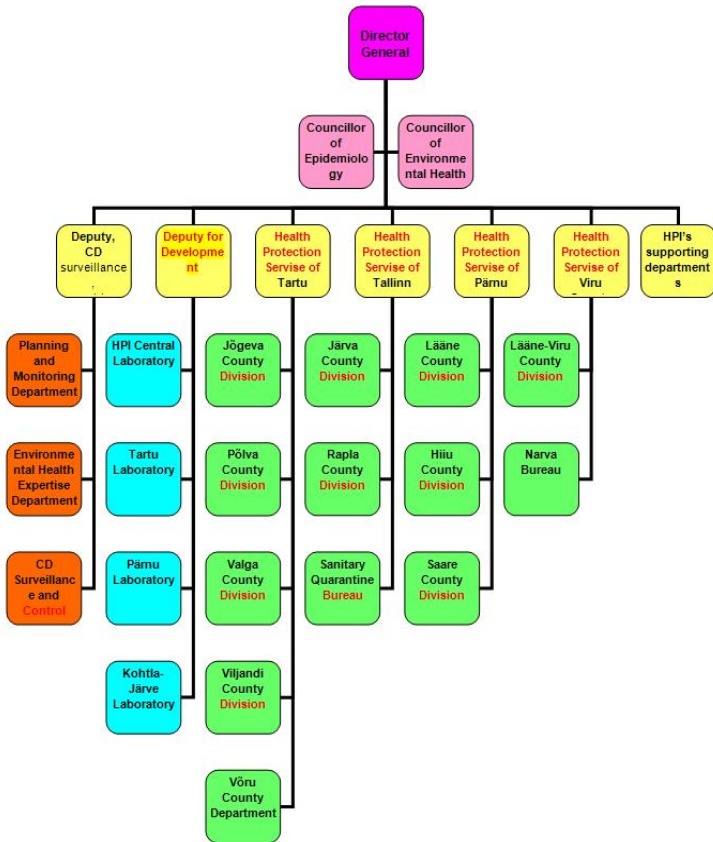
The Health Protection Inspectorate (51) is responsible for monitoring environment and health risk factors and enforcing regulations relevant to environment and health. The Health Protection Inspectorate is a government institution under the Ministry of Social Affairs. The Inspectorate is responsible for surveillance and control of communicable diseases; early detection and response to outbreaks; collecting and analysing immunization data; and enforcing legislation in environment and health (drinking-water, indoor air, noise, chemicals, vibration and light). The Inspectorate shares with the

municipalities all information collected. The responsibility of the Inspectorate in risk assessment needs to be developed further.

Table 3. Distribution of the inspector and specialist staff of the Health Protection Inspectorate

Speciality	Central authority	Health protection services
Expert (Adviser)	2	–
Senior Inspector of Water Safety	2	12
Senior Inspector of Social Institution Safety	2	8
Senior Inspector of Consumer Goods Safety	4	5
Inspector	–	42
Senior Inspector of Epidemiology	8	22
Inspector of Epidemiology	–	17

Fig. 9. Organizational structure of the Health Protection Inspectorate



At the time of the review, attempts were underway to change the legal status of the Inspectorate. The Inspectorate has one central office, four regional offices, 11 county offices, 1 Estonian Sanitary Quarantine Bureau and four laboratories (which include physics, chemistry, virology and microbiology). The physics and chemistry laboratories conduct testing on the safety of consumer goods and environmental

factors. In addition to carrying out investigations for the Inspectorate at the national, regional and local levels, these facilities offer expert advice and conduct investigations for other institutions and private customers. The laboratory in Tallinn mainly analyses pesticides in food, chemicals in indoor air, chemicals in products and toys, and the laboratory in Tartu performs microbiological analysis of cosmetics. The Health Protection Inspectorate is responsible for the core population-based health protection services and contains several departments:

- the Department of Communicable Diseases Surveillance and Control, which includes the Bureau of Epidemiological Preparedness and National Influenza Centre;
- the Environmental Health Expertise Department; and
- the Planning and Monitoring Department.

The Inspectorate is in charge of the quality of consumer goods, including cosmetics and products for children. The Consumer Protection Board receives complaints but often redirects them to the Inspectorate.

The Inspectorate monitors drinking-water and bathing water.

The Inspectorate monitors water quality in public places. The suppliers are responsible for water in private households, but the Inspectorate checks the monitoring of the suppliers. The Radiation Protection Centre monitors radiation in drinking-water. The Inspectorate maps radioactive substances in drinking-water. The Inspectorate takes part in various international programmes in environment and health.

National Institute for Health Development

The National Institute for Health Development (52) is a national research and development agency administered by the Ministry of Social Affairs. The Institute is a key implementer in public health with a broad set of roles and activities aimed at developing and implementing national health programmes and strategies (described in other parts of this report), performing public health research and

monitoring but also providing continuing education for health professionals.

The National Institute for Health Development carries out several tasks as a service provider itself in public health (including oversight of the implementation, guidance on public health issues and mass-media campaigns), coordinates the implementation of strategies (including guidance and support to the county and municipal levels), facilitates the work of several health-promoting networks (including health-promoting schools, health-promoting kindergartens, health-promoting hospitals and, recently, health-promoting workplaces). In addition, the Institute contracts service providers including the public sector, private sector and increasingly NGOs to provide public health services.

The National Institute for Health Development is responsible for creating and managing health-related databases and registries such as cancer and others (including data collection and analysis) and carrying out research on biomedicine, epidemiology, biostatistics, health economics, occupational health and behaviour. The Institute also measures the health status of population groups and examines the impact of health hazards resulting from the outdoor environment. Since 2008, the Institute has been responsible for health statistics and national reports covering various areas (previously under the responsibility of the Ministry of Social Affairs).

In environment and health, the National Institute for Health Development manages the Asbestos Laboratory, which has conducted research in asbestos since 1997. The Laboratory also participates in international projects, and the occupational health risks related to asbestos are therefore well assessed and managed in Estonia. Further, researchers of the National Institute for Health Development have continuously monitored the health status of Chernobyl liquidators (including cancer risk) (53).

Health Care Board

In public health, the Health Care Board (54) is responsible for controlling the quality of occupational health care services. It has been responsible for elaborating guidelines on chemical safety in working environments (guidelines for health care staff) and for classifying occupational diseases.

In the overall health sector, the Board is also responsible for quality assurance and accreditation (mainly licensing) of health care providers, including registering and licensing both health care professionals and providers. This also includes maintaining the registers of human resources for health and providers, exercising state supervision, contracting emergency care providers and ensuring emergency preparedness.

Chemicals Notification Centre

The Chemicals Notification Centre (55) is the competent authority for the EU REACH legislation at the national level. Its main tasks are controlling imported and exported chemicals and notifying about new substances. The Centre is responsible for implementing the Globally Harmonized System of Classification and Labelling of Chemicals. The Centre has 15 staff, one person covering the help desk function. The Centre collects information on chemicals listed in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and forms part of an unofficial working group together with other Baltic and Nordic countries on exchanging information and learning from other countries' experience and activities.

The Poison Information Centre (56) is under the Chemicals Notification Centre and was established in 2006. It has a database in which information on first aid and management of poisoning for incidents have been improved by including information about chemical products, medicines, plants, mushrooms, animals etc. It provides information eight hours per day, five days per week for health care personnel and the general public.

Labour Inspectorate

The WHO Regional Office for Europe has defined occupational health as an integral part of environment and health. Regional priority goal 4 covers occupational hazards to health. In Estonia, the Labour Inspectorate is the main supervisor of occupational health (57), being responsible for supervising employers' compliance with existing health and safety regulations and controlling whether employers have accurate risk assessment information and whether all the necessary health checks have been carried out and measures implemented (checking whether the requirements set by the Chemical Safety Act are followed, indoor climate, noise, ventilation and social conditions). Although the Inspectorate is involved in assessing chemical safety risk, chemical safety cards are checked during the assessment process on how employees deal with hazardous chemicals and the availability of personal protection equipment only. Generally inspectors do not have any background in chemical toxicity, whereas those inspecting specific chemical factories have that expertise. Checks are also done to verify whether the employees get appropriate instructions on how to deal with dangerous substances.

There are 40 technical inspectors, 4 investigators for industrial accidents and 8 investigators for occupational injuries. The Inspectorate collaborates closely with the Health Care Board, the Technical Surveillance Authority and the Rescue Board.

The Labour Inspectorate also ensures the surveillance of all labour relations and serves as a court in case of disputes in work relations.

The example of Jõgeva County shows that the county inspectorate is responsible for 10 municipalities with an average of 1000 companies to be inspected by 1.5 staff members.

In case of non-compliance with the regulations, the Inspectorate determines fines. The fines range between EEK 30 000 and 40 000 but are levied as a last resort.

Health care workforce

In accordance with the development of the primary health care system presented above, family doctors carry out most preventive activities. However, health care professionals do not have any special training in environmental risk factors to health. Physicians and nurses are trained in various fields such as nutrition and the effects of physical activity but do not have enough training in food safety and wider environmental determinants.

The population has a high opinion of family doctors. In the primary care team, the physician and nurse provide both curative and preventive services. Nurses have recently received support in the form of additional materials and financial incentives (58).

Physicians acknowledge environment and health but do not discuss it in an institutionalized manner at medical congresses and within medical associations. Doctors treating symptoms mostly deal with environmental determinants in cases of chronic disease. Counselling patients on the environmental risk factors of health is an important aspect of the training and practice of family doctors, and physicians (or nurses) take preventive action to reduce exposure to unhealthy and dangerous living conditions when visiting newborns at home in the first 10 days of life. Similar to many other countries in the European Region, there is a shortage of physicians related to various aspects such as ageing and migration. This task is now mostly covered by nurses in the health care teams. At the same time, the need for nurses is increasing, and the main current difficulties are related to training sufficient skilled nurses and retaining professionals, who tend to migrate to other countries or out from the sector. Regardless of the constraints in the system, disease prevention activities are increasingly applied but should be strengthened further. The preventive approach is more frequently applied in rural areas where the family doctors know the living circumstances of the inhabitants very well.

However, there are scope and time constraints to providing sufficient services related to environment and health. A relative lack of nurses in primary care to ensure sufficient attention to disease prevention in primary care makes the designated tasks difficult.

Physicians working in specialized care are not directly involved in their everyday work with occupational health issues. In 2008, 97 occupational health physicians were registered, although many were not working as occupational physicians anymore. The occupational health physicians mainly work in private practice (providing services to employers in selected areas to have regular checks for their employees) or in selected occupational health centres (such as the Regional Hospital in Tallinn) to explore and diagnose workplace-related diseases. Occupational health services are therefore weak, and plans to develop these services further are currently being considered.

Environment sector

Ministry of the Environment

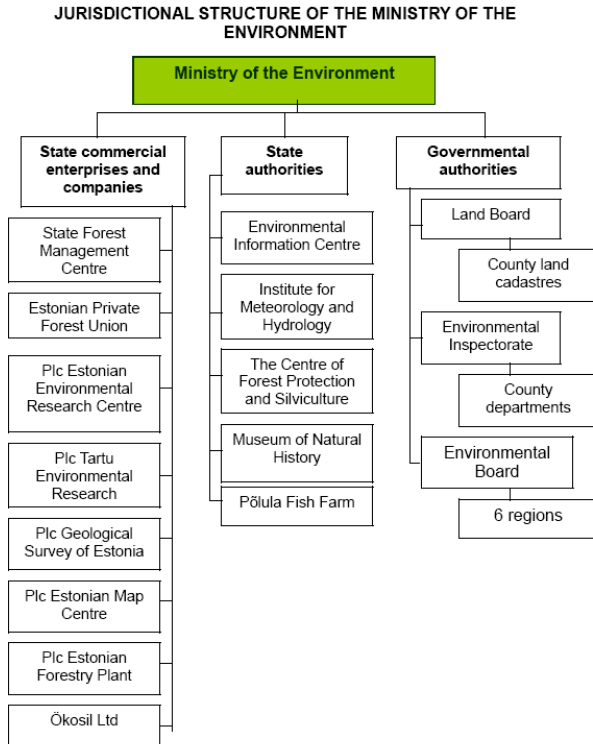
The Ministry of the Environment (59) does not have a special unit in charge of environment and health, but in 2007–2008 an environment and health focal point was officially appointed for the first time.

The Ministry of the Environment is responsible for the following government functions: protecting the national environment and nature; maintaining land and spatial databases; natural resources, including estimating their quantities and regulating their use, recycling and protection; radiation safety; environmental surveillance; organizing meteorological, geological, cartographic, geodesic surveys and ecological and marine research; maintaining the land and water cadastres; and drafting legislation on these areas. In other words, the Ministry of the Environment is responsible for organizing and coordinating environmental policy. It is in charge of developing and implementing the Environmental Strategy 2030 and the Environmental Action Plan 2007–2013, which the government approved in 2007. The Ministry reports to the government about the activities implemented for fulfilling the Strategy, which is to be considered as the umbrella strategy for all other environmental strategies. The plan is updated every three years.

The Ministry of the Environment has a department specifically designated for environmental impact assessment and for accrediting specialized companies performing environmental impact assessment. The Environmental Impact Assessment Department of the Ministry double checks the environmental impact assessment reports and presents them through public events. The Ministry of the Environment also checks the health component of environmental impact assessment.

The Ministry has 15 environmental departments at the county level that are mostly in charge of managing natural resources, issuing environmental permits and checking environmental impact assessment at the county level.

Fig. 10. Organizational structure of the Ministry of the Environment



Source: *Ministry of the Environment (59)*.

Environmental Inspectorate

The Environmental Inspectorate is directly responsible to the Ministry of the Environment and operates in all areas of environmental protection in Estonia. The main office is located in Tallinn, and four additional units will be established in the near future whose structure will correspond to that of the Health Protection Inspectorate, which has four regional offices. In 2008, 230 employees (170 involved in supervision activities) worked in 15 county offices. Data compiled by UNECE (60) show that the number of staff members of the Environmental Inspectorate decreased by 40 since 1995.

The tasks of the Environmental Inspectorate, which are connected with environmentally related hazards to public health, are: a) to implement measures provided by law for preventing illegal activities, b) to suspend unlawful activities damaging or dangerous to the environment and c) to monitor activities that use natural resources if they endanger life, health or property.

The areas of supervision comprise forest protection, fisheries, hunting requirements, earthquakes, classical nature protection, waste and packaging, ambient air, water, hazardous substances and chemical safety, radiation, flora and fauna, integrated pollution control, maintenance and excavation works.

The Inspectorate issues licences to enterprises and checks whether the water and waste management system is in accordance with the required standards.

Through a hotline, the Environmental Inspectorate responds to complaints from the population. There are about 10 000 calls per year, and most problems are related to odours due to fertilizer, marine pollution, oil-covered birds, neglected animals, car accidents with animals and paper factory fumes.

Each inspector has the duty to check at least 35 enterprises and private people a year. Licences are awarded once water and waste conform to requirements and standards as set by law.

The Environmental Inspectorate closely cooperates with the police, Rescue Board, border guards, veterinary inspectorates, local governments and custom offices (waste shipments). Nevertheless, cooperation with the health sector has been limited to avian influenza preparedness.

At the international level, the Inspectorate is part of the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) and International Network for Environmental Compliance and Enforcement (INECE).

Estonian Environment Information Centre

The Estonian Environment Information Centre (61) responds to the Ministry of the Environment and provides information on four main areas: state of the environment, environmental registry, environmental monitoring and information systems and reporting. The registry collects information on water, air, waste, biodiversity and other topics relevant to environmental management and protection (natural resources, invasive species, risk areas etc.), used for making the annual reports to international agencies (European Environment Agency, EU and environmental reviews). The Estonian Environment Information Centre is a member of the National Reference Centre of the European Environment Agency.

Most data are publicly available on the web. The Estonian Environment Information Centre publishes reviews on various topics (reviews of the state of the environment, reviews of the results of the national monitoring programme, water usage, waste generation, status of biodiversity conservation etc.) periodically both on paper and on the Internet.

Estonian Environment Research Centre

The Estonian Environmental Research Centre (62) is under the Ministry of the Environment and specializes in chemical analysis in environmental protection. It analyses drinking-water, food, fuel and other substances. The Centre has four main departments dealing with:

environmental chemistry, air quality management, fuel quality management and water and soil research.

The Centre is responsible for air quality monitoring at the national level and provides analysis for water monitoring programmes.

Together with the laboratory of Tartu Environment Research, the Centre is the main provider of chemical analysis for the national monitoring programme. In exceptional cases, when national capacity is not sufficient, analysis is done abroad (for example, pesticides).

Estonian Meteorological and Hydrological Institute

The Estonian Meteorological and Hydrological Institute is responsible for monitoring related to climate change (63). As a government service under the Ministry of the Environment, its responsibilities are:

- meteorological issues connected to protecting the environment;
- forecasting weather;
- collecting and analysing meteorological and hydrological data (precipitation, water level, temperature etc.);
- climatological survey of Estonia;
- providing information;
- providing special services for public and private interests on a commercial basis; and
- cooperating with international meteorological institutions, especially with the World Meteorological Organization.

Estonian Radiation Protection Centre

The Estonian Radiation Protection Centre (64) is under the Ministry of the Environment and is funded by the state. The Centre has 17–20 staff members based in Tallinn and travelling throughout the country. The main tasks are:

- to advise on issues of radiation practice licences and activity licences for qualified experts (Ministry of the Environment);

- to draft legislation on radiation protection;
- to advise the people exercising supervision (Environmental Inspectorate);
- to maintain the State Dose Registry of Exposed Workers, Registry of Radioactive Sources, Registry of Nuclear Material, Registry of Radioactive Waste and Registry of Radiation Practice Licences;
- to monitor radiation levels;
- to estimate the effective and equivalent doses incurred by members of the public and reference groups of the population;
- to provide services that ensure radiation safety; and
- to provide advice during radiation emergency situations.

The Centre is organized along two main departments: the Department of Radiation Monitoring and the Department of Radiation Protection. The Department of Radiation Monitoring monitors the levels of radioactivity in different environments. The Department is the main responsible institution for implementing the state monitoring programme in environmental radioactivity in accordance with the recommendations in the European Atomic Energy Community (EURATOM) treaty. The environmental surveillance consists of a permanent monitoring network incorporating 10 fully automatic and 3 semiautomatic stations. Each year 400 samples are taken. The Centre has its own laboratory.

The Department is responsible for elaborating and managing the early warning system in case of radiation threats to Estonia. The Department also maps radon risk areas. Indoor radon concentrations are measured in dwellings throughout Estonia as part of a nationwide radon survey programme. Another task is to investigate uranium (radium) and radon concentrations in the soil. A radon risk map exists for Estonia and is largely discussed publicly. People are therefore quite well informed and aware about health risks from radon.

The Department of Radiation Protection issues radiation practice licences valid for five years. This task includes reviewing applications, checking the conformity of submitted documents with the actual situation and performing necessary radiological measurements.

Another important responsibility of the department is the maintenance of the State Dose Registry of Exposed Workers, Registry of Radioactive Sources, Registry of Nuclear Material, Registry of Radioactive Waste and Registry of Radiation Practice Licences.

The Department is active in preparing drafts of national legislation, draft documents to accede to international conventions and agreements related to radiation protection or nuclear safety.

The Centre cooperates with the Ministry of the Environment, the Environmental Inspectorate, the Rescue Board and the Ministry of Social Affairs. It has also prepared informative material on radon and radium in drinking-water in collaboration with the Ministry of Social Affairs.

The Centre is also responsible for carrying out emergency training. It participates in emergency situation exercises in collaboration with representatives of various sectors, under the leadership of other ministries that rotate responsibility, and yearly exercises with the Customs Board and the Rescue Board.

Other sectors

The lessons learned from existing policies and interventions show that effective action to protect children's health from environmental threats requires firm political commitment and close collaboration between health and environment authorities as well as cooperation with other sectors such as interior, finance and economy, transport, energy and urban and rural planning.

Ministry of the Interior

The Ministry of the Interior (65) manages the Rescue Board, which is in charge of disaster preparedness. It collaborates with the Ministry of Social Affairs and Ministry of the Environment to establish emergency preparedness plans. The Rescue Board controls major accidents and hazards involving dangerous substances.

The Ministry is also the central authority for spatial planning and organizes the preparation of the national spatial strategy. Local and regional authorities are primarily responsible for preparing spatial plans.

Ministry of Economic Affairs and Communications

In environment and health, the Ministry of Economic Affairs and Communications (66) covers the safety standards of buildings and plays a key role in issues related to transport and road safety.

The main legal basis for the work of the Ministry of Economic Affairs and Communication in building quality is the Building Act (67). The Technical Control Board under the Ministry of Economic Affairs and Communication is responsible for checking the technical quality of buildings and ensures that EU standards are incorporated into national standards.

The Ministry is also in charge of planning the construction of roads to fulfil the requirements necessary for road safety. It is responsible for the Road Transport Act (68), which ensures protection from the adverse effects of transport (noise and protection zones) and for the National Road Safety Programme 2003–2015 (divided into four-year plans) (34).

The Ministry of Economic Affairs and Communications chairs the Governmental Traffic Commission. The Commission comprises representatives of the Ministry of Interior, Ministry of Education and Research, Ministry of Social Affairs, Ministry of Justice (69), Ministry of Finance (70), Tallinn University of Technology, NGOs, municipalities and driving schools. The high-level Commission has been established for the first time in Estonia's history over a period of four years. The Ministry has the leadership role in preventing road traffic injury.

Ministry of Agriculture

The Ministry of Agriculture (71) is the major actor in food safety in Estonia. Responsibility for food monitoring has been transferred from the Ministry of Social Affairs to the Ministry of Agriculture. The Food and Veterinary Department covers animal health, food hygiene, food surveillance, food safety and animal protection.

Two main inspection and monitoring bodies (with subdepartments at the county level) are under the Ministry:

- The Veterinary and Food Board is responsible for animal health, welfare and feeding stuff, animal breeding and is also in charge of market regulation, trade, import and export in the field.
- The Estonian Plant Production Inspectorate regulates and monitors plant health, plant protection, horticultural products, organic agriculture, animal feed, fertilizers and seed. The Inspectorate checks companies' use of pesticides (registration, storage and discharge).

The Veterinary and Food Board is responsible for developing and managing a preparedness and response plan for avian influenza. The Veterinary and Food Board is organized around 15 county centres with about 200 inspectors for the whole country.

Estonian Technical Surveillance Authority

Since the beginning of 2008, the newly created Estonian Technical Surveillance Authority has carried out the tasks formerly performed by the Estonian National Communications Board, Estonian Railway Inspectorate and Estonian Technical Inspectorate (72). The new Authority conducts national safety surveillance, market regulation and development in a variety of fields. It has divisions for railways, electronic communications and industrial safety.

Municipalities and counties

Counties finance their public health and disease prevention activities mainly through funds from the Ministry of Social Affairs, Estonian Health Insurance Fund, Ministry of the Interior, health foundations and social funds. The county governors are responsible for setting the local priorities based on the national strategies.

Counties are involved in the local implementation of disease prevention programmes, such as the health days organized on a yearly basis, targeting the population with low education and focusing on activities centred around health and nutrition. The Labour Inspectorate and other state agencies' offices are also active at the county level.

The built environment and urban planning are given priority at the county and municipal levels rather than at the national level. Municipalities are in charge of urban planning, land use and construction and comprehensive urban plans (including streets and ports). Municipalities are in charge of noise barriers, the implementation of action plans on public transport (such as a plan for pedestrian streets) and for financially supporting households to improve the quality of their housing in case of lack of funds (such as support for connecting to a central sewerage system).

Municipalities are also in charge of environmental impact assessment. This is outsourced to private companies, but the county governor has to approve the assessment and the Health Protection Inspectorate has to check it. Unfortunately, the methods used in specific types of impact assessment are not well known at the local level.

Counties have information officers in charge of environmental education in schools and kindergartens. Kindergartens organize thematic days focusing on specific environmental topics, such as forest days and waste management.

Nongovernmental organizations

Estonia has many NGOs across the country. Nevertheless, no NGO focuses directly on environment and health. Several NGOs focus on environmental protection, and several NGOs in the health sector focus on greater protection from health risk, especially due to violence. However, no NGO deals specifically with the adverse health effects of the environment.

One major NGO in Estonia is the Baltic Environment Forum (73), which has the aim of supporting Baltic countries in implementing EU regulations in environmental protection and chemical safety. Their priority areas are nature protection, chemical safety and environmental programmes on waste, energy and air quality.

The NGO was founded in 1995 and has offices in Estonia, Germany, Latvia, Lithuania and the Russian Federation. They are mainly considered a project-based organization, implementing activities on their own or with other partners.

The main activities are awareness-raising and training on chemical safety issues in cooperation with representatives of the Ministry of Social Affairs, the Ministry of the Environment, the Ministry of Economic Affairs and Communications and state agencies. Training is also given to other NGOs and consumer organizations and industrial companies. Training mainly focuses on the practical understanding and implementation of chemical safety legal acts and requirements. In addition to organizing seminars, the Baltic Environment Forum also produces guidance materials and information publications on relevant chemical safety topics, such as chemical legislation and policies, guidance on environmental management for industrial enterprises, guidance on chemical risk management in companies and chemicals in products and risks for consumers.

4 Tools for management

Conclusions

- Although environment and health are considered to be an integral part of public health in Estonia, there is no clear strategy on environment and health. Nevertheless, a chapter of the new National Health Plan 2009–2020 covers environment and health.
- Among the environment and health risks and determinants, public health strategies and programmes mostly focus on physical activity.
- The terms used in environment and health are limitedly and not systematically used in regulations and strategies for health.
- Prevention of road traffic injury is an area of good cooperation between the health sector and the Ministry of Economy and Communications and other relevant sectors.
- The National Environmental Health Plan was the first strategy approved by the government addressing all the environment risk factors to health. Estonia has no NEHAP or children’s environment and health action plan.
- Compared with the Environmental Strategy of 1997, the new Environmental Strategy 2030 adopted in 2005 contains a chapter focusing on the need for strengthening the integrated activities regarding environment and health.
- Due to the lack of reliable data, the health costs of environmental pollution are not sufficiently integrated into policy-making.
- Financing mechanisms mainly focus on industry and not on the consumption patterns of the population.
- Transport strategies cover all relevant aspects of transport: air pollution, safety and physical activity.
- Lack of funds is one of Estonia’s greatest challenges related to environment and health.

Recommendations

- The new National Health Plan 2009–2020 including environment and health addresses issues of human health related to environmental factors: it is an opportunity to operationalize the environment and health approach in Estonia.
- Excise and tax authorities (Ministry of Finance) require detailed health information and data to develop economic instruments that help monitor and forecast the impact of industrial activity on health.
- Environment and health sectors need to improve intersectoral collaboration to ensure appropriate monitoring instruments for the future use of economic instruments for industry and private bodies.
- Experience from other countries in the cost–benefit analysis of interventions in environmental policies and economic instruments should be used and evaluated.
- The Building Act should guarantee accessibility to buildings for people with physical handicaps and disabilities.
- In the framework of improved road safety measures, more attention should be focused on developing legislative measures protecting the safety of cyclists.
- Specific funds for environment and health should be allocated and monitored at the county and local levels.

Environment and health policy in Estonia is implemented under the umbrella of several national acts and policy programmes from the health sector, the environment sector and the transport sector.

Health policies related to environment and health

Public Health Act

The Public Health Act is currently being revised according to the needs for implementing the National Health Plan 2009–2020.

National Health Plan

The government approved the National Health Plan 2009–2020 in July 2008. It is the umbrella strategy for all national health strategies and policies. The draft was made available for comments to the public, and a working group on environment and health prepared the chapter on environment and health. The working group consisted of representatives of the Health Protection Inspectorate, Ministry of Agriculture, Ministry of the Environment, Ministry of Economic Affairs and Communications and Ministry of the Interior.

The Ministry of Social Affairs coordinates the implementation of the population health strategy. Other participants in implementing the strategy in addition to the bodies in the government area of the Ministry of Social Affairs include the Office of the Prime Minister, Ministry of Defence, Ministry of the Environment, Ministry of the Interior, Ministry of Education and Research, Ministry of Agriculture, Ministry of Culture, Ministry of Justice, Ministry of Economic Affairs and Communications, local governments and citizens' associations (50). A steering committee, which includes the above-mentioned bodies, is responsible for planning the activities and resources to implement the strategy and is accountable to the government.

Currently, the government has approved five national health programmes, which are under the responsibility of the Public Health Department of the Ministry of Social Affairs. Three are especially relevant to environment and health priorities.

Injury strategy

Currently an injury strategy is being elaborated covering alcohol-related injuries. It focuses on young children, including newborns, and has the objective of raising awareness. The priorities are suicide and road traffic and home injuries, which were set by a working group comprising representatives of various sectors (Ministry of Social Affairs, Road Traffic Council, Estonian Health Insurance Fund, hospital specialists, and two scientists) in charge of defining and implementing the strategy.

A campaign to “keep your child in one piece” was launched in cooperation with the Estonian Health Insurance Fund and has the aim of informing about risks to children. Activities to prevent injury are also implemented together with the Ministry of Economic Affairs and Communications, mainly preventing road crashes.

The injury strategy also focuses on the need for improving the data availability on injuries to enable proper priority-setting in preventive activities. Currently there is no injury registry, but there are cancer and death registries. Data on injuries are collected through various sources. Data from emergency care units and trauma units are being collected as part of a pilot programme on injury surveillance.

Prevention campaigns have also been started at the municipal level. Municipalities have applied for specific projects. These campaigns focus on empowering networks at local level.

Finally, the strategy also focuses on the campaigns for preventing accidents due to chemicals. The Chemicals Notification Centre and Poison Information Centre in the Department of Public Health under the Ministry of Social Affairs are responsible for these activities.

National Cancer Prevention Strategy

The Minister of Social Affairs approved the National Cancer Prevention Strategy 2007–2015 in May 2007, which covers various environment and health components. Chemicals are highly relevant. The Strategy addresses chemical and carcinogenic hazards in the living and working environments by mapping cancerous hazards in these environments and developing chemical safety supervision aiming at planned information campaigns. The Health Care Board and Labour Inspectorate are preparing guidelines for chemical emergencies.

Smoking is also addressed by systematically training physicians. Physicians are paid for assisting patients who want to quit smoking,

and World No Tobacco Day (31 May)³ is organized in Estonia. Through data collection based on telephone surveys, the effects of smoking bans on employers and employees have been analysed. Alcohol prevention is also part of the Strategy but will be transferred to the injury strategy.

In addition, the Strategy addresses nutrition and food safety – raising awareness about healthy food choices (food production technology and safe food production).

National Strategy for Prevention of Cardiovascular Diseases 2005–2020

Among other preventive activities (food and nutrition, smoking etc.), the National Strategy for Prevention of Cardiovascular Diseases 2005–2020 (48) is promoting physical activity by addressing the physical infrastructure needed to ensure exercise and physical activity by raising awareness. The strategy focuses on the need to map available facilities, train family doctors and prevent leisure sports accidents. Activities are implemented jointly with the Ministry of Culture, which has an independent strategy on physical activity (Sport for All 2006–2010).

Physical activity and nutrition are promoted in schools for all children up to 16 years (in some municipalities until 19 years). Free meals for lunch are provided. The municipalities provide funds. In kindergartens, parents pay for “healthy” ingredients and are supported by subsistence allowances if they cannot afford it.

The WHO Regional Office for Europe evaluated the National Strategy for Prevention of Cardiovascular Diseases 2005–2020 in 2006 at the request of the Ministry of Social Affairs (74). Overall, the Strategy had increased health promotion capacity and training and boosted the health promotion infrastructure. The principal strength of the strategy lies in its integrated approach involving three key risk factors

³ The no tobacco day preparation for 2008–2009 is focusing on smoking behaviour among soldiers and pregnant women.

(tobacco, poor nutrition and physical inactivity) and its ability to draw together the work of different ministries to focus attention and resources on the high level of cardiovascular diseases in Estonia.

Environmental policies

Environment and health are also covered by environmental legislation and regulations, and Estonia has three major strategies or action plans. The major environmental strategy is the Environmental Strategy 2030, which is implemented through the Environmental Action Plan 2007–2013.

Environmental Strategy 2030

The first national Environmental Strategy was drafted in 1997 (75). The Strategy took into account internationally accepted principles and international environmental agreements. This Strategy did not contain any specific chapter on health. The second Strategy was drafted in 2005 covering the period until 2010 and indicated the need for strengthening the integrated activities regarding environment and health and highlighted the need for understanding about the connections between environment and health. The Parliament approved the new long-term Environmental Strategy 2030 in 2007 to ensure health through safe and healthy environments, food, water and air conditions.

The strategic direction of the Environmental Strategy is set by evaluating the available data.

National Environmental Action Plan

The first National Environmental Action Plan following the Environmental Strategy of 1997 was drafted in 1998 and set the implementation required to attain the short-term goals of the Strategy in motion. The three-year action plan included 658 projects, two thirds of them short term and involving estimated total expenditure of

EEK 8.2 billion. This was to be financed through various government and private sources and from international sources.

About half of this sum was to be devoted to reducing the negative effects of the energy sector and to improving air quality; another 25% was to improve usage and protection of groundwater resources and the protection of sea water and fresh surface water, and the rest was allocated to the other six policy goals. Towards the end of 2000, a second National Environmental Action Plan was prepared, and in mid-2001 the final document was issued, following up on the previous Plan (60).

Environmental Action Plan for 2007–2013

In accordance with the Environmental Strategy 2030, the government approved the Environmental Action Plan for 2007–2013 on 22 February 2002 (76). The Plan identifies the basic activities that will achieve the goals set in the Environmental Strategy 2030 and thereby to improve the human environment.

The Plan covers waste generation, quality of surface water and groundwater, use of mineral resources, safeguarding of forests, ensuring the good state and population diversity of fishery, eliminating industrial and household substances depleting the stratospheric ozone layer and developing an environmentally friendly and safe public transport system and safe pedestrian traffic networks. The Plan includes EU-oriented activities and areas of national priority (such as eliminating residual pollution and the environmental impact of the energy sector). The cost of implementing the Plan until 2013 is an estimated EEK 100 billion. The EU, the government, local governments and private companies are funding the Plan.

The Ministry of the Environment is in charge of developing, reporting and assessing the Plan, but the Ministries of Social Affairs, the Interior, Economic Affairs and Communications, Agriculture and Education and Research are involved in implementing it. The Plan is reviewed every three years and, if necessary, upgraded.

Other

Estonia has many additional national and international relevant environmental action plans, strategies and conventions covering environment and health priorities:

- Environmental Supervision Act (77);
- Environmental Monitoring Act (78);⁴
- Radiation Act (79);
- Waste Act (80);
- Water Act (81);
- Estonian National Strategy on Sustainable Development: Sustainable Estonia 21 (SE21) (75);
- EU Water Framework Directive (82);
- EU Groundwater Directive (83);
- EU Air Quality Framework Directive (84);
- Convention on Long-range Transboundary Air Pollution (85);
- Convention on the Protection and Use of Transboundary Watercourses and International Lakes (86);
- Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (87);

⁴ The Environmental Monitoring Act was passed in 1999 and updated the 1993 “Concept of State Environmental Monitoring” and adapted Estonia’s legislation to the numerous EU directives in the field, in particular the directive on information. It provides a definitive legal framework for monitoring and includes provisions regarding sampling and analytical work such as laboratory certification, good laboratory practices, a quality insurance and accreditation system, intercalibration, inspection and auditing of laboratory work, etc. The Act defines the modalities for the dissemination of data and also determines how monitoring is financed: the state budget finances state monitoring, municipal budgets local monitoring and companies self-monitoring. The collection of data on air, when it is not mentioned in the laws on waste, water and nature protection, is covered by the Air Act in accordance with EU directives (60).

- EU directive on integrated pollution prevention and control (88); and
- EU directive on volatile organic compounds (89).

Transport policies

The integration of environmental and health aspects into policies and decisions on transport, efforts to shift the demand for transport towards more sustainable mobility are key issues in environment and health policy-making. The transport sector, through the Ministry of Economic Affairs and Communications, is the leading institution for road safety.

National Road Safety Programme 2003–2015

The Parliament approved the National Road Safety Programme 2003–2015, and a special commission on investigating severe road crashes has been established. The National Road Safety Programme 2003–2015 sets a maximum of 100 annual deaths in road crashes by 2015 as the main target for road safety. The main priorities of the Programme are education, reducing the incidence of drink-driving, reducing speed, increasing the use of passive safety measures, improving road infrastructure and improving safety for vulnerable road users. The Programme is organized in four-year intervals and involves stakeholders from other sectors, such as the Ministry of Social Affairs and Ministry of Education.

Traffic Act

The new Traffic Act (90) entered into force in 2001 and introduced a number of important legislative measures:

- a legal alcohol limit for drivers of 0.1 milligrams per litre of breath or 0.2 milligrams per litre of blood;
- drink-driving when the blood alcohol concentration exceeds 0.5 milligrams per litre of blood;

- licences for cyclists aged 10–15 years and moped riders aged 14–15 years;
- two-level motor vehicle driver training system (preliminary level and basic level);
- training at driving schools for all driving candidates;
- mandatory educational system for driving instructors;
- special rules for driving test examinations;
- establishment of technical conditions for seasonal speed limits;
- technical conditions for motor vehicles harmonized with EU directives;
- new rules on road crash registration;
- 50 km/h speed limit in built-up areas and 20 km/h in pedestrian areas; and
- obligatory seat-belts and child seats.

Bicycle helmets have not been included yet in the list of requirements. Helmets are still voluntary. According to public surveys performed in 2007 and 2008, the share of population supporting the compulsory requirement of using helmets, both for children and adults, increased from 46% to 55%. Further, the number of children and adults wearing helmets when cycling increased. Nevertheless, in 2008 57% of all cyclists were not using helmets (91).

Transport Development Plan 2006–2013

Estonia's transport policy and strategic directions are presented in the Transport Development Plan 2006–2013 (92), which the government approved in November 2006. The main strategic directions of the Plan are:

- enhancing administrative capacity, including elaborating subsectoral action plans, research, management and optimization of systems, better drafting of laws and policies, cooperation with other EU Member States and neighbouring countries;
- meeting the needs of users of transport networks, public transport and transport policy measures: enhancing infrastructure, passenger transport and light-vehicle transport and efficient use of resources;

- ensuring sustainable development (preventing crashes, preventing environmental damage, reducing regional divergence and increasing the competitiveness of the transport industry); road safety measures are based on the data on road traffic injuries collected by the Ministry of Social Affairs; and
- ensuring the implementation and involvement of interested parties and convening of the Transport Commission (already in preparation), which will elaborate long-term goals for Estonia's transport system.

The Plan is covering social aspects, mainly focusing on the accessibility to transport facilities by all population groups.

Road Transport Act

The Road Transport Act (68) entered into force in 2000 and focuses on the road design, urban street design and the introduction of road maintenance level standards. It has the aim of regulating the establishment of protection zones and noise barriers to be set up by municipalities.

Public Transport Development Plan 2006–2010

Besides developing public transport routes and vehicles, the Public Transport Development Plan 2006–2010 (93) outlines the importance of developing pedestrian and light-vehicle roads in urban and rural areas.

Other relevant policies

Public Information Act

The purpose of the Public Information Act (94) is to ensure that every person has the opportunity to access information intended for public use, based on the principles of a democratic and social rule of law and an open society, and to create opportunities for the public to monitor

the performance of public duties. The Public Information Act refers to the need to share with the public information on the state of the environment, environmental damage and dangerous environmental effects on health. It underlines the obligation to publish all data collected from environmental monitoring based on state or local government monitoring programmes.

Building Act

Spatial planning was introduced as a common practice with the Planning and Building Act (1995). While spatial planning remained under the Ministry of the Environment, at the beginning of 2000 the building division was transferred to the Ministry of Economy. The Act called for a National Spatial Plan, EESTI 2010, and an action plan for implementation, approved in September 2000. The Act also gave each county three years to devise its own spatial plan, an objective all counties except two effectively reached in 1998. The plans were worked out in close cooperation with the county authorities and the municipalities, as these in turn have to draw up their own municipal plans: land-use plans. An action plan for implementing spatial planning, indicating the county's priorities, was also requested; and about half the counties have complied so far. For 2002, the Ministry of the Environment also requested county administrations to formulate a policy on environmental preconditions for settlements and land use that should integrate nature conservation concerns, such as green networks and valuable landscape reservations (green layers), into spatial plans. A new Building Act entered into force on 1 January 2003. This Act provides the requirements for construction works, building materials, construction products and building design documentation and organizes state supervision and construction supervision. It also provides the requirements for construction works of different types, for the building and its use and for the people building them, in so far as this is not regulated by other Acts (67). The Building Act does not refer to environmental impact assessment, and the requirements stipulated by the Act do not sufficiently cover the need for guaranteeing that buildings are accessible to people with physical impairments.

Soft law

The term soft law refers to quasi-legal instruments that do not have any legally binding status and are “weaker” than traditional law (hard law). The first draft of the NEHAP was presented in late 1997. Five working groups reviewed and amended the plan. The government finally approved the NEHAP in 1999 (95).

The NEHAP was the first plan in Estonia to summarize the environmental risk factors to health. The actions formulated were based on assessing the exposure of the population to hazardous environmental factors and on assessing environment and health risk and setting priorities for action. The NEHAP incorporated action as well as health-related tasks that were part of various other action plans from ministries, organizations, local governments and others, giving them a new content, meaning and evaluation from the standpoint of protecting public health. The NEHAP covered the areas of environment and health that were not included either in the Environmental Strategy (adopted by the Parliament in 1997) or the National Environmental Action Plan (approved by the government on 26 May 1998). The NEHAP was revised in 2002.

Currently Estonia has no NEHAP and no children’s environment and health action plan. Children’s health is covered by other strategies (National Road Safety Programme 2003–2015 and a pillar on children in the new National Health Plan 2009–2020). The Environmental Strategy 2030 covers other activities based on the priorities set by the four WHO regional priority goals. No intersectoral committee or forum is in place in Estonia for implementing the commitments related to the Fourth Ministerial Conference on Environment and Health in Budapest in 2004.

Although the NEHAP and children’s environment and health action plan are fully accepted in the country, the practical implementation of the NEHAP at the national level was difficult and not always very efficient. The major problems encountered include: the lack of concrete action and responsibilities across all involved sectors and the lack of available funds for implementing it. No ministry involved

allocated funds to the NEHAP activities. Further, the large number of formulated activities was felt to be difficult to accomplish.

Economics and funding

Policies and strategies designed to address environment and health conditions should always be supported by the necessary resources or an institutional framework that will ensure that these resources can be raised.

Lack of funds is one of the biggest challenges and problems in Estonia's environment and health sector.

State funds for disease prevention activities and programmes are specifically rare. Many different sources fund disease prevention activities at the county and municipal levels: the Ministry of Social Affairs, Estonian Health Insurance Fund, Ministry of the Interior, foundations and social funds. These multiple donors ensure the implementation of several activities, but this often means that the donors choose which activities will be implemented.

The lack of funds creates difficulty in developing and sustaining effective databases necessary for assessing and monitoring environment and health priorities. For example, due to the lack of available funds, there is still no comprehensive database on water quality.

Financial support in the environment sector seems to be more institutionalized. The state budget funds the national environmental programme. Estonian environment investment funds finance environmental projects when the state budget is not sufficient (funds come from environmental charges and are then distributed for environment projects if the state money is not sufficient).

NGO activities in environmental management, protection, capacity-building and research are mainly financed by international funding programmes (EU Leonardo da Vinci programme, Nordic Council of Ministers, EU INTERREG, Deutsches Bundesstiftung Umwelt DBU

and EU LIFE programme), Kaunas Technical University and Poland (ECONET) either as leading institution or as partners.

The economic instruments used in environmental policies are restricted to tax differentiation for industrial enterprises based on emissions. Specific acts (such as the Ambient Air Act) regulate tax regulations and penalties related to pollution levels. Several incentives are in place for encouraging environmental investment through tax and value-added tax allowances, investment grants and the substitution of pollution charges.

The transport sector focuses on taxing engine power rather than on the emissions produced. Initial attempts have been made to eliminate parking fees for hybrid cars. By the end of 2009, new taxation policies for transport are to be proposed to the government.

Public transport policies have not changed in recent years, and public transport has always been affordable. Nevertheless, public transport is becoming less attractive to providers while more and more connections are needed as single-family houses are developed in suburban areas. Due to the economic development of the country, cars have more and more become an economic symbol and the population is not willing to return to public transport.

According to the Act on the Use of Revenue Accruing from Exploitation of the Environment adopted by the Parliament in 1999, all the funds collected should be transferred to the state budget and money should be spent for environmental protection and preserving the state of the environment.

In summary, the health costs of environmental pollution are not sufficiently integrated into policy-making, and the preventive approach towards the environmental burden of disease needs to be strengthened. Economic analysis has an important contribution to make throughout health and environmental decision-making. The example of physical activity shows that there is no support for the population to attend sports clubs or classes to be physically active. Sports clubs seem to be very expensive. The effect of projects is one of the strongest arguments for follow-up funding and activities, but

the evaluation mechanism for assessing the effects of the projects is not clear. The adoption of tax incentives for the use of environmentally friendly means of transport and fuel should be developed further.

The aim of the economic instruments as direct tools for implementing the economic policies to change environmental behaviour in Estonia is somewhat unclear. Due to the very limited capacity for economic analysis, in particular in the Ministry of the Environment, the monitoring of the effects of the instruments is limited. The setting of charges and taxes appears to have been based more on “presumed affordability” by enterprises and public consumers than on a minimum or maximum percentage of income.

5 Intersectoral collaboration

Conclusions

- Intersectorality in developing national legislation and regulations is a well-institutionalized process in Estonia.
- Several well-functioning intersectoral committees have been set up to manage ongoing policy processes.
- Intersectoral cooperation seems to be more efficient at the county level.
- The cooperation with NGOs is not systematic in the health sector or in the environment sector.
- Many of the reviewed institutions have extensive and well-functioning cooperation at the international level.

Recommendations

- The responsibility, accountability and representation of the sectors in environment and health policy-making need to be better streamlined.
- NGOs should be systematically and regularly included in the process of developing policy.

The health status of the population is largely determined by environmental factors affecting risk exposure, lifestyles and behaviour. Health policy should therefore aim at interacting with policies and decision-making in sectors other than health. The importance of intersectoral cooperation in developing effective policy responses to today's public health challenges has repeatedly been recognized by decision-makers of national governments of the EU and the whole WHO European Region and recently in the Tallinn Charter: Health Systems for Health and Wealth (1).

Intersectoral collaboration takes place and has to be ensured at different levels of policy-making: in the drafting of national legislation, policies and strategies, in the regulatory process through shared monitoring and evaluation process and approaches and in

implementing preventive activities. This applies to the various environment and health issues and priorities.

Intersectorality in developing national legislation and regulations collectively is an institutionalized process in Estonia.⁵ Many strategies have been developed that can be seen as a major step forward in tackling the root causes of ill health and addressing the principal health scourges Estonia faces. An important feature of these strategies is their inclusive, multisectoral, multi-stakeholder approach. The governing or overseeing bodies of the strategies have broad representation, as outlined below.

All government regulations, policies and programmes have to go through an intersectoral consultation process before being sent for approval to the government. Representatives of all ministries have to approve the draft or make comments as appropriate. In the example of the Transport Development Plan 2006–2013, the Plan should be checked by the Ministry of the Environment, which has to make sure that this plan incorporates the major principles of the Environmental Strategy 2030, including health.

The development of intersectoral strategies has been an important part of public health reform in recent years. The leading role of the Ministry of Social Affairs and its understanding of its own mission in public health within the Public Health Department is essential in the continued development of this field.

Several intersectoral committees have been set up to steer, monitor and implement ongoing policy processes.

A working group on environment and health was established to draft the environment and health chapter of the National Health Plan. The working group comprised representatives of the Health Protection Agency, Ministry of Agriculture, Ministry of the Environment,

⁵ The source of most of the information in this section is *Public health in Estonia. An analysis of public health operations, services and activities (43)*.

Ministry of Economic Affairs and Communications, Ministry of the Interior and others.

At the same time, a multisectoral drafting group also drafted the activities formulated to fulfil the commitments on environment and health set by the Environmental Strategy 2030. These groups do not seem to be the same.

The NEHAP committee established in 2003 has not been re-established since. Despite the broad acceptance of the NEHAP and children's environment and health action plan and its priorities in the country, the practical implementation of the NEHAP at the national level was felt to be difficult and not always very efficient. The major problems are the lack of concrete action and responsibility across all involved sectors and the lack of available funds for implementing it.

At the umbrella level, the Ministry of Social Affairs has established a multisectoral committee for public health that is in charge of implementing a framework plan for the various authorities in public health. In health protection, a multisectoral high-level committee is dedicated to planning and coordinating for a potential influenza pandemic.

The national health strategies have been devised to ensure substantial intersectoral cooperation. There are examples of various strategies in the past years. For example, the government created a high-level multisectoral HIV/AIDS Committee as an advisory body to the government to centrally coordinate the implementation of the new HIV/AIDS strategy (23). The Committee includes various stakeholder representatives: the representatives of all the ministries that need to plan activities in their field (Ministry of Social Affairs, Ministry of Education and Research, Ministry of Justice, Ministry of Defence and Ministry of the Interior); the representatives of municipalities and counties; Parliament (the Social Affairs Committee); the Office of the Prime Minister; the representatives of the four thematic working groups that submit annual plans to the committee; people living with

HIV; representatives of NGOs; and a representative of the union of youth organizations.⁶

An additional example is the commission that supervises the National Strategy for Prevention of Cardiovascular Diseases 2005–2020, which includes various sectors (such as agriculture, culture and education) and links the strategy aims with clear action plans within each sector and reports. A recent evaluation nevertheless highlights areas for improvement: increasing the leadership role and including more stakeholders from the private and voluntary sectors (74).

In chemical safety, the Ministry of Social Affairs has been appointed the coordinating institution of the Chemical Safety Committee. The Chemicals Act does not stipulate a coordinating function by the Ministry of Social Affairs, but the institutions involved have agreed to this. The coordinating function mainly comprises ensuring the flow of communication between the involved sectors.

In spring 2006, the working group of occupational health specialists began devising a new occupational health development plan for 2008–2012. The occupational health development plan for 2008–2012 was due to be completed during 2008 by the group of occupational health and safety specialists from the public and private sectors. The work was being undertaken within the context and provision of the EU strategy (96).

Other sectors have also set up intersectoral committees and steering bodies relevant to environment and health. Efforts are currently being made to encourage multisectoral cooperation in preventing road crashes. The Governmental Traffic Commission under the Ministry of Economic Affairs and Communications consists of representatives of various ministries and institutions.

In drafting and enforcing legislation, the Ministry of Social Affairs shares activities with the Ministry of the Environment, but this is

⁶ Until late 2007, a representative of the Global Fund also represented the country coordination mechanism to build links with the Global Fund in the period 2003–2007.

mostly done at the level of the inspectorates rather than ministries. For example, while the Health Protection Inspectorate's county offices assess the safety of drinking-water and check the functioning of the monitoring system and compliance with requirements, the Ministry of the Environment issues the licences for "special use of water". Before issuing a licence for "special use of water", the county office of the Ministry of the Environment checks the site of the water source, including its geological and hydrogeological characteristics; the nature of the pumping equipment and procedures; and the composition and safety of the water to be abstracted. The licence specifies the name and location of the water source. It also requires the owner to monitor the quality and safety of the water, and the results of the monitoring must be forwarded to the enforcement agency.

Nevertheless, although inspectorates cooperate well at the practical level, the coordination between the health and the environment sectors is institutionally weak.

Several other developments require a multisectoral and stakeholder approach to policy enforcement. In occupational health, the employer is responsible for implementing policy and regulations. This is an area of stewardship and oversight that has changed considerably in recent years. The 1999 Occupational Health and Safety Act (97) stipulates that all employers are obligated to make the working environment safe, taking into consideration specific hazards (such as working with carcinogens or in a noisy environment).

The Labour Inspectorate collaborates closely with the Health Care Board, Technical Surveillance Authority and Rescue Board. The Health Care Board is responsible for quality control in the occupational health care service, and the Technical Surveillance Authority is responsible for such important areas of occupational safety as machinery, electrical works and explosive substances. Together with the Rescue Board, major accident hazards involving dangerous substances are controlled.

The Health Protection Inspectorate has also made agreements with the Veterinary and Food Board, Military Services, State Agency of Medicine and, for the purpose of sentinel surveillance, additional

agreements with health care providers (general practitioners and hospitals).

The Health Protection Inspectorate cooperates closely with the Health Care Board, State Agency of Medicines, Consumer Protection Board, Tax and Customs Board, Veterinary and Food Board and Technical Surveillance Authority on goods that directly or indirectly affect health. The cooperation includes exchange of information on market surveillance results and dangerous products. There are also organized joint market surveillance activities on identified product groups.

Finally, intersectoral collaboration takes place in joint prevention programmes. The Estonian Radiation Protection Centre is cooperating with various sectors in radiation protection. Yearly emergency exercises are carried out with representatives of various sectors. Each year a different sector is responsible for this. The Estonian Radiation Protection Centre is preparing a publication on radon and radium in drinking-water in cooperation with the Ministry of Social Affairs. If required, the Health Protection Inspectorate and the Radiation Centre and the Environmental Inspectorate also conduct a joint spot visit.

As an example of intersectoral cooperation, in food safety, the Ministry of Agriculture is responsible for the safety of production and the Ministry of Social Affairs for nutrition. This is a largely positive example of collaboration, and the Ministry of Social Affairs and Ministry of Agriculture cooperate well on obesity and energy-dense food. Consumer education has been used to encourage demand-led changes into food markets, and incentives have been established for producing healthy products.

In summary, in Estonia many different working groups have been established to improve and enhance cooperation within the sectors. However, the responsibility and representation of the various sectors needs to be streamlined better. Many working groups, committees etc. could serve different purposes, enabling the overload of work of many of the civil servants to be reduced. Estonia is a small country and therefore does not have enough human resources to equally cover all these working groups.

In general terms, intersectoral cooperation seems to be more efficient at the county level, where the organization of the work is predominantly based on closer personal contacts between the institutions.

Official institutions work together with NGOs, but their cooperation is not systematic. The involvement of NGOs is particularly developed in chemical safety. The Baltic Environment Forum has been involved in developing the strategy on chemical safety. In addition, this NGO has organized training courses on waste management and air pollution on behalf of the Ministry of the Environment. Although they are involved in awareness-raising and training exercises, their participation is not systematic.

Many of the reviewed institutions have extensive international cooperation, especially between the Baltic countries and with the Scandinavian countries. For example, twice a year a meeting is organized with Nordic and Baltic countries and a seminar for continuing education for the Veterinary and Food Board. The Health Protection Inspectorate is part of an international project on biocide products. The Radiation Protection Centre is a member of a twinning project with Germany for preparing for environmental and chemical emergencies, and the Chemicals Notification Centre is cooperating with institutions in Italy to get training on environmental impact assessment. National environmental impact assessment companies perform assessment for other countries, such as assessing the impact of constructing road infrastructure in Afghanistan and Azerbaijan. NGOs also have quite advanced international cooperation.

6 Tools for action

Conclusions

- There is some confusion on the responsibility of the Ministry of the Environment and the related county departments for forwarding environmental impact assessment results to the health sector or whether they have to assess the effects on health themselves.
- Data on specific environmental parameters are collected in Estonia, but information needs to be prepared and used for assessing environment and health within the country.
- Despite a government decree emphasizing the obligation of all institutions to make the information available to the public, not all the available data is systematically communicated to the public, resulting in a lack of the public awareness on environmental threats to health.
- There is a lack of indicators assessing the effect of policies in the country.
- The public interest in environment and health effects and the involvement in public initiatives for health promotion are limited.
- Communication flow between public health professionals in the Baltic countries is institutionalized.
- Estonia has no specialized institution for educating or training environmental health professionals.
- In the past the focus was on environment and health and occupational health; the current priority is managing health care systems.
- No mechanism for specialization or continuing professional training in environment and health for existing health care staff has been developed.

Recommendations

- Appropriate regulation should more clearly stipulate the requirements for health impact assessment within environmental impact assessment.
- The number of specialists performing health impact assessment and the quality of the assessment in the public and private sectors need to be increased.

- Incentives should be provided for local authorities to undertake health impact assessment by allocating additional human and financial resources.
- Local health profiles should be used in the local authority policy-making process and in the information used for health impact assessment.
- Health impact assessment in all sectors and all major policy initiatives should be encouraged and streamlined.
- A web site and database on injuries should be created.
- Due the lack of a central registry for injuries in Estonia, injury surveillance should be further developed to better define the burden, causes and effects of injuries, for advocacy and for monitoring and evaluation.
- A designated institution should progressively adopt indicator-based analysis and reporting following the ENHIS methods; the Ministry of Social Affairs needs more ownership of the ENHIS in Estonia.
- Efforts should be made to have better partnerships between institutions related to environment and health (and their mass-media people) with journalists and other mass-media employees.
- The knowledge and understanding among general journalists on environment and health that they can communicate reliably to the general population should be improved.
- The educational curricula of the health sector need to be changed to integrate environment and health modules and to improve the quantity and the quality of trained environment and health professionals.

Environmental impact assessment and health impact assessment

The Environmental Impact Assessment and Environmental Management System Act (98) entered into force in 2005. On 19 June 2008, the Parliament adopted the Act Amending the Environmental Impact Assessment and Environmental Management System Act. The changes were necessary to eliminate shortcomings that had become apparent while implementing the Act and to bring the Act into

compliance with EU law. The most important changes and additions were made in the list of activities likely to have significant effects on the environment that therefore require assessment. For example, peat extraction by mechanical means has been included on the list. The novel term “preliminary assessment” was introduced. A preliminary assessment determines the need for launching full environmental impact assessment, aiming to assess whether the intended activity is likely to result in significant environmental effects and how they would be expressed. The introduction of the preliminary assessment procedure brings the law finally into compliance with EU legislation. Other amendments specify provisions regulating licences for environmental impact assessment and the competence of supervisory authorities in assessing effects on the environment. Additional provisions are introduced for disclosing environmental impact assessment programmes and for the requirements concerning environmental impact assessment reports. The amendments entered into force on 1 August 2008 (99).

The Act provides the legal basis and procedures for environmental impact assessment. The objectives of environmental impact assessment are to provide information to decision-makers on the likely environmental effects of the proposed activity and its reasonable alternatives and the potential to prevent or minimize negative environmental effects. The Act also stipulates requirements for strategic environmental assessment to contribute to integrating environmental considerations into the preparation and adoption of strategic planning documents. Environmental effects are any potential direct or indirect effects of activities on human health and well-being, the environment, cultural heritage or property.

The environmental effects resulting from the implementation of a strategic planning document and the area likely to be affected must be taken into account based on the risks to human health or the environment, including the probability of accidents.

Environmental impact assessment is mandatory for any development plans in oil processing, energy, transport, telecommunication, waste and water management, industry, forestry, agriculture, fisheries, tourism and land use.

Environmental impact assessment reports determine the potential environmental effects of the proposed activity and its actual alternatives, including the indirect impact and combined effects with other activities, effects on the state of the environment, including the health, well-being and property of people, plants, animals, soil, landscape, quality of air and water, climate, protected natural objects and the cultural heritage and the interaction of the factors specified here (98).

The people or companies proposing an activity are responsible for environmental impact assessment. The developer of the plan must pay for all costs related to environmental impact assessment. External environmental impact assessment experts are contracted to perform the assessment. The Ministry of the Environment is the ultimate instance supervising the environmental impact assessment and approving or rejecting the plan. The Ministry is directly responsible when the potential effects of the plan may extend to another country, transboundary body of water or the sea. In other cases, the environmental department of the county supervises the environmental impact assessment. Its main function is to verify the correctness of the environmental impact assessment, to verify the compliance of the environmental impact assessment with the requirements set by law, inform the public about the plan and the results, verify compliance with the results of the assessment and evaluate the environmental impact assessment afterwards. The Minister of the Environment issues licences for companies and experts performing environmental impact assessment. The accreditation requires higher education in environmental protection, life sciences, natural sciences, agriculture, forestry, fisheries, health or technical fields and construction. Experience in environmental protection is required as well as training in environmental impact assessment for at least 40 hours and successful completion of an examination and professional experience in previous assessments.

The extended responsibility of including health in environmental impact assessment is still not sufficiently enforced. This review found some confusion about the requirements for including health in environmental impact assessment and of having the health sector

evaluating the environmental impact assessment. The Health Protection Inspectorate reviews the results of assessment regarding noise and comments on waste, water and electromagnetic fields. At the same time, the information obtained at the county level suggested that local governments send risk assessments for land planning and urban planning to the Health Protection Inspectorate for comments; nevertheless, there was no certainty about whether this is mandated by law. On the other hand, at the same administrative level, environmental impact assessment was not defined as requiring comments or approval by the health sector.

In 2006, WHO and the Ministry of Social Affairs held a workshop on health impact assessment for introducing a broad group of professionals to the objectives and methods of health impact assessment (100). Although common understanding about the strategy for implementing health impact assessment in Estonia was gained, there is not enough expertise to implement the legislative regulations in a reliable and efficient manner based on recognized methods of health risk assessment or health impact assessment. In 2006, there were several barriers to implementing health impact assessment at the local level. These included a lack of political knowledge and understanding about health and health impact assessment and limited data being available at the municipal level to support the analysis required during health impact assessment.

In conclusion, legislation needs to be changed to strengthen health impact procedures within environmental impact assessment. The methods for including health impact assessment in environmental impact assessment reports need to be strengthened, the number of specialists in health impact assessment need to be increased and the development of training, education and knowledge in this field needs to be strengthened further.

Monitoring

The monitoring of living and working environments and the inspection, enforcement and monitoring of goods are key areas of health protection and basic health services.

Monitoring of environment and health parameters can be used to indicate the level of compliance with a standard but also to assess trends over time.

Many institutions and sectors monitor environmental hazards to health in Estonia. Monitoring is mainly performed by the national and local health protection inspectorates and environmental inspectorates but also by specialized institutes or agencies.

The Ministry of the Environment is responsible for most environmental monitoring, which is regulated by the national monitoring programme organized along 12 subprogrammes:

- monitoring of meteorological parameters;
- monitoring of ambient air quality, including bioindicative monitoring of heavy metals in moss and the concentration of pollutants in precipitation;
- monitoring of groundwater quality in different areas;
- monitoring the status of inland water bodies: hydrobiological and hydrochemical parameters in rivers and lakes, coastal processes and remote sensing;
- monitoring of the coastal sea: water quality, biota, coastal processes and remote sensing;
- monitoring of biodiversity and landscapes: protected and endangered species and habitats, agricultural landscapes, coastal landscapes and remote sensing;
- monitoring of forest resources: forest health and growth parameters;
- integrated monitoring: air quality, precipitation, soil quality and biodiversity as a complex;
- soil monitoring: soil fertility and pesticides;
- seismological survey;
- radiation survey; and
- supporting activities: coordination of the programme, financial reserve and data management.

The state budget funds the national environmental programme. The Ministry of the Environment contracts with different institutions

providing the data (mainly institutes and scientists), and national laboratories analyse the data. The laboratories are accredited following international standards and methods.⁷

The Estonian Radiation Centre carries out radiation surveys; the Estonian Meteorological and Hydrological Institute is responsible for meteorological and hydrological monitoring. Until 2008, the Estonian Nature Protection Centre coordinated biodiversity monitoring (to be reorganized in 2009). These institutions are obligated to conduct environmental monitoring in accordance with their official statutes and receive funding directly from the state budget.

The Estonian Environment Information Centre manages the reports and data of the national environmental monitoring programme. All reports and data files are available on the Internet. Data are stored in the database of the Environmental Registry; data series are made accessible for specialists and wider public via the Internet portal of the Registry. Every fifth year an overview of the results is published on paper (*IOI*), but electronic reviews are published on the Internet and distributed for some target groups (such as environment officials in municipalities) on CDs every year.

Beside the Ministry of the Environment, the environment is also monitored at the enterprise level, either voluntarily or mandatorily, determined by the environmental permits of the enterprise (self-monitoring and enterprise monitoring, respectively) and at the municipal level. A new Environment Monitoring Act (78) is being prepared. The aim of the new Act is to ensure the commitments and the share of responsibilities by and among different stakeholders, private enterprises, local municipalities and county administrations. Environmental data at the local level have mainly been based on the information provided by enterprises; there is still no systematic way of gathering information at the local level and transmitting it to the Estonian Environment Information Centre (62). The new Act will ensure that all municipalities have an adequate programme for

⁷ Although most of the analysis can be done in laboratories within the country, some analysis has to be outsourced to foreign laboratories.

monitoring locally and that all data are transferred to the Estonian Environment Information Centre.

The Health Information and Analysis Department of the Ministry of Social Affairs routinely analyses health indicators; it has the main responsibility of coordinating the collection of the health statistics from health care providers. There are still many health registries that will be unified once the e-health system is put in place.

The following overview of monitoring responsibilities, standards and management is organized along the four regional priority goals.

Water and sanitation

The Health Protection Inspectorate regularly monitors the quality of drinking-water and bathing water. Estonia has 34 coastal beaches and 38 inland beaches. Water monitoring follows the requirements established by EU regulations but has additional stricter regulations. The Health Protection Inspectorate monitors the water quality in public places, but suppliers are responsible for the water in private households. The Inspectorate nevertheless checks the monitoring of the suppliers. The Health Protection Inspectorate also organizes the mapping of radiation in drinking-water. The Radiation Protection Centre monitors radiation in drinking-water.

In 2005, no inland beaches failed to meet quality requirements, but eight coastal beaches did not meet the requirements. In 2006, all inland beaches complied with quality requirements, and only three coastal beaches did not comply with requirements.

The Ministry of the Environment is responsible for monitoring coastal waters, rivers, lakes and groundwater under the state monitoring programme. The Ministry of the Environment reports to the European Commission.

In drafting and enforcing legislation, the Ministry of Social Affairs therefore shares activities with the Ministry of the Environment. For example, the Health Protection Inspectorate's county offices evaluate the safety of drinking-water and check the functioning of the

monitoring system and compliance with requirements, and the Ministry of the Environment issues licences for “special use of water”. Before issuing a licence for “special use of water”, the county office of the Ministry of the Environment checks the site of the water source, including its geological and hydrogeological characteristics; the nature of the pumping equipment and procedures; and the composition and safety of the water to be abstracted. The licence specifies the name and location of the water source. It also requires the proprietor to monitor the quality and safety of the water, and the results of the monitoring must be forwarded to the enforcement agency (43).

The results of the investigations are available through the Health Protection Inspectorate web site and the mass media and on the web page of the Estonian Environment Information Centre. Nevertheless, from the public perspective, not all data seem to be available, and the data available are difficult to use. The parameters monitored in water are felt to be insufficient, and the strategic view on what should be monitored needs to be developed further.

Injuries

In Estonia, various institutions collect data on injuries and deaths from road crashes and other unintentional injuries. The police, Estonian Traffic Insurance Fund (102) and Estonian Road Administration (103) gather information on road crashes. The Ministry of Social Affairs also seems to collect some data through hospitals (104). The data collected are disaggregated by age and sex but do not yet allow for analysing the cause of the accidents. The collection of data on unintentional injuries tends to focus on road traffic injuries.

There is no central registry for children’s accidents, and there is little or no coordination among the various services.

The Ministry of Social Affairs has mentioned the development of a central registry on injuries as a priority to overcome the existing gap of a comprehensive database on disability and death due to injuries. The definition of indicators that need to be monitored must be especially emphasized. For this purpose, an intersectoral committee was set up, and the first meeting took place in March 2008. The

Ministry of Social Affairs had already defined preventing injury and violence as a priority in 2004. Injury surveillance needs to be developed and strengthened, and an injury database needs to be established within the health sector.

The Labour Inspectorate collects data on occupational accidents and forwards them to Statistics Estonia (105). Nevertheless, occupational accidents are considered to be underestimated; employees are often afraid to report accidents and injuries, as they are afraid to lose their job.

Air quality

Air quality monitoring in the EU follows the requirements laid down in the Air Quality Framework Directive 96/62/EC and its corresponding directives 1999/30/EC, 2000/69/EC, 2002/3/EC and 2004/107/EC (84). In Estonia, air pollution monitoring takes place pursuant to the Ambient Air Protection Act (106), which together with specific regulations covers all requirements laid down in the EU directives mentioned above. The main purpose of the Act is to maintain the quality of the ambient air in regions with good air quality and to improve it in areas in which air quality does not meet the established requirements.

The Estonian Environment Research Centre (62) under the Ministry of the Environment is responsible for monitoring air quality. The national air quality monitoring network comprises seven stationary stations. Besides the national air quality monitoring in stationary stations, mobile stations are used to assess air quality in specific areas or problems of special interest. The major contractors have been local governments and companies. The mobile stations measure the following pollutants: sulfur dioxide, nitrogen oxides, volatile organic compounds, carbon monoxide, hydrogen sulfide, ozone, ammonia, particulate matter, heavy metals, polycyclic aromatic hydrocarbons and meteorological parameters. Although PM₁₀ has been monitored for a long time, PM_{2.5} started being monitored recently according to the EU directive.

Quarterly air quality reports, provided with relevant measurement results and comments, are accessible via the Ministry of the Environment, Estonian Environmental Information Centre, county environmental departments and the Internet.

The cities of Tallinn and Pärnu have set up instant warning systems for air quality in the city centres. However, displays that had been placed in Tallinn showing the concentration of air pollution have been removed. Lack of interest from the population is the main reason mentioned for this. Municipalities are initiating air quality projects, commissioning scientists to prepare reports about air quality in cities. Private companies also conduct air pollution modelling and measurements in environmental impact assessment.

The Health Protection Inspectorate is in charge of assessing indoor air quality. The Inspectorate measures the indoor air in public places (schools and kindergarten) and in random samples. Estonia is focusing on improving indoor air quality in schools, particularly damp and radon. The Institute of Health Protection is monitoring environmental conditions in schools annually, and especially indoor air quality. Estonia has its own concept of school health, and the working team includes pupils' participation. The main indoor air pollutant is tobacco smoke (107).

Chemical, physical and biological agents and occupational health

Food safety

According to the Food Act (108), the Veterinary and Food Board supervises food safety and quality (including the materials and objects, specified in Article 1 (12) of the Regulation of the European Parliament and European Council No. 1935/2004/EC). The planning of activities is based on the type of food-handling operators (such as operators involved in transporting food, operators storing food, operators involved in manufacturing food and retail operators), food groups (such as dairy products, honey and egg products), food types (such as innovated food, genetically modified food, food additives,

additives and specialty food) and type of research (such as contaminants, residues and microorganisms in food). Official monitoring programmes represent sampling programmes that aim to monitor the situation in food safety and quality and to detect food that is dangerous for human health. Monitoring programmes are drawn up to match the Estonian and European legal requirements. Animals, food raw material and food are sampled in the framework of various programmes to ensure safety within the whole food chain.

In accordance with Council Directive 96/23/EC of 29 April 1996 on measures to monitor certain substances and residues thereof in live animals and animal products (109), residues of veterinary drugs, heavy metals and pesticides are analysed. Polychlorinated biphenyls, organic phosphorus, cadmium, lead, radionuclides and dioxins are analysed in food of animal origin.

The Plant Production Inspectorate (including the Plant Protection Department) is also in charge of ensuring the quality of plant food. Plant variety, plant health, plant protection, horticultural products, organic agriculture, animal feed, fertilizers and seeds are the main areas of control of the Inspectorate. The Inspectorate is in charge of checking whether companies have registered the used pesticides and are storing them correctly. The main regulatory law is the Plant Protection Act (110).

County departments of the Health Protection Inspectorate are responsible for detecting and investigating outbreaks of communicable diseases, and each has a designated outbreak investigation team including epidemiologists and environmental health specialists. Investigation procedures include epidemiological investigation, laboratory diagnostics and, if suitable, legal action. In case of a foodborne disease outbreak, the Health Protection Inspectorate investigation team collaborates with food safety specialists of the Veterinary and Food Board local service according to the approved guidelines on bilateral investigation of foodborne disease. The Veterinary and Food Board and the Health Protection Inspectorate share zoonosis monitoring data on a monthly basis at the local level, but if the need arises there is daily or immediate contact (110).

The monitoring data collected by the Veterinary and Food Board are mainly used for setting the priorities for the next working year.

Occupational health

Occupational health is assessed through occupational diseases, work-related diseases and occupational health statistics, which are analysed annually. Occupational health service indicators are monitored regularly. Employers are responsible for assessing their occupational hazards and sending their employees for health checks based on this risk assessment.

The risk assessment of the workplace can either be performed by the company itself according to a checklist or by employing a specialized company.

The Labour Inspectorate is responsible for supervising employers' compliance with existing health and safety regulations. Estonia has 50 000 enterprises, and 5000 inspections are carried out each year. The Labour Inspectorate controls whether employers have accurate risk assessments, whether the employees get the right instructions for dealing with dangerous substances and machinery and whether all the necessary health checks have been carried out and measures implemented (such as requirements set by the Chemicals Safety Act, but also climate, noise, ventilation and social conditions).

If the required standards are not complied with, the inspectors are in charge of following up and ensuring that the employer is implementing adaptations. The labour inspectors are not entitled to perform measurements. The Health Protection Inspectorate supports them on request.

According to experts' opinion, the reported number of workplace accidents is underestimated. Occupational accidents are difficult to register, as many employees do not want to have an occupational accident or disease registered since they are afraid of losing their employment. In addition, occupational diseases are difficult to diagnose because linking the occupational settings to the diseases is

difficult. In 2007, 3600 occupational accidents were recorded and 117 employees were diagnosed with musculoskeletal problems due to unhealthy and unsafe working conditions. In 2006, there were 29 accidents within construction and 20–30 deaths. The priority is preventing deaths from accidents, but this is difficult for diseases as these are not known. Family doctors do not ask about occupational diseases.

Asbestos is an example of the difficult management and monitoring of occupational health risks. Workers who deal with asbestos have to be registered, but fulfilling this is difficult as small companies do not comply. Workers dealing with asbestos often do not know the risks and are not trained. A random population telephone survey conducted in the introductory part of an asbestos twinning project showed that only 68% of the population knew that asbestos was dangerous.

Trained personnel are needed in enterprises to train and inform employees about risks and dangers, and companies should have working environment specialists. The employer could be a specialist if he or she receives training. The Tallinn University of Technology arranges an 84-hour course for working environmental specialists. This course is divided into two semesters (several evenings per week), but participation is voluntary and not free of charge. All companies are obligated to send their employees to an occupational health physician if they are exposed to risk factors.

Children's work is regulated. Permission is required from the parents and the Labour Inspectorate for children younger than 15 years to work.

Monitoring of goods

Risk assessment of consumer goods is carried out according to national legislation based on the General Product Safety Directive (111) and European chemical legislation (112). Risk assessment on toys is carried out according to national legislation based on a directive on the safety of toys (113) and harmonized standards; risk assessment on cosmetic products is carried out according to national legislation based on the Cosmetics Directive (114). All activities are

based on market surveillance procedures, including laboratory testing. RAPEX, the EU rapid alert system for dangerous consumer products, is used in accordance with the General Product Safety Directive (111). All mentioned EU legislation is transposed to national legislation (the Product and Service Safety Act (115), the Chemicals Act and national regulations) (43).

Noise

The Health Protection Inspectorate organizes noise mapping. Noise maps, however, are only available for Tallinn and major roads with more than 6 million vehicles passing per year. Companies specializing in environmental noise measurement have prepared the measurements and the map, and the Tallinn City Government and National Road Administration have commissioned noise mapping. The Health Protection Inspectorate has finalized and approved the current map of major roads. The noise map of Tallinn has not been finalized yet.

The Health Protection Inspectorate is responsible for inspecting, controlling and communicating noise levels to the public. The Ministry of the Environment is responsible to the European Commission.

There is no noise mapping for trains, as the frequency of train passages per year is below the number requiring noise maps (60 000 passages per year).

Municipalities take some precautions against noise. The Ministry of the Environment double-checks permits, prepares reports on enterprises and works with local governments.

Radiation

The Radiation Protection Centre monitors radiation levels for issuing licences. The Radiation Protection Centre visits all sites before recommending that the Ministry of the Environment issue the licence. After the licence is issued, the Radiation Protection Centre checks the compliance of the limit values in cooperation with the Environmental

Inspectorate. The monitoring programme comprises 400 samples analysed per year and 10 automatic monitoring stations (all dose rates come from automatic stations).

Summary

In conclusion, data on specific environmental parameters are collected, but information needs to be prepared and used for assessing environment and health within Estonia. In addition, the available data are not systematically communicated to the public, resulting in a lack of public awareness on the environmental threats to health.

Indicators are lacking to assess policies, and many environment and health data are collected but they are not integrated. In early 2008, the Health Information and Analysis Department of the Ministry of Social Affairs decided which indicators should be used for monitoring public health development (environment and health, infectious diseases, children, social cohesion, health behaviour and health care). The planned e-health system will also attempt to connect the information about people's health with their working environments.

There has been little involvement at the national level in ENHIS, except for the national implementation of the indicators related to water and sanitation. As most of the data used in ENHIS exist within Estonia, the data sources should be clearly identified, and a designated institution should progressively extend the regular indicator-based analysis and reporting following ENHIS methods. An example could be the Health Information and Analysis Department of the Ministry of Social Affairs. This, in turn, will further advance the implementation of the indicator system in Estonia.

The involvement of many institutes requires close collaboration. Data are not always and systematically transferred and shared among the parties concerned.

Finally, a variety of sources threaten the effective stewardship of public health. Some institutional arrangements and developments need to be carried out before their appropriateness and effectiveness can be fully assessed. This applies to food safety monitoring, for which

responsibility has recently passed from the Ministry of Social Affairs to the Ministry of Agriculture, with a potential conflict of interest from a ministry whose primary constituency comprises food producers, although no evidence so far indicates that the Ministry of Agriculture has performed its tasks inappropriately or incompetently.

Communication

Public participation is a key element in environment and health policy-setting and can only be ensured if adequate is provided. The freedom and availability of information are basic societal rights. Anyone in Estonia has the right to ask for and gain access to information on the environment and health status of the population. Since June 2008, all government institutions have been obligated to make information available electronically. The population is informed when threshold values of monitored environment parameters are exceeded on a long-term basis. However, displays that had been placed in Tallinn showing the concentration of air pollutants have been removed. Lack of interest among the population is the main reason mentioned for this.

Data on environmental conditions are made available to the public through the Estonian Environment Information Centre, which is in charge of the environment registry and is responsible for posting information on the web. The Estonian Environment Information Centre has one department dealing with communication and promotion. Information about water quality monitored by the suppliers and all results of the monitoring performed by the Radiation Protection Centre are published on the web. Further, the results of environmental impact assessment are made publicly available.

The content of environmental impact assessment is published twice (the programme and the environmental impact assessment presentation are both published in a paper version and electronically by the local community in charge).

The public interest in environment and health status is still limited. Knowledge on many major environmental hazards is still lacking. The interest of the population is either focused on environmental changes

and emergencies or on health conditions but not on how the environment affects health. Nevertheless, the low public participation and interest applies not only to environment and health but is a general phenomenon related to the history of the country.⁸

Awareness depends strongly on social status. The lack of interest and pressure by civil society on environment and health issues has increased the difficulty of institutional recognition of environment and health and the chemical safety strategies and related activities at the ministry level.

At the county level, one information officer is in charge of environmental education in schools and kindergartens. Nevertheless, awareness-raising needs to increase at the national level. NGOs are supporting the information distribution through training and seminars, such as on persistent organic pollutants.

Although the information level on environment and health is rather low, the population uses practical information mechanisms. The Poison Information Centre (56) started operating in October 2008. In addition, the Veterinary and Food Board has had a special telephone line since 1 July 2007 to answer public queries. The registered calls are increasing.

Finally, the Health Protection Inspectorate responds to the complaints of the population about possible sources of electromagnetic radiation through a specific telephone number. The results of the monitoring are then published on the web.

Communication has to be ensured between the sectors involved in environment and health policy-making, monitoring etc. Within each institution and its national and regional and county branches, the flow of communication seems to be well organized. The regional health inspectorates, for example, regularly communicate the latest monitoring data to the other regional centres via the national

⁸ For example, the Eurobarometer 2008 shows that only 58% of Estonians consider climate change one of the most serious global problems, versus a 62% average in the EU27 and 92% of Cyprus' population (115).

institution. The health protection inspectorate sends its information to municipalities. Nevertheless, communication between institutions is not always straightforward.

For example, prevention campaign materials and leaflets prepared by the National Institute for Health Development do not often reach family doctors, as they are not automatically sent to practising practitioners but mainly distributed in institutions.

The Ministry of the Environment prepared a booklet to address general environment risk factors for health and endocrine disruptors but did not consult the health sector. The reasons for this need to be explored further.

On the other hand, there is institutionalized and organized communication flow between professionals in health inspectorates in the Baltic countries. A joint working group of Estonia and the Russian Federation has been set up to ensure the exchange of data between the countries.

In summary, since Estonia is small, communication seems to be good at the personal level. Efforts have to be made to institutionalize communication mechanisms with the public and the awareness of the public of environment and health priorities. Public information and education on environment and health risks will be essential for ensuring successful implementation of environment and health policies. Promoting journalists and the mass media as partners in developing communication strategies could be a useful approach for increasing the visibility of environment and health issues.

Capacity-building

Estonia has no specialized institution for educating or training environmental health professionals. There is an Environmental and Occupational Health Unit within the Department of Public Health of the Faculty of Medicine of the University of Tartu. The Faculty of Medicine addresses students of medicine, dentistry and pharmacy. The teaching staff members of the Unit comprise one environmental technician, a physician, a biologist and an external expert. The

Department has four other units: Epidemiology and Biostatistics, Health Promotion, Health Economics and Health Care Management.

After graduating from the Faculty of Medicine (six years of studies), physicians can choose to specialize (postgraduate specialization available in all medical specialities from three to five years) as occupational health physicians through their residency. Family doctors and other specialists (through their residency programmes), however, are not sufficiently trained in occupational health.

The University of Tartu also offers a two-year Master of Public Health programme covering four areas (one course each year): environment and health, health care management, health promotion and epidemiology. After the programmes were launched in 2000, the focus in the first few years was on environment and health and the management of health care. In the past two years, the students have mostly been enrolled in health promotion and epidemiology training. The postgraduate and graduate master students participating in the public health programme have various backgrounds, not only physicians. Environmental determinants and topics covered by the programme include air quality, food, water, climate and waste, risk assessment tools and environmental impact assessment. Most of the licensed experts in environment impact assessment, however, have a professional background in environmental expertise rather than health expertise. Training in environmental impact assessment is also provided from one private company to another.

In general terms, the interest in environment and health within the medical curriculum but also in the framework of public health studies seems to be rather weak. Current research mostly focuses on outdoor air pollution. The environmental studies units of the faculties of natural and technical sciences of the University of Tartu and other universities do not focus on health. The unit of environmental health emphasizes purely scientific education and not preventive approaches. There is limited content in the curricula for medical students on preventive approaches to public health. As described earlier, there is postgraduate training of specialists in public health, environmental health and epidemiology, but this does not yet provide sufficient

specialists, as the need in the public and private sectors is much greater (43).

No mechanism has been developed for specialization or continuing professional training in environment and health for existing health care personnel. Paediatricians and family doctors (as well as nurses) need systematic training to raise their awareness of children's health and environment issues. Within the mandatory 60 hours training per year for continuing development for family doctors and nurses, this topic is not the first priority, and no special training sessions on environment and health are available.

Educational curricula need to be changed to integrate environment and health modules and to improve the quantity and the quality of trained environment and health professionals. Training courses for senior professionals in environment and health risk factors, principles and management should be developed to overcome the lack of experts in this field. There is no training in toxicology.

The need to strengthen environment and health education applies to the primary and secondary school levels. Estonia promotes education on environment through specific environment action days (forest days, waste management etc.). However, the environmental inspectorates carry out most of these activities. These projects tend to emphasize nature conservation (nature trails, conservation of specific areas and energy conservation) and not the effects of environmental hazards on health. The Ministry of Education does not seem to be highly involved in education campaigns on environmental risks.

7 Assessment of the chemical safety strategies and actions

Conclusions

- The Ministry of Social Affairs has a predominant role in chemical safety.
- A legal framework on chemical safety is in place (Chemicals Act and the Public Health Act), and relevant EU legislation has been transposed into national legislation.
- Chemical safety is approached intersectorally, mainly through the Chemical Safety Committee.
- Chemical safety issues at the international and EU levels are closely followed (Estonia is in the process of joining the OECD).
- Focal points for conventions and agreements have been designated.
- Institutions necessary for chemical safety are being set up (Poison Information Centre and Chemicals Notification Centre).
- Human resources for chemical safety are not sufficient.
- The Chemicals Notification Centre is well established.
- Estonia has good cooperation with Baltic and Nordic countries in chemical safety and has twinning projects with other EU countries, such as Italy.
- There is no formal training in toxicology.
- Data on exposure to chemicals are limited.
- The Chemical Safety Committee under the Ministry of Social Affairs has no legal status.
- The national system for emergency preparedness and response is well established.
- Multisectoral involvement of national authorities is necessary for chemical-related International Health Regulations events.

Recommendations

- Toxicological training and risk assessment need to be strengthened. The Poison Information Centre needs more trained personnel to fulfil minimum requirements and be open 24/7.

- The Emergency Preparedness Act (2000, 2002) specifies the responsibilities of different structures and exchange of information and could serve or assist as an intersectoral or multidisciplinary International Health Regulations–related coordination mechanism.
- The Plan should be reviewed with respect to the International Health Regulations.
- Technical guidance, training of personnel at the national level and simulation exercises on chemical safety response are needed and would be required from WHO.

General management of chemicals

The Ministry of Social Affairs is the main coordinating ministry on environmental health and chemical safety. A Chemical Safety Committee comprising representatives of different sectors has been put in place, and the Ministry of Social Affairs has the coordinating role in agreement with the other ministries.

The Chemical Safety Committee assesses current problems concerning chemical safety in Estonia and makes proposals to government agencies for developing and applying chemical safety strategies.

The Poison Information Centre was established as a unit within the Chemicals Notification Centre under the Ministry of Social Affairs and started functioning in late 2008. It has two staff members: one emergency physician and one emergency nurse. The Centre collaborates closely with Nordic poison centres, especially with Finland, which assisted Estonia in training and provided the data management system. The data management system has subsequently been translated into Estonian and has been steadily updated with products, plants and mushrooms relevant to the Estonian environment. On workdays, the Poison Information Centre answers calls from the public and from specialist physicians, ambulances, rescue centres and the Health Protection Inspectorate. The Poison Information Centre is

currently located in the building of the Ministry of Social Affairs but may be placed in one hospital in Tallinn.

The main acts regulating chemical safety are the Public Health Act (1995), the Plant Protection Act (1994) and the Chemicals Act (1998) and a range of additional regulations, adopted by the government, that regulate the management of hazardous chemicals. The legislation has been transposed in accordance with EU regulations. Although the Ministry of Social Affairs is responsible for most of the provisions of the Chemicals Act, it also involves other relevant ministries. The Chemicals Act includes provisions on good laboratory practices, determining the hazardousness of chemicals and assessing and classifying risks.

Estonia had not prepared a national chemicals management profile, but during the past two years a national chemical safety plan has been prepared. It still needs to be developed further, since preparing the National Health Plan 2009–2020 has been given priority. The public health strategy will make developing an action plan on chemical safety mandatory.

Policy setting and institutional framework

National laws and regulations on chemicals

Classification and labelling

Several government regulations have been adopted on labelling, packaging, classifying, identifying and notifying chemicals. Estonia's regulation on the import and export of certain hazardous substances largely complies with EU regulations. The regulation on the handling of hazardous chemical substances entered into force in July 2001.

The Globally Harmonized System of Classification and Labelling of Chemicals in the context of the EU is progressively being followed up in Estonia.

Occupational health

International Labour Organization Convention 182 on child labour was ratified in 2001, and child labour is not a problem in Estonia. Estonia has ratified all directives and legislation of the EU.

At workplaces, employers have chemical safety cards. Inspectors control workplace cards, how they deal with hazardous chemicals and the availability of personal protective equipment. Inspectors who control chemical factories have a background in toxicological assessment.

In 2007, 117 workers had occupational diseases and there were 3600 occupational accidents. Diseases attributable to chemicals are difficult to identify, including cancer.

Workers dealing with asbestos have to be registered, but small construction companies do not comply with this regulation or are not aware of it.

The Health Care Board organizes the occupational health services. The National Institute for Health Development runs a project on health-promoting workplaces.

Pesticides

The Ministry of Agriculture regulates pesticides. The Plant Protection Department of the Plant Protection Inspectorate under the Ministry of Agriculture authorizes pesticides, organizes their control of marketing and the use and supervision of plant protection equipment. It is also in charge of registering the importers and suppliers (including storing and marketing places) of plant protection products, including the importers and users of very toxic plant protection products.

Regulation No. 177 of the Minister of Agriculture of 15 November 2004 entered into force on 26 November 2004. Only substances listed in Annex I to the EU directive on plant protection products (117) are permitted to be used in plant protection products. There is a list of very toxic pesticides permitted to be used in Estonia.

Around 200 plant protection products with 100 active ingredients are registered.

All pesticides used in Estonia are imported, as there is no pesticide production in the country.

The Plant Protection Inspectorate participates within projects and initiatives of the European Food Safety Authority and in some committees of the Codex Alimentarius Commission.

There is public concern about the use of pesticides on fruit.

Biocides

The Ministry of Social Affairs regulates biocides. The Chemicals Notification Centre registers biocide products and cooperates with other agencies. It evaluates the products and issues certificates. There is no laboratory for analysis within the Chemicals Notification Centre, and the evaluations are made based on the dossiers and according to requirements. If necessary, universities perform the required analysis, but most is performed outside Estonia. There are about 300 biocide formulations.

Other chemicals

The Chemicals Notification Centre collects information on imported and produced chemicals. Representatives of the Centre attend EU meetings on REACH and all other meetings at the EU level dealing with chemicals, and the Help Desk for REACH was established early 2008 within the Centre. Only one person works on the Help Desk, but other staff provide support. Fifteen staff members work in the Chemicals Notification Centre. It is also the institution designated for following up on the Globally Harmonized System of Classification and Labelling of Chemicals once Estonia adopts it.

A twinning project was set up with Italy for training related to raising awareness on the exposure-based risk assessment of chemicals. The overall objective of this twinning project is to control the risks posed

by chemicals to environment and health. Italy provides institutional support to Estonia's government institutions responsible for risk assessment and management of chemicals according to the REACH regulation and the EC directives on the assessment of the effects of certain plans and programmes on the environment to protect health and environment. The project is focusing on training trainers.

Before Estonia joined the EU, a training session of the European Chemical Industry Council was implemented and Estonia was twinned with Sweden during the accession period.

The Centre annually sends questionnaires on toxic chemicals that have been imported, exported or produced and can be used as precursors for chemical weapons. Baltic and Nordic countries meet twice yearly and exchange information and learn from each other's activities and experiences.

Hazardous waste

Hazardous waste in Estonia is mainly regulated by the Estonian Waste Act (2004, amended 2007). The Act provides the general requirements for preventing waste generation and the health and environmental hazards arising from it, for organizing waste management with the objective of reducing the harmfulness and quantity of waste and liability for violating the established requirements.

In addition, the National Environmental Strategy (1997) and the National Environmental Action Plan (1998) also set the guidelines for the development of the National Waste Management Plan (2002).

International conventions and agreements

UNECE Convention on Transboundary Effects of Industrial Accidents
Estonia ratified the UNECE Convention on Transboundary Effects of Industrial Accidents (118) in 1993. It is designed for protecting human beings and the environment against industrial accidents by preventing them as far as possible, by reducing their frequency and severity and by mitigating their effects.

The Civil Protection Committee, consisting of the representatives of ministries chaired by the Minister of the Interior, is responsible for developing and implementing policies and strategies concerning preventing, being prepared for and responding to industrial accidents (118).

The Estonian Rescue Board is the designated competent authority and the executive body of the Committee. It is involved in setting up on-site and off-site contingency plans, including the coordination needed for warning and information systems during an industrial accident. The National Board of Technical Inspection under the Ministry of Economic Affairs and Communications and the Rescue Board are responsible for preventive measures, including the technical inspection of hazardous activities.

Rotterdam Convention

Estonia acceded to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (119) in 2006. The purpose of this Convention is to promote shared responsibility and cooperation in the international trade in certain hazardous chemicals. The Ministry of Agriculture, the International Relations Division of the Ministry of the Environment, the Ministry of Foreign Affairs and Ministry of Social Affairs are the official contact points for the Rotterdam Convention. The designated national authority for the Rotterdam Convention is the responsible officer of the Chemicals Notification Centre.

Stockholm Convention

Estonia acceded to the Stockholm Convention on Persistent Organic Pollutants (120) in 2008. The Convention entered into force for Estonia on 5 February 2009 (19).

Estonia will compose its national implementation plan and improve the monitoring programme for persistent organic pollutants in the nearest future. The Ministry of the Environment is the national focal point for the Convention.

Basel Convention

Estonia acceded to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (121) in 1992. The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements and disposal of hazardous and other wastes. The Commission on Import, Export and Transit of Controlled Waste under the Ministry of the Environment is the focal point and the competent authority for the Convention.

Strategic Approach to International Chemicals Management

The Strategic Approach to International Chemicals Management (SAICM) is a policy framework to foster the sound management of chemicals. SAICM supports the achievement of the goal agreed at the 2002 Johannesburg World Summit on Sustainable Development in ensuring that, by the year 2020, chemicals are produced and used in ways that minimize significant adverse effects on the environment and human health. The head of the Environmental Health and Chemical Safety Unit of the Ministry of Social Affairs is the focal point for SAICM.

Aarhus Convention

Estonia signed the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters in 2001 and approved its Protocol on Pollutant Release and Transfer Registers in 2007.

Specific chemical issues

Children and chemicals

The poisoning-related deaths among people 0–19 years old in Estonia averaged 3.34 per 100 000 for males and 0.85 per 100 000 for females in 1998–2002.

A national law requires child-resistant packaging of household cleaning agents but not medication. The government approved a national injury prevention strategy with specific targets and timelines related to preventing poisoning among children and adolescents.

Although no ministry or government department has mandated responsibility for preventing poisoning among children and adolescents, the Poison Information Centre could play an important role in this respect.

Toys, cosmetics and consumer goods

The Estonian Consumer Protection Board was founded in May 1994. It is the national authority in charge of protecting the legitimate rights of consumers and representing their interests in developing and implementing consumer policies in accordance with the provisions of the United Nations guidelines, the Consumer Protection Act and of EU consumer policy. The European Consumer Centre of Estonia was established in 2005 and works within the Estonian Consumer Board.

The Health Protection Inspectorate under the Ministry of Social Affairs is in charge of controlling beauty, personal and tourism services, consumer goods, materials that come into direct contact with foodstuffs and drinking-water, cosmetic products, chemicals transferred to the final consumer and products for children.

It inspects toys, cosmetics, toiletries and consumer goods and participates in RAPEX, market surveillance activities and control of cosmetics imported from low-income countries. In 2006, 10 notifications were sent to the RAPEX system.

The main focal point for RAPEX is the Consumer Protection Board. They are in charge of exchanging existing information; the health protection inspectors inspect locations that do not follow the requirements. Health Protection Inspectorate closely cooperates with the Customs Inspectorate and the Border Inspectorate to inform the Health Protection Inspectorate about suspect products. They also participate in projects focusing on azo dyes in textiles and on nickel.

The Health Protection Inspectorate posts information on dangerous products on the web. A total of 28 notifications have been received from other countries. In the past, toys were sent to neighbouring countries to be tested for phthalates, but Estonia now has national capacity for this. There are laboratories in four regions. The laboratory in Tallinn analyses all toys and chemicals in indoor air and in products and pesticides in food and food contact materials.

The legal framework is the Public Health Act and the regulations under it. Under the Chemicals Act, the Health Protection Inspectorate is responsible for checking labels, restricted chemicals, such as azo dyes in textiles, and chemicals that are carcinogenic, mutagenic or toxic to reproduction.

The head office trains inspectors. The head office has five staff members and is the coordination centre and involved with EU work. Four regions have five inspectors: two in Tallinn and one in each of three other regions.

Heavy metals

Leaded petrol is not available in Estonia. Contamination with mercury is an issue in Estonia.

Tools for action: information on chemicals

The Estonian Environment Information Centre collects and processes data on the state of the environment and provides environmental information for Estonia's decision-makers and public and interested organizations in Estonia and elsewhere. The Estonian Environment Information Centre collects data into five databases or information systems, including data about emissions into the environment and monitoring data about the state of environment.

The data cover air, waste, packaging and packaging waste, landfills, marine, surface and groundwater, nature conservation, use of natural resources, fish resources, wastewater and wastewater-treatment plants. The information is collected and processed in different databases and

information systems such as the Registry of Air Pollution Sources, National Water Cadastre, Waste Data Management System, Packaging Register, Information System of Environmental Permits, Information System on Fish and Fishery and Estonian Nature Information System. Most data that are not restricted to internal use are available on the Estonian Environment Information Centre web site.

Emergency preparedness and response

Estonia has a national system for emergency preparedness and response. The Ministry of the Interior is responsible for the overall preparedness for emergencies by leading a high-level commission that includes the highest civil servant of each Ministry.

The Rescue Board (*122*) is a government agency is operating under the Ministry of the Interior that directs planning emergency preparedness and operational management of rescue services, also in exercising state supervision and applying the enforcement powers of the state and in developing and implementing the rescue policy of the state. It plans the development of rescue service agencies, directs and coordinates, where necessary, fire-extinguishing and rescue work in the event of a major accident, administers and exercises state supervision of fire safety, supervises the operational readiness of rescue service agencies and administers and carries out the removal of explosives. At the same time, each Ministry is responsible for its area: the Ministry of Social Affairs for health-related issues, including the overall preparedness of the health system and health care facilities, infectious disease control and selected topics in public health. The roles and responsibilities as well as better coordination for surveillance, information sharing and response need to be developed further.

The National Audit Office performed an audit in 2007 to assess the preparedness of Estonia for an emergency arising from avian influenza, an influenza pandemic, large-scale marine pollution and transport accidents involving hazardous chemicals and the operation of the system of preparation for emergencies. The main findings show that, despite the serious efforts of the ministries, Estonia is not

prepared for avian influenza, an influenza pandemic, large-scale marine pollution or transport accidents involving hazardous chemicals at the required level, because the protection of the people, property and environment has not been ensured (123).

The Rescue Board, local offices of the Rescue Board and the Technical Surveillance Authority act as the competent authorities related to the safety of enterprises likely to be affected by a major accident.

The main legislation regulating civil emergency planning is as follows.

- The Rescue Act of 1994 regulates the organization of fire and rescue operations and defines the responsibilities, rights and accountability in this area.
- The State Reserves Act of 1994 defines various classifications of national reserves and how these are to be administered.
- The Emergencies Act of 1996 prescribes the necessary measures to be taken in natural disasters and catastrophes and for preventing the spread of infectious diseases.
- The State Emergency Act of 1996 defines the conditions required to declare a state of emergency. Together with the Emergencies Act, this Act defines the duties of the Government Crisis Committee in exposure to threats.
- The Emergency Preparedness Act of 2000 defines the duties and rights related to civil emergency planning and civil protection at the local, regional and national levels.

Additional laws apply to civil emergency planning, such as the Peacetime State Defence Act, Health Care Services Organization Act, Public Health Act, Border Guard Act and Police Act and several laws related to prevention, such as the Act on Radiation Safety and Chemicals Act.

Two government regulations have been adopted, transposing a substantial part of the Seveso II Directive (124). Estonia has identified the plants covered by the directive on integrated pollution prevention and control. The Integrated Pollution Prevention and Control Act was

adopted in May 2002, and the Emergency Preparedness Act was adopted in November 2000.

Estonia ratified the UNECE Convention on Transboundary Effects of Industrial Accidents in 1993. In 2005, Estonia appointed a focal point for the International Health Regulations. This focal point is from the Health Protection Inspectorate and is responsible only for health events and public health risks of biological origin (available 24/7). The Ministry of the Interior is responsible for dealing with chemical and radionuclear events. There is no documented procedure for communication between the national International Health Regulations focal point and other authorities, but the first meetings have been held.

The International Health Regulations came into force in 2007 and have been translated into Estonian as a draft but not as an official translation yet. Estonia has performed assessments to analyse the implementation paths, and in selected areas Estonia's progress has been good compared with other EU countries. Further, an interministerial commission to prepare the International Health Regulations implementation plan for 2009 was convened in mid-2008. A preliminary review of the legislation concerning health events and public health risks of biological origin (infectious diseases) shows that this is compatible with the International Health Regulations but needs to be updated.

The Emergency Preparedness Act specifies the responsibilities of various structures and exchange of information and could serve or assist as an intersectoral and multidisciplinary coordination mechanism for the International Health Regulations. This should be reviewed with respect to the International Health Regulations.

During the self-assessment in early 2008, the International Health Regulations focal point identified the need for technical guidance, training of staff at the national level and simulation exercises on chemical safety response as areas of assistance that would be required from WHO. These needs were among the highest priorities identified by the 34 WHO European Member States that responded to the survey.

The response to a chemical spill at sea was not satisfactory, and Ministry of the Environment is currently preparing a plan for such incidents.

Conclusions and recommendations

The National Environmental Health Action Plan approved in 1999 addressed chemical safety. The main legislation on chemicals is the Chemicals Act (1998), the Public Health Act (1994) and the Plant Protection Act (1994) and a range of regulations adopted by the government that regulate the management of hazardous chemicals. EU regulations have been transposed into national legislation.

The Chemical Safety Commission, comprising representatives of various government agencies, is coordinated by the health sector and enables close collaboration by all relevant sectors.

The Ministry of Social Affairs has a prominent role in chemical safety in the country. It provides the SAICM focal point and is also one of the designated national authorities for the Rotterdam Convention. Both duties are assigned to the Environmental Health and Chemical Safety Unit of the Ministry of Social Affairs, which also participates in the EU work on chemicals. Given the amount of work and active participation at the EU and international level as well as joining OECD, the Unit is understaffed with its six staff members and needs strengthening.

Although the Health Protection Inspectorate, which is the national International Health Regulations focal point, is responsible only for health events and public health risks of biological origin, they would play a role in chemical events, as they participate in RAPEX. Another institution that would contribute to chemical events is the Chemicals Notification Centre of the Ministry of Social Affairs.

An assessment tool on chemical safety capacity and public health aspects prepared by the WHO Regional Office for Europe would be helpful for identifying possible partners for an intersectoral and

multidisciplinary coordination team for chemical events related to the International Health Regulations.

The Chemicals Notification Centre is well established and is functioning well, but Estonia has to rely on testing biocides in other countries if needed.

The Health Protection Inspectorate currently has enough inspectors but might have to scale up the human resources when implementing REACH.

Estonia has good collaboration with Baltic and Nordic countries on chemicals. Training has especially been provided on toxicology and for the establishment of the Poison Information Centre.

A minimum requirement for a poison information centre is functioning 24 hours 7 days a week. The newly established Poison Information Centre needs to be strengthened with more trained personnel, especially if it is to respond to the public as well. Although the ultimate location of the Poison Information Centre is to be finalized, its current location within the Chemicals Notification Centre should be considered given the expertise on chemicals already available.

Toxicological training needs to be strengthened. There is no formal training in toxicology in Estonia. Training needs to be received abroad. There is an Estonian Society of Toxicology, and small-scale ecotoxicology testing is performed at a university, but there is no analytical toxicology laboratory, which would be very useful for the Poison Information Centre.

Risk assessment training is mostly provided through twinning projects.

Data on exposure to hazardous chemicals is limited. The health problems deriving from chemicals are not known.

Finally, there is good cooperation with NGOs. The Baltic Environment Forum works on chemical safety. Its main activities are

raising awareness on REACH, training industrial companies in cooperating with the Ministry of Social Affairs, participating in strategic discussions on chemical safety strategy and raising awareness of chemicals in schools.

References

1. *Tallinn Charter: Health Systems for Health and Wealth*. Copenhagen, WHO Regional Office for Europe, 2008 (<http://www.euro.who.int/document/E91438.pdf>, accessed 6 March 2009).
2. Prüss Üstün A, Corvalán C. *Preventing disease through healthy environments: towards an estimate of the environmental burden of disease*. Geneva, World Health Organization, 2006 (http://www.who.int/quantifying_ehimpacts/publications/preventingdisease/en/index.html, accessed 6 March 2009).
3. *Country profiles of the environmental burden of disease*. Copenhagen, WHO Regional Office for Europe, 2007 (http://www.euro.who.int/envhealth/data/20070831_4, accessed 6 March 2009).
4. *Environment and health: the European Charter and commentary*. Copenhagen, WHO Regional Office for Europe, 1990 (WHO Regional Publications, European Series, No. 35; <http://www.euro.who.int/document/WA3095.pdf>, accessed 6 March 2009).
5. *Children's Environment and Health Action Plan for Europe*. Copenhagen, WHO Regional Office for Europe, 2004 (EUR/04/5046267/7; <http://www.euro.who.int/document/e83338.pdf>, accessed 6 March 2009).
6. *Declaration of the Fourth Ministerial Conference on Environment and Health*. Copenhagen, WHO Regional Office for Europe, 2004 (EUR/04/5046267/6; <http://www.euro.who.int/document/e83335.pdf>, accessed 6 March 2009).

7. Second Ministerial Conference on Environment and Health, Helsinki, 1994 [web site]. Copenhagen, WHO Regional Office for Europe,

(http://www.euro.who.int/eehc/conferences/20021107_1, accessed 6 March 2009).
8. Third Ministerial Conference on Environment and Health, London, 1999 [web site]. Copenhagen, WHO Regional Office for Europe,
(http://www.euro.who.int/eehc/conferences/20021010_2, accessed 6 March 2009).
9. Environment Performance Review Programme [web site]. Geneva, United Nations Economic Commission for Europe (<http://www.unece.org/env/epr>, accessed 6 March 2009).
10. Environmental country reviews [web site]. Paris, Organisation for Economic Co-operation and Development (http://www.oecd.org/topic/0,3373,en_2649_34307_1_1_1_1_37465,00.html, accessed 6 March 2009).
11. MacArthur I, Bonnefoy X. *Environmental health services in Europe 2: policy options*. Copenhagen, WHO Regional Office for Europe, 1998 (WHO Regional Publications, European Series, No. 77; [http://whqlibdoc.who.int/publications/1998/9289013419_\(part_1\).pdf](http://whqlibdoc.who.int/publications/1998/9289013419_(part_1).pdf), accessed 6 March 2009).
12. MacArthur I, Bonnefoy X. *Environmental health services in Europe 1: an overview of practice in the 1990s*. Copenhagen, WHO Regional Office for Europe, 1997 (WHO Regional Publications, European Series, No. 76; [http://whqlibdoc.who.int/publications/1997/9289013400_\(part_1\).pdf](http://whqlibdoc.who.int/publications/1997/9289013400_(part_1).pdf), accessed 6 March 2009).
13. Corvalan C, Briggs D, Zielhuis G. *Decision-making in environmental health: from evidence to action*. London, Routledge, 2000.

14. National profiles on children's health and environment: assessing readiness for improving environmental health protection systems for children [web site]. Geneva, World Health Organization, 2007

(<http://www.who.int/ceh/profiles/natprofiles/en/index.html>, accessed 6 March 2009).
15. The European Environment and Health Information System (ENHIS) [web site]. Copenhagen, WHO Regional Office for Europe, 2007
(http://www.enhis.org/object_class/enhis_home_tab.html, accessed 6 March 2009).
16. Main demographic indicators [online database]. Tallinn, Statistics Estonia, 2008 (http://pub.stat.ee/px-web.2001/I_Databas/Population/01Population_indicators_and_composition/02Main_demographic_indicators/02Main_demographic_indicators.asp, accessed 6 March 2009).
17. Kunst A et al. *Social inequalities in health in Estonia*. Tallinn, Ministry of Social Affairs, 2002.
18. European Health for All database (HFA-DB) [online database]. Copenhagen, WHO Regional Office for Europe, 2008 (<http://www.euro.who.int/hfadb>, accessed 6 March 2009).
19. Koppel A et al. Estonia: health system review. *Health Systems in Transition*, 2008, 10(1):1–230
(<http://www.euro.who.int/document/E91372.pdf>, accessed 6 March 2009).
20. Lai T et al. Costs, health effects and cost-effectiveness of alcohol and tobacco control strategies in Estonia. *Health Policy*, 2007, 84:75–88.
21. *An overview of health status in Estonia*. Tallinn, Ministry of Social Affairs, 2008

- ([http://213.184.49.171/www/gpweb_est_gr.nsf/HtmlPages/health_status_eng/\\$file/health_status_eng.pdf](http://213.184.49.171/www/gpweb_est_gr.nsf/HtmlPages/health_status_eng/$file/health_status_eng.pdf), accessed 6 March 2009).
22. *Estonian Communicable Disease Bulletin*. Tallinn, Estonian Health Protection Inspectorate, 2008 (http://www.tervisekaitse.ee/documents/english/2008/Detsember_inglk_2008.pdf).
 23. Drew R et al. *Evaluation of fighting HIV/AIDS in Estonia*. Copenhagen, WHO Regional Office for Europe, 2008 (<http://ee.euro.who.int/EVALUATION%20OF%20FIGHTING%20HIV%20AIDS%20IN%20ESTONIA%202008.pdf>, accessed 6 March 2009).
 24. Veideman T, Tekkel M. *Health behaviour among the Estonian adult population survey, 2006*. Tallinn, National Institute for Health Development, 2007.
 25. Aasvee K et al. *Eesti Kooliõpilaste Tervisekäitumise Uuring 2005/2006 õppeaasta, Tabelid [Health Behaviour in School-aged Children; HBSC study 2005/2006, tables]*. Tallinn, National Institute for Health Development, 2007 (http://www2.tai.ee/uuringud/HBSC_tabeliraamat_tryk.pdf, accessed 6 March 2009).
 26. *Country profiles of environmental burden of disease: Estonia*. Geneva, World Health Organization, 2009 (http://www.who.int/quantifying_ehimpacts/national/countryprofile/en/index.html#E, accessed 6 March 2009).
 27. *Country profile: Estonia by environmental health core indicators*. Copenhagen, WHO Regional Office for Europe, 2009 (http://www.enhis.org/object_class/enhis_enhis2_country_profiles.html, accessed 6 March 2009).
 28. Environment and Health Information System: ENHIS indicator-based assessments (2007) [web site]. Copenhagen, WHO Regional Office for Europe, 2007

(<http://www.euro.who.int/EHindicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).

29. *Public water supply and access to improved water sources*. Copenhagen, WHO Regional Office for Europe, 2007
(<http://www.euro.who.int/EHindicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
30. *Wastewater treatment and access to improved sanitation*. Copenhagen, WHO Regional Office for Europe, 2007
(<http://www.euro.who.int/EHindicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
31. *Bathing water quality*. Copenhagen, WHO Regional Office for Europe, 2007
(<http://www.euro.who.int/EHindicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
32. *Mortality from road traffic injuries in children and young people*. Copenhagen, WHO Regional Office for Europe, 2007
(<http://www.euro.who.int/EHindicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
33. *Policies to reduce and prevent selected unintentional injuries (falls, drowning, poisoning, fires and choking) in children and adolescents*. Copenhagen, WHO Regional Office for Europe, 2007
(http://www.enhis.org/object_document/o4728n27384.html, accessed 6 March 2009).
34. *Eesti Rahvuslik Liiklusohutusprogramm 2003–2015 [National Road Safety Programme 2003–2015]*. Tallinn, Estonian Road Administration (<http://www.mnt.ee/atp/?id=998>, accessed 6 March 2009).
35. *Eesti Vigastuste Ennetamise Strateegia Alusdokument [Framework for Injury Prevention Strategy]*. Tallinn, Ministry of Social Affairs, 2008
(http://www2.sm.ee/tervisepoliitika/failid/Vigastuste%20strateegia%20alusdokument_Final.pdf).

36. *WHO Charter on Counteracting Obesity*. Copenhagen, WHO Regional Office for Europe, 2006 (<http://www.euro.who.int/Document/E89567.pdf>, accessed 6 March 2009).
37. Currie C et al. *Inequalities in young people's health. HBSC international report from the 2005/2006 survey*. Copenhagen, WHO Regional Office for Europe, 2008 (http://www.euro.who.int/InformationSources/Publications/Catalogue/20080616_1, accessed 6 March 2009).
38. Tobacco Control Database [online database]. Copenhagen, WHO Regional Office for Europe, 2009 (<http://data.euro.who.int/tobacco/?TabID=2404>, accessed 6 March 2009).
39. *Policies to reduce the exposure of children to environmental tobacco smoke*. Copenhagen, WHO Regional Office for Europe, 2007 (<http://www.euro.who.int/EHIndicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
40. *Exposure of children to environmental tobacco smoke*. Copenhagen, WHO Regional Office for Europe, 2007 (<http://www.euro.who.int/EHIndicators/Publications/qryIndicatorbasedAssessments>, accessed 6 March 2009).
41. *Country profile: Estonia by environmental health core indicators*. Copenhagen, WHO Regional Office for Europe, 2008 (http://www.enhis.org/object_binary/o2724_Estonia_Indicator_overview_per_country_onlyCarpet_WEB_V20a.pdf, accessed 6 March 2009).
42. Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources. *Official Journal of the European Communities*, 1991, L 375:1–8 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0676:EN:HTML>, accessed 6 March 2009).

43. *Public health in Estonia. An analysis of public health operations, services and activities.* Tallinn, WHO Regional Office for Europe and Ministry of Social Affairs, 2008.
44. Dwellings [online database]. Tallinn, Statistics Estonia, 2003 (http://pub.stat.ee/px-web.2001/I_Databas/Population_census/05Dwellings/05Dwellings.asp, accessed 6 March 2009).
45. Estonian Health Insurance Fund (EHIF) [web site]. Tallinn, Estonian Health Insurance Fund, 2009 (<http://www.haigekassa.ee/eng>, accessed 6 March 2009).
46. Ministry of Social Affairs [web site]. Tallinn, Ministry of Social Affairs, 2009 (<http://www.sm.ee/eng>, accessed 6 March 2009).
47. *Structure and area of government of the Ministry of Social Affairs.* Tallinn, Ministry of Social Affairs, 2008.
48. *National Strategy for Prevention of Cardiovascular Diseases 2005–2020.* Tallinn, National Institute for Health Development (<http://www.tai.ee/?id=4930>, accessed 6 March 2009).
49. *Riiklik vähistrateegia aastateks 2007–2015 [National Cancer Prevention Strategy 2007–2015].* Tallinn, Ministry of Social Affairs (<http://www.sm.ee/index.php?id=449>, accessed 6 March 2009).
50. *National Health Plan 2009–2020.* Tallinn, Government of Estonia, 2008.
51. Health Protection Inspectorate [web site]. Tallinn, Health Protection Inspectorate, 2009 (<http://www.tervisekaitse.ee/?lang=3>, accessed 6 March 2009).
52. National Institute for Health Development [web site]. Tallinn, National Institute for Health Development, 2009 (<http://www.tai.ee/?lang=en>, accessed 6 March 2009).

53. Kesminiene A et al. Studies of cancer risk among Chernobyl liquidators: materials and methods. *Journal of Radiological Protection*, 2002, 22:A137–A141.
54. Health Care Board [web site]. Tallinn, Health Care Board, 2009 (<http://www.tervishoiuamet.ee/index.php?page=158>, accessed 6 March 2009).
55. Chemicals Notification Centre [web site]. Tallinn, Chemicals Notification Centre, 2009 (<http://www.ktk.ee/index.php?tid=sHudhl6l9ijUj9a7XXu7ZfozIIITasOZuLf8fT8>, accessed 6 March 2009).
56. Poison Information Centre [web site]. Tallinn, Poison Information Centre, 2009 (http://www.16662.ee/varsti_eng.html, accessed 6 March 2009).
57. Labour Inspectorate [web site]. Tallinn, Labour Inspectorate, 2009 (<http://www.ti.ee/index.php?page=3&>, accessed 6 March 2009).
58. Atun RA. *Advisory support to primary health care evaluation model: Estonia PHC evaluation project*. Copenhagen, WHO Regional Office for Europe, 2005 (<http://ee.euro.who.int/publications/index.htm>, accessed 6 March 2009).
59. Ministry of the Environment [web site]. Tallinn, Ministry of the Environment, 2009 (<http://www.envir.ee/53328>, accessed 6 March 2009).
60. United Nations Economic Commission for Europe. *Environmental performance reviews – Estonian second review*. New York, United Nations, 2001 (http://www.unece.org/env/epr/epr_studies/estonia%20II.pdf, accessed 6 March 2009).
61. Environment Information Centre [web site]. Tallinn, Estonian Environment Information Centre, 2009

- (<http://www.keskkonnainfo.ee/index.php?lan=EN>, accessed 6 March 2009).
62. Estonian Environmental Research Centre [web site]. Tallinn, Estonian Environmental Research Centre, 2009 (<http://www.klab.ee/?lang=eng>, accessed 6 March 2009).
 63. Estonian Meteorological and Hydrological Institute [web site]. Tallinn, Estonian Meteorological and Hydrological Institute, 2009 (<http://www.emhi.ee/index.php?nlan=eng>, accessed 6 March 2009).
 64. Estonian Radiation Protection Centre [web site]. Tallinn, Estonian Radiation Protection Centre, 2009 (<http://www.envir.ee/kiirgus/eng>, accessed 6 March 2009).
 65. Ministry of the Interior [web site]. Tallinn, Ministry of the Interior, 2009 (<http://www.siseministeerium.ee/?lang=en>, accessed 6 March 2009).
 66. Ministry of Economic Affairs and Communications [web site]. Tallinn, Ministry of Economic Affairs and Communications, 2009 (<http://www.mkm.ee/eng>, accessed 6 March 2009).
 67. *Building Act*. Tallinn, Estonian Parliament, 2002 (<http://www.legaltext.ee/text/en/X50072K2.htm>, accessed 6 March 2009).
 68. *Road Transport Act*. Tallinn, Estonian Parliament, 1999 (<http://www.legaltext.ee/text/en/X30056K5.htm>, accessed 6 March 2009).
 69. Ministry of Justice [web site]. Tallinn, Ministry of Justice, 2009 (http://www.just.ee/?set_lang_id=2, accessed 6 March 2009).
 70. Ministry of Finance [web site]. Tallinn, Ministry of Finance. 2009 (<http://www.fin.ee/?lang=en>, accessed 6 March 2009).

71. Ministry of Agriculture [web site]. Tallinn, Ministry of Agriculture, 2009 (<http://www.agri.ee/?lang=en>, accessed 6 March 2009).
72. Estonian Technical Surveillance Authority [web site]. Tallinn, Estonian Technical Surveillance Authority, 2009 (<http://www.tja.ee/?lang=en>, accessed 6 March 2009).
73. Baltic Environment Forum [web site]. Tallinn, Baltic Environment Forum, 2009 (<http://www.bef.ee/?lang=1>, accessed 6 March 2009).
74. *Summary report of a WHO mission to Estonia 20–22 November 2006 to evaluate the Estonian National Strategy for the Prevention of Cardiovascular Diseases 2005–2020*. Copenhagen, WHO Regional Office for Europe, 2006 (http://www.euro.who.int/Document/HSF/SumRep_EST_CV_D_strat.pdf, accessed 6 March 2009).
75. *Estonian National Strategy on Sustainable Development: Sustainable Estonia 21 (SE21)*. Tallinn, Ministry of the Environment, 2005 (<http://www.envir.ee/58738>, accessed 6 March 2009).
76. *Eesti Keskkonnategevuskava aastateks 2007–2013 [Estonian Environmental Action Plan for 2007–2013]*. Tallinn, Ministry of the Environment, 2007 (http://www.envir.ee/orb.aw/class=file/action=preview/id=380093/Keskkonnategevuskava+2007-2013_20022007_rtf_1.pdf, accessed 6 March 2009).
77. *Environmental Supervision Act*. Tallinn, Estonian Parliament, 2001 (<http://www.legaltext.ee/text/en/X50068K2.htm>, accessed 6 March 2009).
78. *Environmental Monitoring Act*. Tallinn, Estonian Parliament, 1999 (<http://www.legaltext.ee/text/en/X30029K4.htm>, accessed 6 March 2009).

79. *Radiation Act*. Tallinn, Estonian Parliament, 2004 (<http://www.legaltext.ee/text/en/X80040.htm>, accessed 6 March 2009).
80. *Waste Act*. Tallinn, Estonian Parliament, 1998 (<http://www.legaltext.ee/text/en/X40038K5.htm>, accessed 6 March 2009).
81. *Water Act*. Tallinn, Estonian Parliament, 1994 (<http://www.legaltext.ee/text/en/X50046K4.htm>, accessed 6 March 2009).
82. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. *Official Journal of the European Communities*, 2000, L 327:1–72 (http://ec.europa.eu/environment/water/water-framework/index_en.html, accessed 6 March 2009).
83. Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration. *Official Journal of the European Communities*, 2006, L 372:19–31 (http://ec.europa.eu/environment/water/water-framework/groundwater/policy/current_framework/new_directive_en.htm, accessed 6 March 2009).
84. Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe. *Official Journal of the European Communities*, 2008, L 152:1–44 (http://ec.europa.eu/environment/air/quality/legislation/existing_leg.htm, accessed 6 March 2009).
85. *Convention on Long-range Transboundary Air Pollution*. Geneva, United Nations Economic Commission for Europe, 1979 (<http://www.unece.org/env/lrtap>, accessed 6 March 2009).
86. *Convention on the Protection and Use of Transboundary Watercourses and International Lakes*. Geneva, United

- Nations Economic Commission for Europe, 1992 (<http://www.unece.org/env/water>, accessed 6 March 2009).
87. Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters [web site]. Geneva, United Nations Economic Commission for Europe, 2009 (<http://www.unece.org/env/pp>, accessed 6 March 2009).
88. Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (codified version). *Official Journal of the European Communities*, 2008, L 024:8–29 (<http://ec.europa.eu/environment/air/pollutants/stationary/ippc/index.htm>, accessed 6 March 2009).
89. Council Directive 1999/13/EC of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations. *Official Journal of the European Communities*, 1999, L 085:1–22 (<http://europa.eu/scadplus/leg/en/lvb/l28029b.htm>, accessed 6 March 2009).
90. *Traffic Act*. Tallinn, Estonian Parliament, 2001 (<http://www.legaltext.ee/text/en/X50012K5.htm>, accessed 6 March 2009).
91. *Jalgratturikiivri kandmine elanike poolt [Population survey about wearing helmets]*. TNS Emor Ltd., 2008 (<http://www.mnt.ee/atp/failid/jalgratturikiivrikasutamisestatistika2008.ppt>, accessed 6 March 2009).
92. *Transport Development Plan 2006–2013*. Tallinn, Ministry of Economic Affairs and Communications, 2006 (<http://www.mkm.ee/doc.php?321730>, accessed 6 March 2009).
93. *Ühistranspordi arenguprogramm 2006–2010 [Public Transport Development Plan 2006–2010]*. Tallinn, Ministry of Economic Affairs and Communications, 2006

- (<http://www.mkm.ee/doc.php?152911>, accessed 6 March 2009).
94. *Public Information Act*. Tallinn, Estonian Parliament, 2000 (<http://www.legaltext.ee/text/en/X40095K2.htm>, accessed 6 March 2009).
 95. *National Environmental Health Action Plan of Estonia*. Tallinn, Ministry of Social Affairs, 1999 (<http://www.euro.who.int/document/EHP/EST.pdf>, accessed 6 March 2009).
 96. *Improving quality and productivity at work: Community strategy 2007–2012 on health and safety at work. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*. Brussels, Commission of the European Communities, 2007 (http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0062en01.pdf, accessed 6 March 2009).
 97. *Occupational Health and Safety Act*. Tallinn, Estonian Parliament, 1999 (<http://www.legaltext.ee/text/en/X30078K4.htm>, accessed 6 March 2009).
 98. *Environmental Impact Assessment and Environmental Management System Act*. Tallinn, Estonian Parliament, 2005 (<http://www.legaltext.ee/text/en/X90010K1.htm>, accessed 6 March 2009).
 99. *Environmental Impact Assessment Act supplemented. Estonia*. Vilnius, Lexnet Ltd, 2009 (<http://www.infolex.lt/portal/ml/start.asp?srid=45&strid=1063&biulid=166>, accessed 6 March 2009).
 100. Soeberg M, Martuzzi M. *Report of the workshop – an introduction to health impact assessment: goals, methods, resources, Tallinn, Estonia, 16–17 May 2006*. Copenhagen, WHO Regional Office for Europe, European Centre for Environment and Health, 2006

(<http://ee.euro.who.int/HIA%20FINAL%20REPORT%20-%20Estonia%202006.pdf>, accessed 6 March 2009).

101. *Eesti keskkonnaseire 2004–2006 [Estonian environmental monitoring 2004–2006]*. Tallinn, Estonian Environment Information Centre, 2008 (http://www.keskkonnainfo.ee/publications/373_PDF.pdf, accessed 6 March 2009).
102. Estonian Traffic Insurance Fund [web site]. Tallinn, Traffic Insurance Fund, 2009 (<http://www.lkf.ee/index.php?1>, accessed 6 March 2009).
103. Estonian Road Administration [web site]. Tallinn, Estonian Road Administration, 2009 (<http://www.mnt.ee/atp/?keel=en>, accessed 6 March 2009).
104. *National responses to preventing violence and unintentional injuries: WHO European survey*. Copenhagen, WHO Regional Office for Europe, 2006 (http://www.euro.who.int/violenceinjury/network/20050208_3, accessed 6 March 2009).
105. Statistics Estonia [web site]. Tallinn, Statistics Estonia, 2009 (<http://www.stat.ee/?lang=en>, accessed 6 March 2009).
106. *Ambient Air Protection Act*. Tallinn, Parliament of Estonia, 2004 (<http://www.legaltext.ee/text/en/X80049K1.htm>, accessed 6 March 2009).
107. *Estonia: progress towards Regional Priority Goal III on air quality*. Copenhagen, WHO Regional Office for Europe, 2009 (http://www.euro.who.int/eehc/implementation/20050622_3, accessed 6 March 2009).
108. *Food Act*. Tallinn, Parliament of Estonia, 1999 (<http://www.legaltext.ee/text/en/X30044K6.htm>, accessed 6 March 2009).
109. Council Directive 96/23/EC of 29 April 1996 on measures to monitor certain substances and residues thereof in live

- animals and animal products and repealing Directives 85/358/EEC and 86/469/EEC and Decisions 89/187/EEC and 91/664/EEC. *Official Journal of the European Communities*, 1996, L 125:10–32 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0023:EN:HTML>, accessed 6 March 2009).
110. *Plant Protection Act*. Tallinn, Estonian Parliament, 2004 (<http://www.legaltext.ee/text/en/X70049K1.htm>, accessed 6 March 2009).
111. Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety. *Official Journal of the European Communities*, 2002, L 011:4–17 (<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0095:EN:HTML>, accessed 6 March 2009).
112. Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations. *Official Journal of the European Communities*, 1976, L 262:201–203 (<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31976L0769:EN:NOT>, accessed 6 March 2009).
113. Council Directive 88/378/EEC of 3 May 1988 on the approximation of the laws of the Member States concerning the safety of toys. *Official Journal of the European Communities*, 1988, L 187:1–13 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31988L0378:EN:HTML>, accessed 6 March 2009).
114. *Council directive of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products (76/768/EEC)*. Brussels, European Communities, 2008 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1976L0768:20080424:EN:PDF>, accessed 6 March 2009).

115. *Product and Service Safety Act*. Tallinn, Estonian Parliament, 2007 (<http://www.legaltext.ee/text/en/XXX0009.htm>, accessed 6 March 2009).
116. *Standard Eurobarometer 69*. Brussels, European Commission, 2008 (http://ec.europa.eu/public_opinion/archives/eb/eb69/eb69_en.htm, accessed 6 March 2009).
117. Council directive 91/414/EEC concerning the placing of plant protection products on the market. *Official Journal of the European Communities*, 1991, L 230:1–172.
118. *UNECE Convention on the Transboundary Effects of Industrial Accidents*. Geneva, United Nations Economic Commission for Europe, 1992 (<http://www.unece.org/env/teia>, accessed 6 March 2009).
119. *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*. Châtelaine, Secretariat for the Rotterdam Convention, United Nations Environment Programme, 2005 (<http://www.pic.int/home.php?type=s&id=77>, accessed 6 March 2009).
120. *The Stockholm Convention on Persistent Organic Pollutants*. Châtelaine, Secretariat for the Stockholm Convention, United Nations Environment Programme, 2001 (<http://chm.pops.int>, accessed 6 March 2009).
121. *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*. Châtelaine, Secretariat for the Stockholm Convention, United Nations Environment Programme, 1989 (<http://www.basel.int>, accessed 6 March 2009).
122. Rescue Board [web site]. Tallinn, Government of Estonia, 2009 (http://www.eesti.ee/eng/teemad/security/state_as_the_ensurer_of_security/rescue_board, accessed 6 March 2009).

123. *Estonia's preparedness for emergencies*. Tallinn, National Audit Office of Estonia, 2007

(http://www.riigikontroll.ee/audit_en.php?lang=en&audit=581, accessed 6 March 2009).
124. Chemical accidents (Seveso II) – prevention, preparedness and response [web site]. Brussels, European Commission, 2009 (<http://ec.europa.eu/environment/seveso/index.htm>, accessed 6 March 2009).

Annex 1. Additional information by regional priority goal

Regional priority goal 1: Water and sanitation

Summary

Bathing water quality and the access to public water supply are the priorities in water and sanitation in Estonia. Estonia has 1377 public waterworks; 2% produce more than 1000 m³ per day, serving 64% of the population. The smallest 358 waterworks (28% of the total) only serve 3780 people (2% of the population). This situation creates severe difficulty in maintaining the required level of control and ensuring water safety.

Many institutions perform surveillance, an essential tool in controlling waterborne diseases, depending on the type of water.

Institutional set-up

- The Ministry of Social Affairs is in charge of developing public health policies and strategies, drafting regulations and transposing the EU drinking-water directive.
- The Health Protection Inspectorate and the Ministry of the Environment are responsible for monitoring.

Tools for management

Main laws and policies recently established in this area

- Public Health Act 1995
- Regulation 82, a transposition of the EU drinking-water directive
- Water Act
- Estonian National Strategy on Sustainable Development: Sustainable Estonia 21 (SE21)
- EU Water Framework Directive
- EU groundwater directive 2006/118/EC
- Radiation protection strategy

Tools for action

Monitoring

- The state monitoring programme (Ministry of the Environment) organizes the monitoring of water bodies (coastal waters, rivers, lakes and groundwater).
- the Health Protection Inspectorate monitors drinking-water and bathing water.
- The Ministry of the Environment monitors groundwater and surface water; the Ministry reports to the European Commission.
- The Health Protection Inspectorate monitors the water quality in public places. Suppliers are responsible for the water in private households. The Health Protection Inspectorate checks the monitoring of the suppliers.
- The Health Protection Inspectorate organizes the mapping of radiation in drinking-water. The Radiation Protection Centre performs monitoring.
- No database is yet available in which all information on water is collected; a common database should be put into place, but lack of funds hinders the development of a common database on water.
- Water monitoring follows stricter requirements than the EU requirements.

Intersectoral collaboration

- Cooperation between the Ministry of Social Affairs and the Radiation Protection Centre: a publication on radon and radium in drinking-water is being prepared.
- Training is jointly organized with the Ministry of Social Affairs.

Regional priority goal 2: Injuries and physical activity

Summary

Injuries are the third leading cause of death in Estonia. The mortality rates due to road traffic injuries among people 0–24 years old and the mortality rates due to unintentional injuries among people 1–19 years old are above the average for the WHO European Region. Especially the mortality rate for unintentional injuries is unacceptably high. However, Estonia shows greater commitment to preventing injury from road crashes in its policies than average within the European Region.

The prevalence of excess body weight (including obesity) among 11-, 13- and 15-year-old boys and girls in Estonia is lower than the average in the European Region.

Several sectors have carried out prevention activities. The transport sector is mainly in charge of preventing road traffic injuries, but it cooperates with various other institutions within the health sector and the education sector.

Although efforts have been made in preventing unintentional injuries, there is still no central registry for children's accidents, and there appears to be little coordination among the various services collecting the data.

Institutional set-up

- The Ministry of Economic Affairs and Communications is responsible for the National Road Safety Programme 2003–2015 (divided into four-year plans).
- It is also in charge of the Road Transport Act, including road planning (protection zones and noise).

Tools for management

Main laws, policies and strategies recently established in this area

- National Road Safety Programme 2003–2015
- Transport Development Plan 2006–2013

Economics and funding

- The use of the car has become a socioeconomic symbol.
- Public transport is not very expensive, but it is not attractive for providers and a larger network is needed, mostly in rural areas.
- Discussions have been started to have free-of-charge parking facilities for hybrid cars; there is no taxation policy on fuel.

Tools for action

Information campaigns and awareness-raising

- The Estonian Road Administration has initiated road safety campaigns.
- The Ministry of Education has attempted to make safety education compulsory.
- There are campaigns promoting public transport, but there is still not enough public transport capacity.
- Monitoring
- Data on accidents are not systematically collected.
- The Ministry of Social Affairs, police, the road insurance foundation and the Estonian Road Administration all collect data; the aim is to compile all data in one registry.
- The Ministry of Social Affairs is currently developing indicators on how injuries should be monitored. The first committee meeting took place in March 2008.

Intersectoral collaboration

- The Ministry of Education has been involved in injury prevention by attempting to make safety education compulsory at school.
- The Ministry of Social Affairs is responsible for setting the necessary requirements for health for getting a driving licence.
- The Ministry of Social Affairs is also in charge of performing health check-ups for professional drivers.
- The Government Commission on Road Accidents has been set up: a multisectoral committee (Ministry of the Interior, Ministry of Education, Ministry of Social Affairs, Ministry of Economic

Affairs and Communications, Ministry of Justice, universities, NGOs, municipalities and traffic schools).

- The Estonian Road Administration is cooperating with various sectors, depending on the task.

Regional priority goal 3: Air quality

Summary

In the indoor environment, Estonia's population has high exposure to indoor air pollution from the combustion of solid fuels in the home. About 82% of children 13–15 years old are exposed to environmental tobacco smoke at home. Exposure to outdoor air pollution is lower than in many other countries of the Region. Particularly affected are the city centre of Tallinn and areas in Kohtla-Järve with a high concentration of industry.

With a rate of 0.16 of post-neonatal deaths per 1000 live births due to respiratory diseases, Estonia has a medium level of mortality but still greater than the countries in the western part of the European Region. Estonia also seems to implement all policies for smoke-free public places.

At the national level, air quality management focuses on achieving compliance with EU directives. Long-term plans still need to be developed to reduce exposure, and many sectors need to be involved.

Tools for management

Main laws, policies and strategies recently established in this area

- EU Air Quality Framework Directive 96/62/EC
- Indoor climate standards are not obligatory (Finnish guidelines are used)

Tools for action

Monitoring

- The Estonian Environment Research Centre is responsible for outdoor air quality monitoring and is under the Ministry of the Environment.
- Outdoor air quality monitoring focuses on nitrogen oxides, dioxins, PM10 and PM2.5.
- PM10 has been monitored for a longer time.
- PM2.5 has only recently been measured as mandated by the EU Air Quality Framework Directive.
- The national air quality monitoring network has seven stationary stations.
- The stations measure the concentrations of nitrogen oxides, sulfur dioxide, particulate matter, carbon oxide and ozone in ambient air.
- The mobile stations are used to assess air quality in specific areas or in relation to problems of special interest. The major contractors have been local governments and companies.
- Mobile stations measure the following pollutants: sulfur dioxide, nitrogen oxides, volatile organic compounds, carbon monoxide, hydrogen sulfide, ozone, ammonia, particulate matter, heavy metals, polycyclic aromatic hydrocarbons and meteorological parameters.
- While PM10 has been monitored for a long time, PM2.5 has been monitored only recently in accordance with the EU directive.
- Air pollution monitoring stations are part of the transboundary network.
- Instant warning systems for air quality have been established in the city centres of Pärnu and Tallinn.
- Indoor air is monitored in public places (schools and kindergartens); measurements are performed randomly.
- Scientists commissioned by the Ministry of the Environment prepare air quality reports for Tallinn; municipalities will start projects on air quality in the near future.
- Private companies perform technical environmental impact assessment, also performing air pollution modelling and making measurements.
- Monitoring by the Health Protection Inspectorate is project based.

Regional priority goal 4: Chemical, biological and physical agents and occupational health

Food safety

Tools for management

The main laws, policies and strategies recently established in this field include:

- guidelines for monitoring animals, food and plants based on EU directives;
- a separate Food Act; and
- Plant Protection Act: harmonization of the EU directive.

Intersectoral collaboration

Intersectoral collaboration includes the following.

- Cooperation with the Health Protection Inspectorate by the Veterinary and Food Board: in case of food poisoning, doctors inform the Health Protection Inspectorate, which then informs the Veterinary and Food Board.
- The veterinary inspectorates and the environmental inspectorates conduct joint site visits.
- The Plant Protection Department of the Ministry of Agriculture is responsible for controlling pesticide use.
- A meeting with Nordic and Baltic countries and one seminar of continuing education of the Veterinary and Food Board take place twice per year but do not contain any health-specific modules.

Tools for action

Monitoring tools include the following.

There are two inspection and monitoring bodies (with subdepartments at the county level):

- Veterinary and Food Board: animal health; welfare and feedstuffs; animal breeding and market regulation, food department, trade, and import and export department (shops etc.); and
- Plant Production Inspectorate (Departments of Variety, Plant Health, Plant Protection, Horticultural Products, Organic Agriculture, Animal Feed, Fertilizers and Seed), which checks companies and users to determine whether prohibited pesticides remain unused and conducts registration.

Monitoring programme 96/23 monitors residues of veterinary drugs and heavy metals and pesticides.

Samples are taken and analysed from (mainly) food of animal origin: polychlorinated biphenyls, organic phosphorus, cadmium, lead, mercury, radionuclides and dioxins.

A database established by the Veterinary and Food Board is mainly used for planning the next year's activities.

On 1 July 2007, the Veterinary and Food Board set up a special telephone line to answer public queries. The calls have been increasing: calls are recorded and a specialist answers the questions – very often this entails an inspection.

Occupational health

Institutional set-up

- Chemical safety is assessed during risk assessment in industry.
- Checks are done on whether the employees get the right instructions from labour inspectors on how to deal with dangerous substances.
- The Labour Inspectorate checks whether the requirements set by the Chemical Safety Act are followed: not only chemicals but also climate, noise, ventilation and also social conditions etc.
- The Occupational Health Care Department of the Health Care Board has worked on guidelines on chemical safety in working environments (guidelines for health care staff); good material is needed from WHO.
- The Health Care Board has been working on further coding occupational diseases. The Estonian Health Insurance Fund has

only one code for occupational diseases, so an attempt has been made to use the Nordic Council classification.

- Supervision of occupational physicians: in large enterprises they have contracts with occupational health services.

Tools for management

Main laws, policies and strategies recently established in this area

- Occupation, Health and Safety Act
- Chemicals Act
- Government decrees
- Chemical Safety Act (regulates packaging and signing of products, registry of use of chemical substances in industry, requirements for chemical safety cards)
- Children younger than 15 years are not allowed to work without permission from the parents and the Labour Inspectorate
- General Act on the Provision of Health Services

Tools for action

Monitoring

- Chemical safety is assessed during risk assessment in industry (Labour Inspectorate)
- Checks are performed to determine whether the employees get the right instructions on how to deal with dangerous substances (Labour Inspectorate)
- Checks are performed to determine whether the requirements set by the Chemical Safety Act are followed: not only chemicals but also climate, noise, ventilation and social conditions etc.
- When checks have to be made, the inspectors return to check whether the necessary adjustments have been made
- The labour inspectors do not have the right to perform measurements
- Trained personnel are needed to be informed about the risks
- There is little notification of the number of people working with asbestos, either they do not know about the risks of working with

asbestos or because the employees are not trained in the use of asbestos

- Only 68% of the people surveyed knew that asbestos is dangerous
- There are 5000 inspections performed each year and 50 000 enterprises in Estonia
- The risk assessment of the workplace can either be performed by the company itself according to a checklist or by employing a specialized company
- The number of registered occupational accidents is known (3600 in one year), but there is no information on occupational diseases. In one year, 117 people have been diagnosed with musculoskeletal problems; many occupational accidents are not registered because the employee fears losing employment.
- Accidents at the workplace are underestimated.
- In 2006, there were 29 accidents and 20–30 deaths in construction.
- Occupational accidents occur mainly in the wood-processing and manufacturing sectors and caused by falls from high places.
- Linking occupational settings and the diseases analysed is difficult.

Noise

Tools for management

Main laws, policies and strategies recently established in this area

- Ambient Air Protection Act (environmental noise)
- EU environmental noise directive 2002/49/EC
- Public Health Act
- Building Act (noise inside the building)

Tools for action

Monitoring

- The Health Protection Inspectorate performs noise mapping with the following tasks:
 - collect maps and action plans;
 - approve and control; and
 - communicate to the public.
- There is no strategic noise mapping for railways, as the frequency of trains is below the limit requiring noise mapping (60 000 passages per year).
- Noise maps are prepared only for Tallinn and a few kilometres of roads.
- In most master plans, noise mapping is performed when doing strategic environmental assessment or environmental impact assessment if there is a risk for noise.
- Private companies carry out environmental impact assessment, including performing noise modelling and air pollution modelling and making measurements.

Following the Fourth Ministerial Conference on Environment and Health in Budapest in June 2004, and the commitments made by Member States to reduce children's exposure to environmental hazards, countries are seeking support in implementation. WHO/Euro has initiated a project to provide the evidence base for developing and implementing such actions through detailed Environment and Health Performance Reviews (EHPRs).

The EHPRs are country-based interdisciplinary assessments that WHO/Europe carries out at the request of Member States. Through the EHPRs, Member States receive support in the reform and upgrade of the overall public health system. They identify the most important environment and health problems, evaluate the public health impact of environmental exposures and review the policy and institutional framework taking into account the institutional set-up, the policy setting and legal framework, the degree and structural functioning of intersectoral collaboration and the available tools for action.

Based on this analysis, as an integral part of the planning and management of environment and health services the EHPRs provide guidance for strengthening environment and health policy making and for planning preventive interventions, service delivery and surveillance in the field of environment and health.

The present report conveys a clear picture of the current environment and health situation in Estonia. It evaluates strong and weak points of environmental and health status in Estonia and brings recommendations from independent experts.

**World Health Organization
Regional Office for Europe**

Scherfigsvej 8, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 39 17 17 17. Fax: +45 39 17 18 18
E-mail: postmaster@euro.who.int
Web site: www.euro.who.int