

Designing national pesticide legislation



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by

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for the
Development Law Service
FAO Legal Office

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97

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TABLE OF CONTENTS

Preface	v
I. INTRODUCTION	1
1.1. Context for the design of national pesticide legislation	1
1.2. Benefits of national pesticide legislation	4
1.3. An overview of pesticides and their use	6
1.4. Pesticide risks and risk reduction strategies	7
II. INTERNATIONAL FRAMEWORK	11
2.1. Overview	11
2.2. Selected international instruments	14
2.2.1. Non-binding legal instruments	14
2.2.2. Multilateral treaties	18
2.3. Regional instruments and agreements	25
2.4. Meeting supra-national obligations	30
III. THE DESIGN OF A NATIONAL PESTICIDE LAW	31
3.1. Introductory provisions	32
3.1.1. Objectives	32
3.1.2. Scope and definitions	32
3.2. Administration	34
3.2.1. General institutional structure	34
3.2.2. Pesticide board	37
3.3. Inspection	39
3.4. Registration	42
3.4.1. Application procedure	44
3.4.2. Decision-making criteria	45
3.4.3. Registration decisions	46
3.4.4. Re-registration and review	48
3.4.5. Record-keeping and confidentiality	49
3.5. Import and export	50
3.6. Licensing	54
3.6.1. General requirements	55
3.6.2. Manufacture	56
3.6.3. Storage	59

3.6.4.	Sale	60
3.6.5.	Commercial operators	61
3.7.	Packaging and repackaging	62
3.8.	Labelling and safety data sheets	64
3.9.	Pesticide use	68
3.10.	Advertising	70
3.11.	Transport	73
3.12.	Disposal	74
3.13.	Data collection and monitoring	77
3.14.	Offences and penalties	80
	3.14.1. Offences	81
	3.14.2. Penalties	82
3.15.	Miscellaneous provisions	85
IV.	CHANGING THE NATIONAL POLICY AND LEGAL FRAMEWORK	88
4.1.	Considerations in reviewing and revising national legislation	88
	4.1.1. Constitution	89
	4.1.2. Other national legislation	89
	4.1.3. Policies and priorities	91
	4.1.4. Implementation	92
4.2.	Tools for implementing change	95
	4.2.1. Economic instruments	95
	4.2.2. Public-private partnerships, voluntary agreements and private codes of conduct	96
	4.2.3. Education and awareness raising	97
V.	CONCLUSION	98
	REFERENCES	100
	INTERNATIONAL INSTRUMENTS	104
	ANNEX: SELECTED FAO GUIDELINES TO THE CODE OF CONDUCT	105

PREFACE

At national level, pesticides are regulated by legislation covering different subject areas, including human health, environmental protection, agricultural practices, international trade, border control and commerce. Laws and regulations in these areas form part of the overall pesticide management system, and are intended to regulate the use and trade of pesticides. In many jurisdictions, however, legal provisions may be outdated, or may have been elaborated at different times and with different objectives, creating inconsistencies, overlaps and gaps.

Moreover, in recent years many countries have ratified various international instruments but still have to implement the new obligations and standards in their national legislation. Other countries are desirous of harmonizing their legislation with non-binding international guidelines such as the International Code of Conduct on the Distribution and Use of Pesticides but have not yet done so.

Over the years, FAO has produced a number of technical guidelines on pesticide management, and the secretariats of the principal international instruments have developed detailed guidelines for implementation. But what has been lacking is updated and comprehensive guidance to make sense of the maze of issues and obligations relevant to the regulation of pesticides. This text should provide a useful resource for countries seeking to design adequate national legal frameworks for pesticides.

A number of people have participated in the development of this study. Jessica Vapnek, Isabella Pagotto and Margaret Kwoka were the principal authors. The authors would like to thank Barbara Dinham for inputs into the original outline for the publication, Carmen Bullón Caro, Jennifer Hilton and Valerio Poscia for excellent research assistance and the following colleagues for reviewing and commenting on earlier versions: Donata Rugarabamu, Daniele Manzella, Kerstin Mechlem, Ali Mekouar, Elisa Morgera, Bill Murray, George Sarpong, Gero Vaagt and especially, Harry van der Wulp. It is hoped that this text will prove useful to government policy-makers and researchers alike.

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I. INTRODUCTION

1.1. Context for the design of national pesticide legislation

International and national legal frameworks governing the trade and use of pesticides have undergone significant changes over the last twenty years. The International Code of Conduct on the Distribution and Use of Pesticides (Code of Conduct), adopted in 1985 by the 23rd Session of the main governing body of the Food and Agriculture Organization of the United Nations (FAO), was designed to provide universal standards of conduct for all actors involved with pesticides, but especially national governments and the pesticide industry. Since then, the Code of Conduct has been amended once, in 1989, to include the Prior Informed Consent procedure,¹ and revised in 2002.

Since 1985, several other international instruments, either dealing explicitly with pesticides or indirectly relating to their management, have come into force. The most relevant include the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention), the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (Basel Convention), the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), the International Labour Organisation Convention No. 184 on Safety and Health in Agriculture (ILO Convention 184) and numerous standards on pesticide residues in food issued by the Codex Alimentarius Commission. Furthermore, a new Globally Harmonized System of Classification and Labelling of Chemicals (GHS) has been developed, designed to improve the protection of human health and the environment during the handling, transport and use of chemicals.

In the last fifteen years, increasing regional efforts have addressed the harmonization of pesticide regulatory requirements and processes, for example in the Sahel Region (under the auspices of the Permanent Interstate Committee for Drought Control in the Sahel – Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS)), as well as in the Andean Community, MERCOSUR (the Southern Common Market – Mercado Común del Sur) and the European Community. All these

¹ See Section 2.2.2.

international and regional efforts are meant to contribute to the sound management of pesticides throughout their life cycle, beginning with their development and manufacture, and on to their transport and use and finally their disposal. Any review of national pesticide legislation should take into account those instruments which the country has formally signed as well as those it has voluntarily adopted.

When the Code of Conduct was created, many, if not most, developing countries and countries with economies in transition did not have pesticide legislation in place. Awareness of the hazards of pesticides was limited, while the use of pesticides, including highly toxic formulations, was on the rise. Significant progress has been made since then, and almost every country has some type of pesticide legislation in force. However, many of the existing laws and their implementing regulations have structural shortcomings or lack adequate enforcement mechanisms. Some of the flaws include weak penalties, insufficient incorporation of applicable international obligations and standards and the absence of a clear designation of authority to enforce the legislation, all of which undermine effective enforcement. As more of these weaknesses have come to light, government authorities have been seeking comprehensive guidance and assistance in the revision of their national legislative frameworks for pesticides.

Almost every international environmental law instrument is accompanied by guidelines for its implementation at the national level, and significant resources toward that end are often made available by the secretariats of the various conventions. But while such material and advice can be useful and even essential for some countries, the disparate requirements of the applicable conventions, as well as the recommendations of soft law instruments, can place a heavy burden on small national units in charge of pesticide management. Little comprehensive and global advice is available to assist countries in understanding the maze of applicable rules and other non-binding instruments that governments may wish to have reflected in their legislation.

In recent decades, FAO has prepared several legal publications and numerous technical guidelines on discrete aspects of pesticide management. However, changes in the landscape of international law governing pesticides, in particular the revision of the Code of Conduct, the amendment of some of its technical guidelines and the coming into force of related conventions, call for updated guidance.

The purpose of this text is to provide governments wishing to review, update or design national pesticide legislation with up-to-date advice on legislating for pesticide management. The recommendations contained here are intended to be useful to all countries, but the text also specifically highlights the special problems that developing countries and countries with economies in transition are likely to face. The text encourages countries to design and approve a parliamentary law on pesticides to provide a firm legal basis for all further regulation on pesticides, through subsidiary instruments such as regulations and decrees.

It is important to note that legislation alone is unlikely to balance effective pesticide management with an environmentally sustainable approach to pest control. Governments may wish to consider adopting other policies and strategies to improve pesticide management, such as providing farmers with support and training in Integrated Pest Management (IPM),² allocating subsidies for the purchase of minimum-risk products and fostering scientific research, public education campaigns and training for both inspectors and professional users. A solid legislative and regulatory framework, however, underpins all of these.

This publication consists of five parts. The first starts with a brief look at the benefits of the review of national pesticide legislation and then provides an overview of pesticides, the risks associated with their use and risk management strategies. Pesticides can have serious negative impacts on the environment and human health, yet they can also be beneficial to both agriculture and the control of vector-borne diseases. Given both the need for and the risks associated with pesticide use, effective pesticide legislation, regulation and management are vital to creating and maintaining a sustainable pesticide regime and fostering trade.

Part II examines the most relevant international instruments directly addressing pesticides or otherwise relating to their management. The discussion is divided into non-binding and binding international instruments, with each instrument typically addressing a different stage in a pesticide's life cycle. Parts III and IV, on the other hand, focus on the revision and design of national pesticide legislation. Part III is a guide to structuring a modern pesticides law, outlining in some detail what its contents should be and what

² IPM emphasizes the growth of healthy crops and encourages natural pest control systems (see Section 1.4).

types of administrative bodies should have advisory and executive powers in relation to pesticides. Although different countries will have different needs, the elements set out in this part should be regarded as the minimum contents of effective legislation which will allow for the effective management of pesticides. Part IV examines the political and institutional backdrop to the design of pesticide legislation, and then looks at complementary tools for implementing change, such as economic instruments, public-private partnerships, voluntary agreements, codes of conduct and awareness-raising programmes. Part V offers some brief concluding observations.

1.2. Benefits of national pesticide legislation

National pesticide programmes may have various goals, most of which can be met by an effective legal framework. The first might be to ensure the efficacy of pesticide products for their proposed use, while at the same time protecting pesticide users, consumers, crops, livestock and the environment. Another legitimate goal would be the pursuit of a country's financial interests in international trade. This, too, can be taken into account and balanced with the other objectives.

Pesticides have traditionally been the object of national legislation in several fields. Laws and regulations on human health, environmental protection, agricultural practices, international trade and border control all address or affect pesticides in some fashion, and thus form part of the overall pesticide management system. However, if some of the legal provisions are outdated, or were created at different times and with different objectives, there may be inconsistent and overlapping provisions, weakening the overall regulatory scheme.

Existing national legislation may be outdated with respect to new needs and problems arising in the country, or when compared with international or regional standards. Many countries have ratified international instruments but have yet to implement the new obligations and standards in their national legislation. Other countries may wish to harmonize their legislation with non-binding international guidelines such as the Code of Conduct but have not done so. Among other effects, non-compliance with international norms can raise problems for the country's exports of agricultural goods.

Inconsistencies in the legislative provisions might include varying definitions of pesticides and related terms, overlapping mandates for different agencies

acting in the pesticide realm and conflicting provisions regarding permissible pesticide uses. Inconsistencies may have arisen because different laws or regulations were implemented on an *ad hoc* basis to deal with specific problems in specific contexts, or because some provisions ostensibly replaced by later legislation remain on the books in earlier laws. Reviewing and redesigning the legislative framework so that it provides consistent definitions and clearly identifies the uses to which it applies is the first step to foster compliance by pesticide users and the pesticide industry.

Contradictory provisions within the legislation in force may grant the same or overlapping powers to different bodies. This may result in either duplicative administration of some tasks (creating burdensome and overlapping inspections of businesses), or gaps in coverage allowing unregulated use of pesticides. For example, the decentralization of government power to the regions or the privatization of certain activities may have led to gaps in coverage of certain actions or certain parts of the country.

The overlaps may have originated from different agencies having been created at different times, each with its own domain. For instance, regulatory power over pesticides may originally have resided with the ministry responsible for agriculture, but with the increasing use of pesticides as a means to prevent vector-borne diseases, the ministry responsible for health may have been granted some authority in relation to some pesticides. Equally, if pesticides have become a growing environmental problem, environmental protection agencies may have been given some control. In systems where some types of pesticides are governed by one administrative body and other pesticides by another, it may be unclear to the user which system applies.

A different problem may occur where, because of administrative delays and long waiting periods, government has taken action to streamline the pesticide registration or licensing system. While on the surface this may seem to facilitate trade and commerce, it may also eliminate some of the protections originally included in the pesticide registration or licensing system. In such cases, redesign of pesticide legislation may reinstate some of the protections of a more rigorous review.

Reviewing and redesigning pesticide legislation may also strengthen some provisions by making them specifically applicable to pesticides. For instance, although a legal provision may provide that the contamination of land or

water with substances dangerous to human health attracts criminal penalties, this may not provide sufficient notice to the public that pesticides are included and that the disposal of obsolete or leftover pesticide products is prohibited. Another example is general laws prohibiting misleading advertising: although the provisions may apply to pesticide advertising, users might not appreciate this, and therefore more specific standards for pesticide advertising may better serve policy goals. Redesigned national legislation can enact specific provisions on pesticides which then act as an efficient deterrent and can be effectively enforced. Unambiguous laws also prevent varying or conflicting judicial interpretations.

Finally, national legislation may address a specific area or problem, but enforcement and agency accountability can still be weak. For example, legislation may create a registration process, but unregistered pesticides may often go undetected, and the registration process may be largely ignored by industry and end users if enforcement is not systematic. Resolution of such problems will require revisions to the national legislation to heighten the transparency of agency processes and to improve enforcement of the law.

1.3. An overview of pesticides and their use

When designing national legislation, it is important to understand which products are targeted by the proposed law or regulations and also how and why these products are used and by whom. Different types of pesticides may require different regulatory measures. A national pesticides management programme and national pesticide legislation must encompass and address the range of users and uses in the country. It must also cover all aspects of a pesticide's life cycle.

The term "pesticide" covers substances used for a wide range of purposes. There are two main categories of pesticides: synthetic chemical pesticides and biopesticides. Chemical pesticides differ from other chemicals in that they are designed to have toxic effects on certain organisms. Biopesticides derive from "natural" materials, including pathogens (e.g. viruses, bacteria or fungi that affect the pest) and natural toxins derived from plants. Such products tend to be more specific to their target pest and less persistent in the environment. Microbial pesticides, consisting of microorganisms such as bacteria or fungi, can control different kinds of pests, and each microorganism is fairly specific for its target pest. Another type of biopesticide is a plant-incorporated toxin produced by a plant from genetic

material that has been incorporated into the plant through genetic engineering. This text focuses on chemical pesticides.

The most common use of pesticides is to control organisms that harm agricultural production, but pesticides have other uses in the agricultural context. For instance, pesticides include substances that are used to regulate plant growth or fruit production, defoliate plants or preserve plant products before or after harvest. Furthermore, pesticides may be used in the context of animal husbandry to control insects and pests that infest the bodies of farm animals.

Pesticides have other uses beyond agriculture. Another significant use is to protect human health by controlling insects that carry disease, since vector-borne diseases account for up to 17 percent of the global infectious disease burden. Pesticides are widely used, for instance, to control mosquitoes in malaria-endemic areas. Other vector-borne illnesses frequently controlled by pesticides include chagas, dengue fever, leishmaniasis, lymphate filariasis, Japanese encephalitis and African trypanosomiasis.

Because of these many uses and the potential benefits of pesticides, many societies are heavily dependent on pesticide products, although the types of pesticides most commonly used have changed over time. Organochlorine insecticides, which include Dichloro-diphenyl-trichloroethane (DDT), were once in widespread use. But because they remain biologically active for long periods, bioaccumulation of these compounds and increasing evidence of endocrine disruptive effects led to a search for alternatives. The next generation of pesticides consisted of organophosphates and carbamates, which were less persistent but had acute toxicity to people and animals. This led finally to the development of synthetic pyrethroids, the third generation of pesticides. Their main disadvantage is their higher price compared to older types of pesticides, and the sometimes more rapid development of pest resistance.

1.4. Pesticide risks and risk reduction strategies

Pesticides can protect crops, but if used improperly or excessively they can also have the opposite effect. Examples include the increase in secondary pests due to inappropriate pesticide treatment of a primary pest; adverse effects on pollinator activity; and the disruption of soil ecology due to pesticide contamination. Furthermore, pesticides can have a range of detrimental environmental effects, contaminating the surrounding

environment and water resources through spills, inappropriate disposal, pesticide run-off or drift after aerial application. This can result in widespread death of wildlife and beneficial organisms such as bees, as well as negative effects on livestock, aquaculture and ecosystems.

The detrimental effects can occur not only in the immediate vicinity of the pesticide contamination but also in remote areas where run-off, groundwater contamination, wind currents or animals have carried pesticides far from their original application. Contamination can reduce biodiversity even in a contained agricultural setting by killing beneficial organisms. Of the pesticides having an impact on biodiversity, persistent organic pollutants (POPs) have the most long-lasting and far-reaching effects, as they can remain in the tissue of living organisms, thereby affecting other species in the food web.

Another concern is pesticide resistance among agricultural pests and disease vectors. Intensive pesticide use, or overuse, in an effort to control pests and disease vectors can reduce the efficacy of pesticides for other purposes, such as vector control to protect human health or pest control for livestock production. Often when pests are resistant to a certain pesticide farmers will simply apply more or different pesticides, thereby increasing the residues on food crops and strengthening the pest's resistance even further. In the end, when a pesticide is no longer effective, farmers often face the need to purchase newer, often more expensive products, which can be especially problematic in developing countries. Another problem is how farmers deal with ineffective pesticides, through the use of pesticide "cocktails." Such negative cycles of practice can be broken through the application of IPM programmes.

Negative effects on human health can be caused by direct or indirect exposure to pesticides. Exposure is direct where the pesticide moves straight from the source to the person, as in the case of workers and farmers using pesticides on farms. Exposure is indirect where a pesticide goes through an intermediate pathway, for example via the consumption of food or water contaminated with pesticide residues.

Pesticide exposure can have both acute and chronic effects. Acute effects are caused by a single exposure to highly toxic pesticides, while chronic effects arise from exposure to lower concentrations over longer time periods. Accidental ingestion or substantial physical contact with a pesticide may result

in pesticide poisoning, a serious illness that affects between one and five million people per year. Pesticide poisoning is also responsible for several thousand annual fatalities due to neurological and respiratory problems. Typical modes of physical contact include leaky application equipment, contact during mixing and loading and entering fields or harvesting without respecting prescribed periods of non-entry after application. Chronic exposures, including consumption of food and water contaminated by pesticide residues, or use of household and garden pesticides, can have significant health effects, including endocrine disruption, birth defects, cancer, thyroid disease, neurological problems and immune disorders.

Recent research has confirmed that children are particularly vulnerable to the effects of pesticides, because the ratio of pesticide intake to body weight is higher than in adults and because their organs are still developing. Children may also be exposed *in utero* or through breast milk if their mothers work with or around pesticides. In rural areas in developing countries, children are also more apt to explore storage areas, play with empty containers or otherwise come into accidental contact with concentrated pesticides, treated fields, contaminated equipment or empty containers. Pesticides and application equipment are often stored at home and close to food products.

Developing countries face the most challenges in achieving the sound management of pesticides. A large proportion of the population is directly engaged in agricultural work, often on a very small scale. Farmers will purchase pesticide products for individual use, but may not be sufficiently literate to read the instructions or be comfortable in the language the instructions are written in. Particularly in remote areas, the only source of advice may be the pesticide seller, who may also be poorly informed, and whose advice may be guided by commercial self-interest.

These populations are often not able to afford the newest minimum-risk pesticides, instead using older and often more dangerous products which are cheaper because they can be produced as generic products off-patent. Even appropriate products may be adulterated or have deteriorated because their shelf life expired while they were in storage or because they were stored improperly. Farmers using such pesticides are at risk of developing pesticide-related illnesses and future pest problems.

Lack of awareness and resources can lead to improper disposal of pesticides and reuse of pesticide containers. Developing countries may acquire

substandard pesticides through illegal trade or sometimes through international "donations" or dumping of pesticides that are no longer used in developed countries. These donations are often improper for the climate or local crops or are themselves pesticides that are obsolete or that recipient countries may not be capable of dealing with in an environmentally sound manner.

The improper use of pesticides can pose other problems that can be particularly serious for developing countries. For example, exporting countries may find their agricultural products rejected where they contain unacceptable residue levels. Tourism can also be affected where ecosystems or marine fauna are threatened because pesticides have been used for killing fish or have leached into the waterways, or where travellers rightly or wrongly believe that a country's pesticide management problems make food or drinking water unsafe. Proper management of pesticides at national level therefore has far-reaching implications for a country's well-being with respect to the environment, human health and trade.

Although pesticide hazards and exposure are inextricable from pesticide products, selecting less hazardous products and reducing the risk of exposure can mitigate the risks. Reducing pesticide use is the first step to reducing exposure; further steps include the selection of a mode of application that involves a lower chance of exposure, and naturally the proper use of appropriate protective gear. In this respect, the Code of Conduct suggests that products "whose handling and application require the usage of equipment that is uncomfortable, expensive or not readily available should be avoided" (art. 3.5), and that governments and industry should cooperate in "promoting the use of proper and affordable personal protective equipment" (art. 5.3.1).

Governments can also reduce pesticide use by embracing alternatives to pesticides. For instance, according to Article 1.7.6 of the Code of Conduct, the standards set forth in the Code are designed to promote Integrated Pest Management (IPM). The Code of Conduct defines IPM as "the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment" and as a method emphasizing "the growth of a healthy crop

with the least possible disruption to agro-ecosystems" and encouraging "natural pest control mechanisms" (art. 2).

According to the Code of Conduct, governments should make concerted efforts to develop and promote the use of IPM (art. 3.7). Economic incentives could be employed, such as tax breaks or subsidies to farmers who employ IPM (see Section 4.2.1). Similar requirements or incentives could be created for Good Agricultural Practices. National policies could also promote IPM research, education and awareness raising (see Section 4.2.3). But while the use of IPM may be embraced, encouraged or required at national level, there will still be a need to regulate the pesticides in use in the country, thus the need to design national pesticide legislation. The international backdrop against which national legislation is framed is the subject of Part II.

II. INTERNATIONAL FRAMEWORK

2.1. Overview

Having reviewed the context for the revision of national pesticide legislation and some empirical information about pesticides, the discussion now turns to the international framework for pesticides management. A number of international instruments address pesticides directly and most countries are contracting parties to one or more of these. Other instruments, some binding and some not, implicate pesticides management only indirectly. All of these instruments establish a normative framework for some of the most important aspects of pesticide management.

Most binding and non-binding instruments have been created under the auspices of international organizations such as FAO, the United Nations Environment Programme (UNEP), the World Health Organization (WHO) and the International Labour Organisation (ILO). The principal international instruments relevant to pesticides management are set out in Box 1.

**BOX 1 - SELECTED INTERNATIONAL INSTRUMENTS REGULATING
PESTICIDE MANAGEMENT ACROSS THE LIFE CYCLE OF PESTICIDES
(DATA AS OF SEPTEMBER 2007)**

Legally Binding

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Pesticides and Industrial Chemicals in International Trade (adopted: 1998; entry into force: 2004; number of parties: 117)
Substances covered: specific types of pesticides (24 pesticides and four severely hazardous pesticide formulations) and 11 industrial chemicals

Stockholm Convention on Persistent Organic Pollutants (adopted: 2001; entry into force: 2004; number of parties: 149)
Substances covered: persistent organic pollutants, nine of which are pesticides

Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (adopted: 1989; entry into force: 1992; number of parties: 170)
Substances covered: hazardous wastes, including pesticides at the end stages of their life cycle

Montreal Protocol on Substances that Deplete the Ozone Layer (adopted: 1987³; entry into force: 1989; number of parties: 191)
Substance covered: methyl bromide, a specific type of pesticide which is also an ozone-depleting substance

ILO Convention on Safety and Health in Agriculture, No. 184 (adopted: 2001; entry into force: 2003; number of parties: 8)
Substances covered: not specified, addresses all aspects of health and safety for chemicals used in agriculture

ILO Convention Concerning Safety in the Use of Chemicals at Work, No. 170 (adopted: 1990; entry into force: 1993; number of parties: 15)
Substances covered: (hazardous) chemicals used in all kinds of economic activities

³ The Montreal Protocol was amended in 1990 (London Amendment), 1992 (Copenhagen Amendment), 1997 (Montreal Amendment) and 1999 (Beijing Amendment). Not all of the 191 parties to the Montreal Protocol have ratified these amendments.

Voluntary

FAO International Code of Conduct on the Distribution and Use of Pesticides
(adopted: 1985; revised: 2002)
Substances covered: pesticides (broadly defined)

FAO Guidelines to the International Code of Conduct⁴

Standards of the Codex Committee on Pesticide Residues
(a committee of the Codex Alimentarius Commission)
(Commission established: 1963; number of parties: 175; first session of the
Committee on Pesticide Residues: 1966)
Substances covered: 218 pesticides

UN/ECOSOC Globally Harmonized System of Classification and Labelling
of Chemicals (adopted: 2002; revised: 2004)
Substances covered: hazardous chemicals, including pesticides
(broadly defined)

The international instruments analysed in this study embody a "life cycle" approach to pesticides management, meaning that they address the progressive stages of the life cycle of pesticide products: manufacture, registration, import and export, transport, packaging, labelling, advertising, use, storage and disposal. The Code of Conduct is one of the earliest and most prominent instruments promoting a life cycle approach to pesticides management, and the approach has since been promoted by several other international texts, including Agenda 21,⁵ the Johannesburg Plan of Implementation adopted at the World Summit on Sustainable Development⁶ and recently the several instruments adopted under the Strategic Approach to International Chemicals Management (SAICM).⁷ The Code of Conduct and other important international instruments, binding and non-binding, are explored in the next section.

⁴ See Annex.

⁵ See Agenda 21, Ch. 19, paras. 48–49.

⁶ See Johannesburg Plan of Implementation, Ch. 3, para. 23.

⁷ The three SAICM core documents are the Dubai Declaration on International Chemicals Management, the Overarching Policy Strategy and the Global Plan of Action, see www.chem.unep.ch/saicm. On the relationship between SAICM and pesticide management, see "New International Developments on Pesticide Management," 131st Session of the FAO Council, 20–25 November 2006, CL 131/7, para. 13 *et seq.*

2.2. Selected international instruments

There is no legally binding multilateral agreement comprehensively addressing pesticides. Rather, existing international agreements address specific stages in the life of a pesticide product. In addition to these, non-binding voluntary instruments provide further guidance.

The following discussion first provides an overview of the relevant non-binding international instruments, in particular the Code of Conduct, and then addresses selected binding multilateral agreements (or treaties) at the global level. The discussion is limited to those few international agreements and instruments considered the most influential. This section sets the groundwork for the detailed examination of national legislation that follows in Part III, which focuses on each successive stage of the pesticide life cycle, discussing any specific international provisions that apply.

2.2.1. Non-binding legal instruments

Non-binding legal instruments (often called "soft law" instruments) include plans of action, declarations, codes of conduct, guidelines and technical standards. These instruments are designed to promote international harmonization, and they are usually elaborated and drafted by experts. Although they are not legally binding, some have influenced and continue to influence national pesticide legislation considerably. In contrast to binding multilateral conventions, these soft law instruments do not require ratification in order to be amended or revised.

Code of Conduct

The International Code of Conduct on the Distribution and Use of Pesticides (Code of Conduct) is the only international instrument addressing the main elements of pesticide management throughout the pesticide life cycle. The Code of Conduct is designed to be monitored collaboratively by all concerned parties, and progress made in observance of the Code of Conduct is reported to the Director-General of FAO. The Code of Conduct, which was originally adopted in 1985 by the 23rd Session of the FAO Conference, was subsequently amended in 1989 and fully revised in 2002. The 1989 amendment incorporated the Prior Informed Consent (PIC)⁸ procedure into the Code of

⁸ See Section 2.2.2.

Conduct. In 1998, the Rotterdam Convention developed this procedure and gave it legally binding force, so it is no longer regulated by the Code of Conduct. The 2002 revisions were intended to emphasize more strongly the responsibility of governments, industry, traders, pesticide users, public interest groups and international organizations in reducing the health and environmental risks associated with pesticides.

The revised Code of Conduct is intended to provide guidance on all facets of pesticide distribution and use. As part of its comprehensive approach, the Code of Conduct considers pesticides in the context of both chemicals management and sustainable agricultural development. As noted, the Code of Conduct employs a life cycle approach, focusing sequentially on the development, production, management, packaging, labelling, distribution, handling, application, use, control and disposal of all types of pesticides, as well as used pesticide containers.

Unlike a binding convention or treaty, the Code of Conduct is voluntary, and has been widely adopted by national governments. The Code of Conduct operates in conjunction with a number of technical and legal guidelines published by FAO, which provide further specifications on successive stages in the life cycle of pesticides.⁹

The Code of Conduct contains a detailed overview of its objectives (art. 1) and a comprehensive list of terms and definitions (art. 2). It sets standards for pesticide management (art. 3), pesticide testing (art. 4), health and environmental risk reduction (art. 5), regulatory and technical requirements (art. 6), availability and use of pesticides (art. 7), distribution and trade of pesticides (art. 8), information exchange (art. 9), labelling, packaging, storage and disposal (art. 10) and advertising of pesticide products (art. 11).

Significantly, the Code of Conduct provides specific suggestions on how to design national legislation on pesticide management. In particular, Article 6, entitled "Regulatory and technical requirements," urges governments to create the necessary national legislation to regulate pesticides and to provide effective enforcement, and outlines the areas in which regulation is necessary. The Code of Conduct also identifies other governmental programmes necessary for the creation of a comprehensive pesticides

⁹ Many of the FAO guidelines in support of the Code of Conduct are under constant review. See Annex; see also the continually updated chart at www.fao.org/ag.

management framework. Among other things, as already noted, the revised Code of Conduct encourages IPM (art. 1.7.6).

Codex Alimentarius standards

The Codex Alimentarius Commission (Codex), a joint body of FAO and WHO, elaborates harmonized food standards which are recognized by the World Trade Organization (WTO) through the Agreement on the Application of Sanitary and Phytosanitary Measures. Most relevant to the management of pesticides are the standards for maximum residue limits (MRLs)¹⁰ established by the Codex Committee on Pesticide Residues (CCPR). The CCPR is a subsidiary body of Codex, entrusted with the preparation of the MRLs to be adopted by Codex.

The CCPR establishes MRLs for pesticides and for chemicals similar to pesticides which can be contained in specific food items and animal feed; considers methods of testing for MRLs; and prepares priority lists of pesticides for evaluation by the Joint FAO/WHO Meeting on Pesticide Residues (JMPR).¹¹ Draft standards established by the CCPR are sent to national Codex Contact Points and international organizations for comment before their final adoption by Codex. Through this process, as of July 2007, MRLs had been established for 218 pesticides. Some governments have adopted Codex MRLs as legally binding standards, usually through subsidiary instruments under their basic food laws.

The WTO Sanitary and Phytosanitary (SPS) Measures Committee, meeting on 27–28 June 2007, discussed the issue of private sector standards for Good Agricultural Practices adopted by some importing countries. Many of these new standards are either more restrictive than the internationally agreed-upon standards of Codex or impose standards where none have been set internationally. These higher standards are also much broader since they cover not only the safety of the final product but also the way foods are produced – addressing fair trade, labour practices and environmental issues. Critics complain that these higher standards create an unfair trade barrier by imposing standards on exporting countries which they have not agreed upon.

¹⁰ MRLs are the maximum concentrations (expressed as mg/kg) legally permitted in foods.

¹¹ The JMPR, established in 1963 as an independent scientific advisory body to the CCPR, is an internationally recognized expert committee of independent specialists who make recommendations on acceptable levels of pesticide residues in food subject to international trade.

At the SPS Measures Committee meeting, Argentina, Egypt and many other developing countries proposed shifting the burden from exporting countries to importing countries, making the latter responsible for private sector standards within their borders.¹² Opponents urged Codex to require importing countries to provide scientific evidence to justify imposing stricter standards. At the time of publication, these issues had not been resolved.

Globally Harmonized System

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is an internationally agreed tool for chemical hazard communication, incorporating harmonized hazard classification criteria and provisions for standardized label information and safety data sheets (SDS). The scope of GHS is broad, covering all chemicals, including pesticides. However, it does not cover pesticide residues in food, pharmaceuticals, food additives or cosmetics.

GHS was developed as a result of Agenda 21, agreed in 1992 at the Rio Conference on Environment and Development. It was endorsed by ECOSOC (the United Nations organ on economic and social issues) as an international voluntary standard available for adoption by countries. At the World Summit for Sustainable Development in 2002, governments agreed on a 2008 implementation target for GHS.

GHS harmonizes criteria for hazard classification and sets standards for chemical hazard communication in four key sectors at the national level: industrial workplaces, agriculture, transport and consumer products. Chemical hazard information can be conveyed in the form of a label¹³ or safety data sheet, or through placards, posters and markings. As with Codex standards, some governments choose to adopt GHS standards as binding standards through national legislation.

¹² Committee on Sanitary and Phytosanitary Measures, Maximum Residue Levels for Pesticides – Impact on Exports from Developing Countries, WTO Doc. G/SPS/W/211, 26 June 2007 (Communication from Argentina).

¹³ The GHS standards on labelling are similar to those recommended in the FAO guidelines. Only some GHS signal words, hazard statements and pictograms are different from what is presently practised. One issue that is more disputed is hazard-based versus risk-based labelling, although the extent to which the GHS will imply legal changes is not yet clear.

The ultimate goal of GHS is to ensure that information on chemical hazards, including pesticide hazards, is made available to workers and consumers in a harmonized and comprehensive format, on labels and in SDS, in countries around the world. Successful implementation will require the collaboration of government, industry and public interest and labour organizations. GHS affects legislation on pesticide management insofar as it sets standards relevant to evaluation, registration, labelling and the manner of use of pesticides.

2.2.2. Multilateral treaties

Rotterdam Convention

The growing world trade of chemicals during the 1960s and 1970s raised concerns about the risks linked to the use of hazardous chemicals. These concerns eventually led to the adoption in 1987, by the UNEP Governing Council, of the London Guidelines for the Exchange of Information on Chemicals in International Trade. The Prior Informed Consent (PIC) procedure was added to the London Guidelines in 1989. Its aims were to help importing countries learn more about the potential hazards of chemicals being shipped to them, establish a decision-making process on future imports and encourage exporting countries to take measures to prevent the export of unwanted pesticides.

In 1998, the PIC procedure was incorporated into a legally binding instrument, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention). The convention entered into force in 2004 and applies to pesticides (art. 2.a) as well as industrial chemicals (art. 2.b).

Except for a few obligations relating to domestic production and use, the convention mainly governs the import and export of chemicals. The two main requirements of the convention are information exchange and the PIC procedure. The purpose of the former is to facilitate the exchange of information between countries on chemicals moving in trade, especially those that have been banned or severely restricted to protect human health or the environment. Countries with advanced systems for safe management of chemicals should share their experience with countries with less developed systems. At the same time, all countries should, when taking

measures to regulate chemicals, ensure that such measures do not create unnecessary obstacles to international trade.

The PIC procedure is a mechanism for formally obtaining and disseminating the decisions of importing countries regarding hazardous chemicals. The goal is to protect human health and the environment through the exchange of information about hazardous chemicals (including pesticides), enabling countries to make informed decisions about imports and exports of such substances.

Two types of chemicals are eligible to be "listed" in Annex III of the Rotterdam Convention, meaning that they are subject to the mandatory PIC procedure: "banned or severely restricted chemicals" (including pesticides), and "severely hazardous pesticide formulations." The former are those chemicals (including pesticides) that have been banned or severely restricted in at least two countries from different PIC regions because they pose dangers to human health or the environment. The latter are chemicals formulated for pesticide use that cause severe health or environmental effects observable within a short period of time after a single or multiple exposures. To be listed, chemicals must pass a multi-step process, including notification to the convention's secretariat, review by the convention's Chemical Review Committee and then a recommendation by the convention's Conference of the Parties (COP). In July 2007, 39 chemicals were listed in Annex III, of which 24 are pesticides, 11 are industrial chemicals and four are severely hazardous pesticide formulations.

Once a chemical is listed in Annex III, all parties to the Rotterdam Convention must implement the PIC procedure with respect to that chemical. Parties must also implement appropriate legislative and administrative measures to ensure that they will meet import and export obligations for listed chemicals. The convention includes a provision enabling the COP to establish procedures and institutional mechanisms to determine non-compliance with the convention and to decide upon how to treat parties found to be in non-compliance. At present, an open-ended *ad hoc* working group is studying the development of a procedure of non-compliance to be adopted by the COP.¹⁴

¹⁴ UNEP/FAO/RC/COP.3/26, Dec. RC-3/4: Draft text of the procedures and mechanisms on compliance with the Rotterdam Convention.

Stockholm Convention

The Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention), which entered into force in 2004, is aimed at eliminating the production and use of chemicals that are deemed to be persistent organic pollutants (POPs). POPs are chemicals that accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. They also remain toxic for a very long time and are found in locations far removed from their original source. In many ways, these are some of the most highly dangerous chemicals, although their effects may be seen only in the long term. As of May 2007, there were 12 listed substances, of which nine are pesticides (including aldrin, chlordane, dieldrin, endrin, heptachlor, mirex, toxaphene, hexachlorobenzene and DDT). All but one, endrin, are also listed under the Rotterdam Convention.

To add a new chemical to the POPs list, it must have persistence, bioaccumulation and evidence of adverse effects, as well as the potential for long-range environmental transport. A party may make a proposal to the secretariat that a new chemical be listed. If the secretariat is satisfied with the information provided, it forwards the proposal to the POPs Review Committee for evaluation. All parties and observers are then invited to submit more information specified in Annex E of the convention. The committee then prepares a risk profile and makes a risk management evaluation, and based on this information recommends whether the chemical should be considered by the COP for listing. The final decision to list a new chemical is made by the COP.

There are three different lists of chemicals. Annex A is for chemicals that are to be eliminated, Annex B for chemicals to be restricted and Annex C for chemicals that are unintended by-products of certain production processes and are to be reduced.¹⁵ Article 3 of the convention contains detailed prohibitions on Annex A chemicals and sets out the contracting parties' obligations to eliminate the production, use, import and export of these chemicals. It also outlines restrictions on the production and use of Annex B chemicals. Imports of chemicals for the purpose of environmentally sound disposal are exempted. There are also specific production and use exemptions for chemicals listed in both Annex A and B. For example,

¹⁵ Annex C chemicals are less relevant for pesticide legislation as they are chemicals often produced in industries such as waste incineration, pulp production using chlorine, secondary copper production and some other types of metal production.

Annex B chemicals (e.g. DDT) may be produced and used for so-called "acceptable purposes," i.e. disease vector control in accordance with Part II of that annex.

Parties to the convention therefore need to prohibit the production and use of most listed chemicals under Annexes A and B at national level. The convention also establishes requirements for POPs stockpiles and wastes, and calls for coordinated action with the Basel Convention, discussed below. Like the Rotterdam Convention, the Stockholm Convention includes a provision enabling its COP to establish procedures and institutional mechanisms for determining non-compliance with its provisions and for the treatment of non-complying parties. At present, an open-ended working group is in the process of elaborating institutional mechanisms on non-compliance to be adopted by the COP.¹⁶

Basel Convention

The Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal (Basel Convention), which entered into force in 1992, regulates the international shipment of hazardous wastes. Although not specifically directed at the regulation of pesticides, it does address substances that may be by-products or waste products from pesticides. As such, it is useful for national governments seeking to prevent the dumping within their borders of waste products such as obsolete pesticides, especially where governments may lack the capacity to manage these waste products in an environmentally sound manner. It may also inform national legislation regarding the appropriate disposal methods for pesticide containers and products.

The Basel Convention defines wastes as "substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law" (art. 2.1). The Basel Convention targets "hazardous wastes," which belong to any category contained in Annex I and exhibit one or more of the characteristics listed in Annex III (e.g. toxic, poisonous, explosive, corrosive, flammable, ecotoxic, infectious), which have been further clarified by Annexes VIII and IX. In addition, wastes defined as hazardous in the domestic legislation of an exporting, importing or transiting country are also regulated by the convention (arts. 1.1 and 3). Materials containing pesticides or resulting from pesticides listed under the Rotterdam

¹⁶ UNEP/POPS/COP.3/30, Dec. SC-3/20: Non-compliance.

or Stockholm Conventions would be included under the Basel Convention's definition of hazardous waste once they reached the end stages of their life cycle and were bound for disposal. This is explored further in Section 3.12.

In addition to the original text of the Basel Convention, there are two other related texts which have not yet come into force. The first is the "Ban Amendment" (a ban on the export from OECD to non-OECD countries of hazardous wastes intended for final disposal, and on the export of wastes intended for recovery and recycling). The second is the Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (Liability Protocol), which was adopted in 1999. The creation of this protocol was motivated by the need for a comprehensive regime for liability and for adequate and prompt compensation in the event of an incident occurring at any phase of a legal or illegal transboundary movement of a hazardous waste.

Under the Basel Convention, parties may generally prohibit the import of hazardous wastes, or may prohibit imports of specific types of hazardous wastes or specific shipments of hazardous wastes (art. 4.1). Exporting states may only move hazardous wastes across borders after having provided prior written notification to the importing state and received written consent (arts. 4.1 and 6). Although implementation of the Basel Convention has mainly been focused on the transboundary movement of wastes, the convention imposes many other obligations. Parties must, *inter alia*, reduce the production of hazardous wastes (art. 4.2.a), ensure the availability of adequate disposal facilities (art. 4.2.b), establish criminal penalties for violations of the provisions of the convention (art. 4.3), require proper labelling, packaging and documentation for hazardous wastes in shipment (arts. 4.7.b and 4.7.c) and report to the secretariat of the convention on the transboundary movement of hazardous wastes (art. 13.3.b). In 2002, the Basel Convention's COP established a mechanism, which is administered by a Compliance Committee, to facilitate, promote, monitor and secure the implementation of the convention and compliance with its obligations.¹⁷

¹⁷ UNEP/CHW./40, Dec. VI/12: Establishment of a mechanism for promoting implementation and compliance.

Montreal Protocol

The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) addresses one specific type of pesticide. After scientists determined that methyl bromide depletes the ozone layer, it was put on the list of ozone-depleting substances in 1992 and the Montreal Protocol was amended accordingly (art. 2H). Developing countries have been given a grace period, while industrialized countries were scheduled to eliminate production of methyl bromide by January 2005, with certain exceptions: for pre-shipment, quarantine and emergency uses and for "critical uses" authorized under the protocol (the so-called "critical-use exemptions"). These apply, for example, where technically and economically feasible alternatives are not immediately available. The exemptions are intended to be temporary and strictly limited derogations from the phase-out of methyl bromide. Pursuant to several decisions of the Montreal Protocol's COP, greater emphasis will be placed on the promotion of measures for the phase-out of even these critical uses.¹⁸

The protocol set up a financial assistance fund, which has assisted many developing countries with the adoption of substitutes and the training of farmers. A number of developing countries have agreed to phase out methyl bromide on a faster timetable.¹⁹ The Montreal Protocol was the first multinational environmental agreement to set up a compliance mechanism,²⁰ which has been operating for several years.

ILO conventions

Several International Labour Organisation (ILO) conventions address the safety and health of workers in contact with chemicals at their workplace in general and in agriculture in particular. These conventions have been adopted by the Conference of the ILO. ILO conventions generally have low

¹⁸ Some recent initiatives at the regional level confirm this trend. For example, the European Community submitted in May 2006 its "Management Strategy for the Phase Out of the Critical Uses of Methyl Bromide (ECMS)" to the Ozone Secretariat, which is responsible for assisting parties in the implementation of the Montreal Protocol, see www.unep.org/OZONE.

¹⁹ At the 9th COP held in September 1997, it was decided that non-Article 5 countries should reschedule methyl bromide reduction and its phase-out by 2005, five years ahead of schedule.

²⁰ UNEP/OzL.Pro.10/9, Annex II: Non-compliance procedure (1998).

rates of ratification, although this is slowly but continually changing. Moreover, the ILO instruments may have an impact beyond a simple calculation of the number of states that have ratified each convention, owing to the special nature of the ILO's tripartite governance system.²¹ ILO conventions are negotiated and agreed among governments, unions and industry.

The convention that most clearly addresses the safety and health of workers exposed to pesticides is the C184 Safety and Health in Agriculture Convention (Agriculture Convention), which was adopted by the ILO Conference in 2001 and which entered into force in 2003. The convention is intended to close the gap often found in national legislation which does not generally address the protection of agricultural workers through occupational health and safety legislation. Therefore, many people exposed to pesticides during their daily work are not covered. Usually, only those employed under contracts of employment are entitled to the full protection provided under the legislation, while informal labourers are not.

The convention defines agriculture very broadly, and covers agricultural workers working for a wage (art. 1), whether permanent, temporary or seasonal (art. 17). On the other hand, self-employed farmers and agricultural workers who own or rent the land on which they work, including small tenants, sharecroppers, small owner-operators, members of farmers' cooperatives and subsistence farmers are covered by the accompanying non-binding Recommendation 192.²²

According to ILO's tripartite approach, the Agriculture Convention imposes responsibilities on employers (art. 7), strengthens the rights of agricultural workers (arts. 8 and 16) and places obligations on governments (arts. 4, 5, 9, 11, and 21). The standards of the convention are very high. Governments have to develop a coherent national policy on safety and health in agriculture, consult employers and trade unions, establish a competent authority, specify the rights and duties of employers and workers, ensure that there is a system of inspection and establish an inter-sectoral coordination mechanism.

²¹ Helfer 2006, p. 649 *et seq.*

²² Non-binding Recommendations are mainly adopted to supplement the ILO conventions with more precise and sometimes additional provisions. In some cases, they may reflect a lack of consensus on particular provisions in a particular convention. In the case of Recommendation 192, a majority of governments opposed the inclusion of subsistence farming.

Recommendation 192 clarifies that certain obligations set out in the Agriculture Convention should be implemented in light of the principles embodied in other related conventions. For example, the recommendation refers to the C129 ILO Labour Inspection (Agriculture) Convention and its associated R133 Labour Inspection (Agriculture) Recommendation (both dating from 1969) in order to give effect to Article 5, which concerns labour inspection in agriculture. Similarly, in order to give effect to the provision on the sound management of chemicals (art. 12), Recommendation 192 refers to the C170 ILO Convention on the Safety of Chemicals at the Workplace (Workplace Convention) and its R177 Chemicals Recommendation (both from 1990), as well as other international standards.

The Workplace Convention is more general than the Agriculture Convention, applying to all kinds of economic activities related to (hazardous) chemicals in general, which would include pesticide products. It addresses the protection of workers from harmful effects of chemicals at the workplace, covering any activity that may expose a worker to a chemical (art. 2.c). This includes the production, handling, storage, transport, disposal and treatment of waste chemicals, as well as the release of chemicals resulting from work activities and the maintenance, repair and cleaning of chemical equipment and containers (*id.*). The Workplace Convention embodies a life cycle approach, as it contains specific provisions on classification, labelling, safety data sheets, disposal, monitoring and training. The convention addresses several issues that are also addressed in the Stockholm and Rotterdam Conventions and in the Code of Conduct, such as hazards, risk, labelling, packaging and chemicals management in general.

2.3. Regional instruments and agreements

Countries reviewing their legislative frameworks for pesticides should take into account not only these international instruments but also arrangements applicable at the regional level. Indeed, the Code of Conduct calls for regional harmonization of pesticide registration requirements, procedures and evaluation criteria, and also urges governments to harmonize their registration procedures with those of other countries in the region, so as to promote uniformity (art. 6.1.5). International organizations often rely on regional organizations to develop regional standards as well as to discuss international standards and to solicit inputs into their development.

In the last ten to fifteen years, there has been a trend toward greater regionalization of regulatory activities, with supra-national organizations spearheading efforts to develop regionally applicable legislative instruments and guidelines addressing key elements of the pesticide life cycle. In many cases, the fact of similar legal systems and traditions has facilitated the adoption of regional arrangements, as they capitalize on limited resources and capacities at the national level. The character and legal nature of these instruments differ. Some regional instruments are legally binding on the member states of the respective regional organization (e.g. EC regulations and directives), while others are binding inter-governmental agreements (the CILSS Convention) or decisions (e.g. of the Andean Community).

Regional approaches have several advantages, among them the fact that they can greatly facilitate trade opportunities by ensuring that national pesticide control systems do not constitute barriers to trade in the region. In fact, many regional standards are developed within regional trade organizations. Regional instruments must be consistent with international trade law and any other applicable international obligations. Since in many cases they are also aimed at implementing international standards, they contribute to better national compliance with international obligations. In addition, they pool expertise and resources, permitting joint initiatives such as the common establishment of MRLs.

Because only select groupings of countries will be affected by a particular regional arrangement, this text mainly focuses on international instruments at the global level, whether binding or non-binding. Nonetheless, a brief review of some examples of regional initiatives should provide a useful picture of selected developments taking place around the world.

The Organization for Economic Co-Operation and Development (OECD) which links the governments of 30 market democracies,²³ runs a Pesticides Programme aimed at assessing and reducing the risks of the use of agricultural pesticides. The programme focuses on plant protection pesticides, both chemical (insecticides, herbicides, fungicides) and biological

²³ Although the OECD is not strictly speaking a regional institution, its pesticides initiatives are included in this section for convenience. The member states are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

(bacteria, viruses, predatory insects), while non-agricultural pesticides are dealt with under the organization's Biocides Programme. The Pesticides Programme is directed by the Working Group on Pesticides, which is composed primarily of representatives of the 30 governments, but also includes representatives of the European Commission and other international organizations, the pesticide industry and the environmental community. Broad oversight and coordination with other parts of the OECD Chemicals Programme is carried out by the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology. The Pesticides Programme develops OECD Test Guidelines, which, once adopted by the OECD Council, are binding on member states that do not abstain from them.²⁴ OECD Guidance Documents are another important category of OECD instrument designed to facilitate pesticide registration, although they are not legally binding.

Within the 27 member states of the European Union,²⁵ the most relevant legislative measures concerning the use of pesticides are Directive 91/414/EEC²⁶ on the placing of plant protection products on the market, and Regulation (EC) No. 396/2005²⁷ on maximum residue levels (MRLs) of pesticides in food and feed. The aim of Directive 91/414 is to prevent risks at the source through a comprehensive risk assessment for each active substance and the products containing the substance before they can be authorized for use. Authorization implies that the product, under normal circumstances of use, has been proven to be harmless to human and animal health and the environment. Regulation No. 396 sets MRLs for active substances in plant and animal products, with the aim of limiting the exposure of final consumers.

In 1998, the European Parliament and Council approved Directive 98/8/EC²⁸ concerning the authorization and placing on the market of biocidal products, the mutual recognition of authorizations within EC member states and the establishment at EC level of a list of authorized active substances.

²⁴ They become part of Council Decision C(81)30/FINAL.

²⁵ Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom.

²⁶ OJ 230, 19 August 1991.

²⁷ OJ L 70, 16 March 2005, pp. 1–16.

²⁸ OJ 123/1 24 April 1998.

Directive 99/45/EC²⁹ is aimed at harmonization of national rules on the classification, packaging and labelling of dangerous preparations.

One of the weaknesses of the existing legal framework for pesticides in Europe is that detailed regulation applies only to the placing on the market and the end of the life cycle of plant protection products, not to the phase of actual use. In July 2002, the European Commission adopted a Communication entitled "Towards a Thematic Strategy on the Sustainable Use of Pesticides"³⁰ to be developed under the Sixth Environmental Action Programme. Some other measures (such as the establishment of national action plans, the involvement of stakeholders, the creation of a training system for professional pesticide users and the prohibition of aerial spraying), have been included in the proposed directive of the European Parliament and Council establishing a framework for Community action to achieve sustainable use of pesticides.³¹

The Andean Community³² issued Decision 436/1998 to establish requirements and harmonized procedures for the registration and control of chemical pesticides for agricultural use and to regulate their use and correct handling. The goal is to prevent or minimize damage to health and the environment as well as to facilitate trade in the sub-region. Manufacturers, importers, exporters and wholesalers of pesticides for agricultural use must be registered by the competent national authority, and special permits are required for research and scientific experiments.

The signing of the North American Free Trade Agreement (NAFTA) led to cooperative efforts to harmonize pesticide regulatory requirements among the United States, Canada and Mexico. In 1997, a Technical Working Group on Pesticides (TWG) was created to promote the environmental, ecological and human health objectives of NAFTA and to facilitate the trade of pesticides among member states. In November 2003, the TWG issued a five-year strategic plan entitled "The North American Initiative: The Next Five Years," whose primary goals are full inter-governmental collaboration, equal access to markets and the participation of stakeholders in the sector. The plan also encourages greater access to Integrated Pest Management (IPM) strategies and Reduced Risk Products (e.g. biopesticides) throughout North

²⁹ OJ L 200/1, 30 July 1999.

³⁰ COM (2002) 349.

³¹ COM (2006) 373.

³² Bolivia, Colombia, Ecuador and Peru.

America, as a means to enhance the sustainability of pest management in the region. The TWG is currently working on a new plan to go into effect when the current five-year strategy is completed.

The Strategic Plan of Action (SPA) 2005–2010 of the Association of South East Asian Nations (ASEAN) calls for the harmonization of MRLs of pesticides commonly used for vegetables that are widely traded among ASEAN member countries (Subs. B1, art. 1.2.5), and the implementation and review of harmonized MRLs. The creation of an ASEAN Pesticide Database Network (Subs. B1, art. 1.3) and regional training on biopesticides (Subs. B4, art. 1.1.6) are also expected.

The Bamako Convention agreed in January 1991 by 12 nations of the Organization of African Unity at Bamako, Mali, and enforced since 1996 establishes that all parties shall take "appropriate legal, administrative and other measures within the area under their jurisdiction to prohibit the import of all hazardous wastes, for any reason, into Africa from non-contracting parties. Such import shall be deemed illegal and a criminal act" (art. 4.1). A hazardous waste under the convention is a waste listed in Annex I, a waste possessing any of the characteristics listed in Annex II or any waste considered to be hazardous by the domestic laws of the state of import, export or transit.

The Africa Stockpiles Programme for the clean-up and disposal of obsolete pesticides and the prevention of future toxic threats is a multi-stakeholder partnership among non-governmental organizations, United Nations specialized agencies (such as FAO), other international organizations and the private sector. The programme's Project 1 was launched in September 2005 and is currently active in seven countries across Africa.³³ The project encompasses both field operations (such as training of local personnel, inventory of stocks, safeguarding and disposal) and prevention measures such as the promotion of IPM strategies. Planning and preparatory activities for eight priority countries to take part in Project 2 are currently under way.

The Waigani Convention was opened for signature by members of the South Pacific Forum at Waigani, Papua New Guinea, in 1995. The purpose of the convention is to reduce or eliminate transboundary movements of hazardous and radioactive wastes into and within the Pacific Forum region,

³³ Ethiopia, Mali, Morocco, Nigeria, South Africa, Tanzania and Tunisia.

to minimize the production of hazardous and toxic wastes in the region, to ensure that disposal of wastes is carried out in an environmentally sound manner and as close to source as possible and to assist South Pacific Forum developing countries in the management of hazardous and other wastes they generate. The Waigani Convention differs from the Basel Convention in the inclusion of radioactive wastes, and in its extension to the Exclusive Economic Zone (200 nautical miles) rather than the territorial sea (12 miles).

2.4. Meeting supra-national obligations

Depending on the legal system of a country, a legally binding international treaty may apply directly at the national level, or it may have to be submitted to the national legislative body for approval. There are different ways that countries can choose to meet their legal obligations under international and regional instruments to which they are parties. Incorporating treaty obligations by reference in national laws, i.e. by stating in the national law that the treaty obligations are effective national law, is the first, seemingly easiest, option. Although this may be legislatively straightforward, it may also be ineffective as most people will not be on notice as to what the requirements are, and the requirements will not have been tailored to specific national circumstances.

A second option is to transpose treaty obligations into national laws. This option reproduces the text or crucial requirements from the international or regional instrument directly in the national legislation. While it serves to alleviate the problem of notice to the public about what national laws say, like the first option it does not tailor the provisions to the country's particular interests.

The third, and strongest, option is to adjust national legislation to be consistent with the supra-national instrument, taking into account national policies, institutions, resources and of course, implementation and enforcement. This option is likely not only be the most effective, but in many cases it will be required. This is so because the provisions of many international instruments are quite general, leaving each country free to determine exactly how the obligations will be implemented. This is the case with most, if not all, of the international instruments examined in this text. The Code of Conduct, for example, has provisions governing all aspects of the pesticide life cycle, but most often enumerates only the goals of this approach, rather than providing specific mechanisms for achieving those goals.

As another example, an international instrument may require a party to monitor pesticide incidents that affect human health. This broad provision would need to be implemented by each signatory country in the most appropriate fashion. One country might establish reporting requirements under the national pesticides legislation for all members of the pesticide industry, with violations punishable by criminal penalties or loss of an operating licence. Another country might create an agency to oversee the collection and dissemination of such information. National action is required, and each country will have its own rules and practices to determine the desirable strategy for its national context.

It is worth stressing here that only some obligations arising from supranational instruments affect national pesticide legislation directly. International instruments may also contain other more general obligations state parties must implement. These include the designation of a national authority or focal point, the development of a national implementation plan and the promotion and facilitation of public information, awareness raising, research and development, monitoring, international cooperation and reporting obligations to the secretariat and/or the conference of the parties.

III. THE DESIGN OF A NATIONAL PESTICIDE LAW

A modern pesticide legal framework must reflect a country's international obligations while effectively addressing the country's particular circumstances. The main law and its accompanying subsidiary instruments should take into account the economic and social situation as well as any specific technical requirements in the country, such as the crops grown, pest problems, dietary patterns, toxicity of the required pesticides, level of literacy, climate and the environmental situation. Properly weighing and considering these factors should help to ensure the creation and enactment of a well-designed legal framework for pesticides tailored to national needs and appropriate to the national context.

This part of the text examines the many issues that should be addressed by a national pesticide law. The specific design of the legislation will depend on the legal system, the general legal context, the constitution and existing legislation, the applicable policies as well as government priorities, resources and other considerations related to implementation. These will be discussed in Part IV. The decision regarding which issues to include in the main parliamentary-level law and which to include in the subsidiary instruments

will also vary by country, although as a general matter the law should be kept as basic as possible, with details relegated to regulations and other lower-level instruments. In this way, changes necessary to keep pace with scientific and other advancements can be more easily made through ministerial rather than parliamentary action (see Section 3.15).

3.1. Introductory provisions

3.1.1. Objectives

A national pesticide law should clearly indicate its objectives in the preamble or other introduction. The preamble is not a legally binding provision, but serves as a policy statement capturing the purposes and objectives of the law. The preamble might state that the law is designed to assist the country in meeting its international obligations and to protect human health and the environment from the dangers of inappropriate pesticide management. It might also indicate that the law is designed to address all aspects of the pesticide life cycle. Depending on the government's policies and priorities, the preamble might refer to the importance of IPM strategies, the desire to foster international trade in agricultural products, the need to reduce risks due to pesticide use or the importance of reducing overall dependency on pesticides, as recommended by the Code of Conduct (art. 1.7). The substantive provisions of the pesticide law should be consistent with the purposes stated in the preamble.

3.1.2. Scope and definitions

Provisions on the scope of a national pesticide law describe what the law will cover or not cover. The scope provides information about the pesticide products and substances to which the law applies and the targeted activities relating to pesticide management across the pesticide life cycle. For example, some substances, such as nutrients, soil conditioners, human and veterinary drugs, may not be covered by a pesticide law. The pesticide law will have to state this outright.

For a variety of reasons, a comprehensive pesticide law should include a section with updated definitions of all relevant terms. First, existing definitions may be ambiguous, or there may be inconsistencies among definitions in different laws passed at different times. A new set of definitions can eliminate confusion and gaps in enforcement and foster

consistency in judicial interpretation. Second, definitions may have become outdated over time, as pesticide technology and industry standards changed. This can lead to a situation where industry actors are able to avoid the provisions of the law simply because new technologies are not covered. Third, where the law covers activities governed by international instruments to which the country is a party, the relevant terms and concepts – such as POPs and bioaccumulation – should appear in the law.

The Basel, Rotterdam and Stockholm Conventions each have their own definitions sections. In addition, international bodies often elaborate glossaries and other guidelines on terminology which can assist in the formulation of the definitions sections of the national law. However, none of these is as extensive or as specifically geared towards pesticides as the Code of Conduct, which provides a comprehensive list of terms relevant to all aspects of the pesticide life cycle. To the extent possible, the definitions in the national pesticide law should be in harmony with the Code of Conduct, which, although non-binding, reflects an international consensus on the definition of terms.

Particularly important is a clear definition of "pesticide," since that definition will set the scope and outline the coverage of the pesticide law. The Code of Conduct definition is:

"any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for control of insects, arachnids or other pests in or on their bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport" (art. 2).

Because it is not binding, the Code of Conduct definition can be adopted as is or modified, if necessary, to be more specific or more tailored to national circumstances. Whichever definition is eventually chosen, however, it should cover all forms of pesticides for all uses, thus preventing loopholes or

legislative gaps. National experiences show that public health pesticides, such as DDT, are often not registered because the definition of pesticides in the applicable law is too narrow. The definition of pesticides should apply to pesticides for agricultural, household, public health and industrial use.

As a general matter, the list of definitions in the law should be internally consistent. The definitions should also be drafted as clearly as possible, without archaic constructions like "the said permit" and "therein." The list should only include those terms that actually appear in the law and that are likely to be a cause for confusion if not defined. There is often a temptation, especially among technicians, to include in the pesticide law a plethora of definitions, even for terms that do not appear in the body of the law or for terms that are generally well understood. This is unnecessary.

BOX 2 - DEFINITIONS CHECKLIST

Definitions in a pesticide law should:

- have no inconsistencies, and no ambiguous terms;
- encompass all of the relevant terms in applicable international instruments;
- accord with the Code of Conduct and other relevant international instruments;
- reflect the latest technology, and eliminate other gaps;
- clearly define "pesticide" and other important terms;
- be broad enough to cover all pesticides and all uses;
- be clearly drafted and internally consistent; and
- include only those terms that appear in the law and that are not otherwise commonly understood.

3.2. Administration

3.2.1. General institutional structure

The pesticide law will have to identify the primary competent authority in charge of the management of pesticides in the country. Depending on the national context, this is likely to be the agriculture, health or environment

ministry, although some countries entrust responsibility to a separate body such as an environmental protection agency. The minister or head of the agency will be responsible for implementing the pesticide law, although he or she may call on other government units to assist in that implementation. It will be important to allocate responsibilities to the proper authority, taking into account the national circumstances and resources, to ensure a coherent and effective institutional framework.

All pesticides covered by the national pesticide law should be controlled by the competent authority. The law should provide the authority with all powers necessary to carry out its duties. These may include the power to issue subordinate enactments, such as regulations, rules and guidelines relating to all facets of pesticide management, although some parts of this task may instead be assigned to a pesticide board (see Section 3.2.2). Another important power is the ability to charge fees for the services provided. Many variations will be possible here, such as fees charged for services associated with registration (such as filing an application), for the approval of containers or for each inspection or laboratory analysis. Dealers might also be required to pay a monthly or an annual inspection fee.

In some jurisdictions, the authority, under a cost recovery scheme, is permitted to retain fees for inspections carried out under the law. However, adoption of such a scheme may or may not be legally possible, since some countries require that all government-acquired fees be consigned to the consolidated fund administered by the ministry responsible for finance, which then allocates the funds to the various ministries and agencies through the normal budgetary process. Finally, the competent authority should have the power to enter premises in order to conduct inspections (see Section 3.3). Some inspections should be scheduled and others unannounced, in order to enforce the law most effectively.

Another important duty of the competent authority will be to collect and maintain information about pesticide use and incidents in the country. The legislation may state, for example, that the authority should liaise with all governmental and non-governmental bodies with reason to know about pesticide incidents, because citizens may report incidents to them. The competent authority may also be charged with investigating pesticide accidents with an impact on human health or the environment, and monitoring the health of occupationally exposed individuals. The authority

should compile and report to relevant governmental and non-governmental bodies, as well as to the public, data on pesticide-related accidents.

Some international instruments require the identification of a national focal point or designated national authority (DNA) to monitor implementation of that instrument. In order to avoid information gaps, institutional cooperation between these focal points/DNAs and the competent authority will be essential. Because of the cross-sectoral nature of pesticide management, many pesticide laws provide for the establishment of a multidisciplinary structure, such as a pesticide board, which integrates the national ministries and agencies dealing with various aspects of pesticide management and facilitates information exchange. In addition to domestic activities and cooperation, the board should keep pace with legislative developments in neighbouring countries and major trading partners and interact with other national competent authorities and international organizations. The design of such a board is discussed in the next section.

BOX 3 - INSTITUTIONAL CHECKLIST

The government should:

- identify the primary competent authority to deal with the control of pesticides, taking into account the national context;
- assign to the head of that authority the responsibility for implementing the pesticide law;
- authorize the competent authority to call on other government units for assistance in the implementation and enforcement of the law;
- assign to the authority all necessary control powers, including the power to inspect, charge fees and elaborate regulations;
- charge the authority with collecting and sharing information on pesticide incidents; and
- ensure smooth information exchange across sectors, as well as regionally and internationally.

3.2.2. Pesticide board

A pesticide board (an inter-departmental body, sometimes referred to as the pesticide registration board, pesticide council or pesticide committee) is often established in a national pesticide law and charged with overseeing, deciding or advising on the registration and control of pesticides and exercising responsibility for all policy matters affecting pesticide management. Although the Code of Conduct does not require the creation of any particular administrative body, a pesticide board is recommended to bring together all relevant actors in the implementation of the life cycle management of pesticides.

The pesticide law will set out the mandate, functions and powers of the board. Various types of boards can be set up: executive boards with powers over the registration process and, in some cases, the power to make regulations, or purely advisory boards.

An executive board's powers must be sufficiently strong to enable it to effectively reach all of the activities included within the life cycle of pesticides, including import, export, manufacture, registration, transport, packaging, labelling, storage, sale, disposal and other activities discussed in this text. In this case, the board oversees the registration process or delegates this function to one of its subsidiary committees. Relevant activities here may include evaluating applications, granting or denying registration of a pesticide and issuing licences or permits. In some cases, the board is entitled to collect any fees or fines assessed under the pesticide legislation. The board may also advise the minister on the formulation of national policies relating to the use and management of pesticides and, to improve implementation of the law, may recommend and formulate proposed regulations. Toward that end, some countries include a legal expert or draftsman within the membership of the board.

The law generally provides that the minister responsible for enforcement of the law appoints each member of the board, with the agreement of that person's own minister or head of agency. A recent trend is for pesticide boards to include a wider range of members, with representation not only from the ministry responsible for agriculture, but also the ministries of health or trade, among others. Bhutan's Pesticides Act of 2000 creates a pesticides board with experts from the fields of environment, forestry, plant pathology, entomology, health, plant quarantine and animal husbandry, among others.

Burkina Faso established a national pesticides control commission with wide representation (Law 006/98/AN), and Niger created a broad-based national committee to advise the Minister of Agriculture on the registration and use of pesticides.

The pesticide law (or its subsidiary regulations) should refer to the needed qualifications of members, in that the board must have the expertise, or have the ability and power to seek that expertise, necessary to fulfil its duties. Under Belize's Pesticides Control (Amendment) Act of 2002, the pesticides control board may establish committees to assist it in the performance of its functions and the exercise of its powers. Members of the board or its specialized committees should be able to assess efficacy, toxicology, chemistry and environmental impacts.

Input from various stakeholders such as sellers, users, environmental groups and consumers may be desirable in order to capture the views of all sectors affected by pesticides. In countries where the board is serving an executive function (e.g. evaluating applications for registration), the participation of these groups should be purely advisory to avoid a conflict of interest. In this context, their participation could consist of stakeholder forums or consultations. Alternatively, stakeholders may have a broader role in countries where the pesticide board only has an advisory function, leaving registration decisions to a different body (e.g. a registration committee) or person (e.g. the registrar, see below). It goes without saying that the board's membership should include the focal points identified under the Stockholm and Basel Conventions and the Montreal Protocol. And if the board itself is not the DNA under the Rotterdam Convention, then the DNA should also be a member.

The law should set some limitations on membership, for example requiring that members not have a financial interest in any matter under discussion. Members may generally be removed for malfeasance, absence from meetings, incompetence or conviction of a crime. They can also resign in writing to the minister. The law usually provides a few rules regarding the operating procedures of the board, including its ability to appoint staff, its obligation to hold regular meetings and its duty to circulate information. Depending on the jurisdiction, the law may or may not go into greater detail, for example on the appointment of a chairperson, the requirements for a quorum, the creation of technical and advisory subcommittees and so forth. In other countries, the law will not include lengthy provisions on the board's

operating procedures, leaving the board to set those as it sees fit or charging the minister with establishing detailed operating procedures in subsidiary regulations.

BOX 4 - PESTICIDE BOARD CHECKLIST

A pesticide law should:

- establish a pesticide board;
- set out the mandate, functions and powers of the board;
- designate the authority responsible to appoint members;
- define the board's membership, depending on its role;
- define the conditions for appointment and removal;
- set some minimum operating procedures of the board;
- permit the board to establish advisory and technical subcommittees; and
- identify the person or organ responsible for setting other board procedures and how that will be done.

3.3. Inspection

A reliable inspection system for pesticides serves a number of purposes. Inspection of places where pesticides are sold can ensure vendors' compliance with legislative provisions concerning the registration, import/export, packaging, storage, labelling and advertising of pesticides. Inspections at border points can prevent the entry of prohibited, expired or banned pesticides, as well as pesticides in unsuitable containers or packaging. Inspections at the place of manufacture can ensure that facilities follow safety systems, both those applicable to personnel and those covering the products themselves. Inspections at the workplace or farm can contribute to the safe use of pesticides, preventing harm to human health and the environment. The inspection system also provides pertinent information to the competent authority in order for it to evaluate applications for licences to carry out certain activities in relation to pesticides, and for it to determine whether licence holders are meeting licence conditions (see Section 3.6).

The national pesticide law will, ideally, provide for the appointment of qualified persons to act as inspectors. In some countries the appointment of inspectors is not the responsibility of the minister responsible for the administration of the law but is the responsibility of a central government agency which appoints all public servants and officials. The details of the required qualifications are likely to be set out in subsidiary legislation, with the main law addressing only the person or body with the power of appointment.

In some cases, the competent authority may need to be supported by other administrative agencies and staff, if it has insufficient human resources to carry out needed inspections in all places of business and regions of the country. Thus, the law should permit the responsible ministry or agency to use not only its own employees but also employees of other authorities, or even private contractors, for its enforcement. For example, even where the ministry responsible for agriculture is assigned overall enforcement authority under the law, it may wish to rely on customs officers at border points if there are not sufficient ministry employees to serve at those remote locations. Great Britain's Pesticides Act of 1998 (Cap. 26) amends the Food and Environment Protection Act to allow control of pesticides by local authorities, who may request the assistance of customs officers or police officers in these tasks. To permit such reliance on employees of other ministries or agencies, the pesticide law could indicate that inspectors are those officers appointed "or designated" as such.

Inspectors are the main point of contact between the government and the pesticide industry and between the government and pesticide users, and thus their powers are necessarily broad. Inspectors must have the power to enter a variety of locations, and to stop and search vehicles, persons and containers, in order to ascertain that all aspects of the legislation are being complied with. Because these powers can be very similar to those of police and may therefore impinge upon personal liberties, the pesticide law should clearly outline the parameters of the inspectors' powers. Consistency between the provisions of the pesticide law and the constitution or any law on the powers of public officials will be important.

Other inspection powers include the ability to take samples, to seize equipment, products and documentation, to ask questions, to take photographs, to shut down operations and to issue fines. Inspectors generally have to display their identification card when carrying out their duties, and can request the presence and assistance of the forces of public

order where needed, such as under Great Britain's Pesticides Act, as just seen. Subsidiary legislation may enumerate in more detail inspectors' duties and responsibilities, and may outline procedures for how inspectors should carry out inspections, take and mark samples and submit them for analysis. These rules are designed to ensure that the samples can be properly admitted and used in a court of law.

In addition to the inspection corps, the law should establish a system for identifying and certifying the official analysts and laboratories that will carry out the required analysis and diagnostics of samples taken under the law. Usually the minister or the competent authority is accorded the power in the law to identify and select the official laboratories and to appoint official analysts. The law ought to allow broad leeway in that selection, because in many countries there is an increasing need and desire to rely on private laboratories and their staff for some or all of these functions. Subsidiary legislation may set rules for the operation of the laboratories as well as for how official analysts should receive and analyse samples and communicate the results.

BOX 5 - INSPECTION CHECKLIST

A pesticide law should:

- establish a comprehensive inspection system covering all relevant sites to be inspected and the types of matters to be investigated;
- provide for the appointment or "designation" of inspectors, and indicate by whom;
- lay down the qualifications required of inspectors;*
- outline in detail the powers of inspectors;
- ensure consistency between the inspectors' powers and other national legislation on powers of public officials;
- include provisions on how inspectors should carry out their duties;
- outline requirements for the taking and analysis of samples; and
- provide for accreditation of official laboratories and analysts.

* These kinds of details will likely appear in subsidiary legislation rather than in the main law (see Section 3.15).

3.4. Registration

An essential part of the pesticide law will establish a mandatory pesticide registration scheme. Countries may design their schemes according to national needs, but the basic concept is that in order to be lawfully imported, manufactured, packed, re-packed, labelled, stored, sold, distributed, possessed or used in a country, a pesticide must be registered under the law. Developing countries may wish to design registration schemes suited to their own needs, rather than emulating wholesale the detailed systems in place in countries with greater budgets for pesticide registration.³⁴

Registration means the process whereby the competent national authority approves the sale and use of a pesticide following the evaluation of comprehensive scientific data demonstrating that the product is effective for the intended purposes and does not pose an unacceptable risk to human or animal health or the environment (Code of Conduct, art. 2). Selling or importing into the country any product that has not been registered, does not conform to prescribed standards or is not packaged or labelled as required is a violation of the law in most jurisdictions (see for example Canada's Pest Control Products Act of 2000).

A registration system is designed to reduce potential harmful effects of pesticides by requiring explicit prior permission for many different types of activities, which can both prevent problems from occurring and facilitate enforcement after the fact. The Code of Conduct directs governments to establish re-registration procedures to ensure that periodic reviews can account for new information or risk data (art. 6.1.6).

FAO's existing Guidelines on Registration and Control of Pesticides (1985) and Guidelines for Legislation on the Control of Pesticides (1991) provide substantive guidance to countries revising or designing their pesticide registration systems. The draft Guidelines on Data Requirements for the Registration of Pesticides can also prove useful in this connection. In addition, FAO is currently developing a new "umbrella guideline," draft Guidelines on Pesticide Registration, which will cover the whole registration procedure.

³⁴ Moreover, to save resources, neighbouring countries may wish to set up regional procedures in which two or more countries with similar agricultural and political backgrounds implement a common registration scheme. (For example, some African countries in the Sahel Region have established a joint registration scheme within CILSS.) However, national legislation may still be required.

Depending on its design, the registration process can encourage the use of fewer pesticides or less toxic pesticides. The Code of Conduct encourages countries to restrict pesticide use by either not registering particularly hazardous products or by conditioning their registration on limitations associated with certain uses or users (art. 7).³⁵ Where there is a high or unusual degree of hazard associated with a particular pesticide, the legislation might put in place special procedures. For example, the law might state that with respect to certain compounds or substances, the national authority could order a field evaluation or temporarily prohibit or restrict the importation, sale, distribution or use of these compounds, even if they are already registered in the country. The pesticide law or its subsidiary regulations will set out such details, including the conditions and limitations that may be imposed by the authority responsible for registration.

Some examples of measures to discourage the use of higher-risk pesticides through the registration procedure are: (a) creating a more streamlined and simpler registration process for pesticides with low toxicity and low environmental persistence, thereby encouraging their use over others; (b) establishing a sliding fee scale for registration, i.e. higher registration fees for highly toxic pesticides and lower fees for other categories; or (c) requiring the registration authority to de-register any pesticide of high toxicity or high environmental persistence for which a safer alternative exists, on the basis of a comparative risk assessment.

Registration can either be undertaken by the board itself, or the board can oversee a subcommittee established for that purpose (e.g. a pesticide registration committee or an independent national statutory body). In either case, the entity's powers and functions should be set out in the pesticide law. These powers should include the ability to request further information at any time from an applicant or a registrant, and to cancel, amend or suspend registration as new information becomes available. This might occur if the registration was secured based on false information, if the pesticide has been withdrawn from the market, if registration conditions have been breached or if re-evaluation leads to the conclusion that the pesticide is no longer effective for its intended use or is undesirable on the grounds of harm to

³⁵ Moreover, there is international consensus in favour of phasing out particularly hazardous pesticides (e.g. WHO Class Ia (extremely hazardous) and Ib (highly hazardous) pesticides in countries that cannot ensure that products will be used as prescribed. See Tables 1 and 2 of the WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification (2004), at pp. 16, 18.

plant, human or animal health or the environment. The authority should also have the power to charge fees for services associated with registration.

3.4.1. Application procedure

The legislation should clearly outline the procedure for obtaining registration or provisional approval so that applicants are aware of what is required. Registration should cover two categories of pesticides: those that have not previously been registered or marketed, and those that are already registered or provisionally approved. For the first category, an application for registration or provisional approval is required. For the second, the legislation may require submission of an application where: (a) the data provided in connection with registration have changed; or (b) the applicant seeks to change the product's label or to upgrade the approval status from provisional to full approval (see Section 3.4.3). The registration authority may be particularly interested in any new health or environmental findings.

The law should require applications for pesticide registration in order to import, manufacture, pack, re-pack, label, store, sell, distribute, apply, possess or use a pesticide product. An exemption should be made for pesticides imported in small quantities for scientific research where permission is obtained from the registration authority, but this should be defined through precise criteria so as to prevent the exemption being improperly used. The legislation should clearly specify who may apply for registration: this is usually the person or company that wishes to import or manufacture a pesticide for sale, or to sell a pesticide.

The application may refer to the formulated pesticide (in which case the application should include the formula) or the active ingredients that will be used in the final product. The legislation must indicate which application form should be used and what information the applicant must include. Because of the level of detail, these requirements will generally be set out in subsidiary legislation. The details are likely to include the proposed distinguishing name of the formulation; the proposed trade name; the envisaged use; a statement of the composition (e.g. the ingredients, the chemical identity of the active ingredient(s) and the methods of analysis of the formulation); any toxicological data concerning the active ingredients; and reports of efficacy trials under conditions similar to those in the

country.³⁶ Fewer efficacy tests may be required where pesticides are already registered in another country for use in similar agricultural and ecological conditions (so long as the prior registration took place according to internationally recognized efficacy evaluations) or where pesticides are already registered for one purpose and registration is sought for additional similar crops or circumstances.

Other informational requirements may include reports of residue trials (which should be conducted in accordance with the *FAO Manual on the Submission and Evaluation of Pesticide Residues Data (2002)*); reports of environmental effects following the use of the proposed formulation at the proposed rates; a certificate of authenticity of the data supplied; information on how the pesticide will be stored and handled and how used containers and any surplus will be disposed of; what kind of first aid will be needed; and a sample label for approval. Finally, countries may wish to require the registration authority to review data submitted in analogous registration processes in other countries.

3.4.2. Decision-making criteria

The law should provide that registration decisions are to be made based on a risk assessment including all available information and in accordance with FAO and WHO specifications for pesticides. These specifications are established by the FAO/WHO Joint Meeting on Pesticide Specifications (JMPS), and provide information on the appearance, active ingredients, relative impurities and physical properties of each pesticide. The legislation should list the criteria the responsible body will use in considering registration applications. Among the likely factors to be included are the following:

- human and animal health hazards;
- environmental impacts, including effects on non-target species;
- suitability for local conditions of use;
- efficacy, based primarily on data submitted by applicant while taking into consideration data obtained in other countries applying recognized and harmonized standards;

³⁶ Where the pesticide is intended for agricultural use, the efficacy trials should be carried out in accordance with the *FAO Guidelines on Efficacy Data for the Registration of Pesticides for Plant Protection (1985)*.

- occupational health and safety risk to workers involved in all stages of the production and common circumstances of use of each pesticide;
- risk or history of misuse;
- existence of safer alternatives (in which case the more hazardous pesticides should not be registered);
- quality;
- residues, persistence, half life and other factors contributing to the persistence of residues on the crop concerned;
- the proposed package and label; and
- standards and MRLs determined by key export markets.

Another factor for consideration will be the need for personal protective equipment associated with the pesticide. The rationale is as stated in the Code of Conduct: "Pesticides whose handling and application require the use of personal protective equipment that is uncomfortable, expensive or not readily available should be avoided, especially in the case of small-scale users in tropical climates. Preference should be given to pesticides that require inexpensive personal protective and application equipment and to procedures appropriate to the conditions under which the pesticides are to be handled and used (art. 3.5)."

Generally, the legislation should use WHO hazard classifications and require the use of labels with recognized hazard symbols. In future, the criteria set out in the Globally Harmonized System of Classification (GHS) will have to be taken into account in the pesticide registration process (see Section 3.8).

3.4.3. Registration decisions

After setting out the criteria for the registration authority's decision-making process, the pesticide law will indicate the possible final decisions which the authority must deliver within a specified period of time, which would include:

- registration (full, or provisional until further information is received from the applicant);
- conditional registration (on the use, users or areas); or
- denial of registration, which may include banning a product, severely restricting it or phasing it out.

When registration is granted, the product is assigned a registration number and the authority issues a certificate of registration, in the form set out in subsidiary instruments under the pesticide law. The certificate indicates how long the registration is valid and sets out any conditions imposed. Usually, the label, an exemplar of which was attached to the application for registration, is approved at the time of registration. No change may be made to the label as approved without the permission of the registration authority.

Registration entitles the applicant to carry out the activity outlined in the registration application (importation, sale, use, etc. of a pesticide) for a specific period of time. Provisional approval is also granted for a specified time, after which it lapses unless data are supplied to upgrade the claim or unless a request is approved for an extension of time. Registration with conditions may specify that the pesticide may only be used for certain crops, certain locations or by professionals with particular equipment or that the pesticide may not be sold for certain purposes. Ghana, for example, grants or denies registration under its Pesticides Control and Management Act (1996) depending on whether the pesticide is classified as (i) for general use (arts. 4(1)(a) and 5); (ii) for restricted use (arts. 4(1)(b) and 6); (iii) suspended (arts. 4(1)(c) and 6); or (iv) banned (art. 4(1)(d)).

Refusal to register a product will effectively forbid the applicant from the conduct that was sought in the registration application. However, it does not preclude the applicant from reapplying nor does it prevent another individual or entity from submitting an application for the same or similar product. Banning a product takes the more drastic step of eliminating all use of the pesticide in the country, by the applicant and by others. This means that importation of that product would constitute illegal trafficking and that no subsequent application for registration of that pesticide will be approved. Severely restricting a product would have the same effect as a ban, but might exempt certain uses or users. This action may be most appropriate for substances such as DDT, whose use may still be permissible for the purposes of public health but not for any agricultural purpose. Phasing out a product entails approving the product but with limitations on the amount, so as to reduce and eventually eliminate its use.

The Rotterdam Convention requires each party that adopts a final regulatory action banning or severely restricting a chemical to notify the secretariat in writing within 90 days of such action (art. 5.1). For the purposes of the convention, the term "final regulatory action" means, in relevant part, an

action taken by a party that does not require subsequent regulatory action by that party (art. 2(e)). In addition, parties are obliged to notify the secretariat of any final regulatory actions in effect when the treaty enters into force, unless that party has already submitted notifications under the amended London Guidelines or under the Code of Conduct (art. 5.2).

If the decision is not to register the pesticide, the law will generally require the registration authority to provide a written explanation of the reasons for the denial and to afford the applicant the chance of an appeal. The appeal could be channelled either through the normal legal process, or else provisions in the pesticide legislation may create a special appeal process (see Section 3.15).

3.4.4. Re-registration and review

The law should provide that the authority responsible for registration may review a registration or provisional approval in the light of subsequent knowledge about any unfavourable or unforeseen side effects arising from the use of the pesticide. Such information may come from reports of additional testing, poisoning cases, deleterious effects on the environment, phytotoxicity or notifications of control actions in other countries. Similarly, the legislation must empower the registration body to impose additional conditions on the manufacture, handling and application of a pesticide or even to revoke that registration or provisional approval in two circumstances: (1) where it determines from the review that the continued use of the pesticide is not desirable; or (2) as a penalty, for example where the holder of a registration has been found in violation of the pesticide law.

Although most pesticide legislation states that the registration of a pesticide is valid for a certain period of time, the registration body may also be accorded the power to review the status of a product at any time. Some national provisions specify a certain time period after which a pesticide must be re-registered, so as to encourage de-registration of pesticides for which there are safer alternatives now available or because of the need to take into account new information revealing hazards associated with certain pesticides. The legislation may state that a re-evaluation will occur at regular time intervals, at the initiation of the competent authority or at the request of a third party upon some reasonable showing of new information. Legislation should also require a registrant to notify the registration body of any change in the packaging, labelling or use of the registered product. If the product

itself, its composition, its active ingredient or its formulation is changed, a new application for registration is required.

3.4.5. Record-keeping and confidentiality

The body responsible for registration should be allocated responsibility for keeping a register of pesticides. This will contain detailed information on all registered pesticides, including the pesticide's trade name, common name, chemical name, concentration, formulation, uses and label, the name and address of the applicant and any other data deemed necessary by the registration body.

BOX 6 - REGISTRATION CHECKLIST

A pesticide law should:

- establish a mandatory registration system for pesticides, tailored to national needs;
- contain a system designed to encourage the use of fewer or less toxic pesticides, and to discourage the contrary;
- identify the body responsible for registration;
- set out the powers and functions of the registration body;
- outline the procedure for applying for registration or provisional approval;
- clearly define the activities requiring registration;
- list the validity period for registrations;
- list the information required to be included in the application;
- indicate how the registration body will make its registration decisions;
- list the types of final decisions the registration body can take;
- provide procedures for denial of registration and appeal;
- provide for review of registered pesticides and empower the registration body to impose new conditions in view of new information;
- consider imposing mandatory re-registration at certain intervals;
- assign responsibility for keeping records, and define the contents; and
- include provisions ensuring confidentiality of trade secrets.

Confidentiality regarding the registration body's decision-making processes will be particularly important since industry trade secrets are provided in connection with the registration process. Procedures and rules should address which information shall be considered confidential (such as the manufacturing process and the formulation details), how confidential records are to be maintained and stored and who shall have access to them. By the same token, the legislation may provide a list of pesticide-related information that is not considered confidential once registration has been granted. The penalties for breaches of confidentiality should be sufficiently high to act as a true deterrent and to assure industry members that the registration process will not compromise their business interests.

3.5. Import and export

In many developing countries, pesticides are not produced, formulated or manufactured domestically. Thus, efficient controls on the importation of pesticides can effectively eliminate the presence and use of unsuitable or highly hazardous pesticides. The legal framework must allow countries to control the entry of pesticides into their territories.

The key reference for the design of a pesticide import/export scheme should be the Rotterdam Convention, as it governs the international trade of pesticides. Each state party must implement the PIC procedure for the pesticides listed in Annex III of the convention. This means that the national pesticide authority must notify the secretariat regarding whether the country consents to the import of each newly listed chemical and if so, under what conditions (arts. 10.2 and 10.4). To implement the convention, a national pesticides law should list prohibited imports and, more generally, forbid the import of defective or substandard products, with criteria clearly established in the law.

To establish government control over imports, the law should provide that no importation of pesticides is allowed without an appropriate import permit from the competent national authority. The law (and its subsidiary regulations) will elaborate the procedures for entities or individuals wishing to apply for an import permit for pesticides. To protect human health and the environment, and to avoid arbitrary decision-making, the law should set out criteria for the grant or denial of a permit. For example, the law may provide that the competent authority may request the submission of further data or may carry out a site visit at the applicant's plant, to check storage

facilities and the qualifications of staff. The law may also require the authority to take into account the existing quantities of the pesticide in the country so as to determine whether there is a risk of accumulation. The expiry date will also come into play, to avoid the risk of the pesticides becoming obsolete soon after they arrive in the country.

The law should provide that imported pesticides are subject to inspection at the port of entry to enable control of their quality, packaging and labelling. Because the customs department is usually the first point of contact for imported commodities, it will have an important role to play in preventing the importation of pesticides that have not been cleared for use via the registration process and pesticides that are not properly packed or labelled. The law should also indicate whether there are exceptions for donations or for public entities importing pesticides for certain purposes set out in the legislation, for example vector control or emergency use. For example, the law might state that pesticide import requirements apply equally to donations and other introductions of pesticides into the country, unless emergency exemption is granted.

Some countries implement a licensing scheme for importers, so that certain companies can be recognized as pesticide importers under a more streamlined procedure. The legislation sets out the requirements that the company must fulfil, in terms of facilities, equipment, local representation and staff, in order to acquire an importer's licence. The law will indicate the validity of the licence and the terms for renewal. The company must still apply for an import permit each time it wishes to import a pesticide, but the process is faster since the company is officially recognized as a pesticide importer by the competent national authority.

With regard to exports, the Code of Conduct requires pesticide manufacturers to ensure that exported pesticides meet the same quality standards as comparable domestic products (art. 8.2). This could be achieved by making it an offence under the law to export pesticides not meeting established standards. Under the Rotterdam Convention, each party is responsible for ensuring that exporters comply with decisions of importing parties not more than six months after being informed of those decisions by the secretariat of the convention (art. 11.1). Parties must also ensure that chemicals listed in Annex III are not exported from their territory to any importing party that has refused to accept the pesticide under the PIC scheme, save in exceptional circumstances (art. 11.2). Those circumstances

include cases where: (a) the pesticide at issue is registered in the importing country at the time of import; (b) it is a chemical for which evidence exists that it has previously been used in or imported into the importing country and that country has not taken regulatory action to prohibit its use; or (c) explicit consent to the import has been sought and received by the exporter through the DNA. Moreover, parties that export a chemical that is banned or severely restricted in their own territory have to provide an export notification to the importing party (art. 12).

Exceptions for non-registered products may be permitted under the law where special circumstances occur or where new, unexpected situations arise, such as the appearance of a new pest for which no products have yet been registered. Federal legislation in the United States authorizes the Environmental Protection Agency (EPA) to allow states to use a pesticide for an unregistered use for a limited time if the EPA determines that emergency conditions exist (Federal Insecticide, Fungicide and Rodenticide Act, sec. 18). In 2001, the Netherlands amended its Pesticides Act of 1962 in order to permit the entry of certain pesticides considered "indispensable." The circumstances under which non-registered pesticides may be admitted include urgent need and the unavailability of viable alternatives.

The Rotterdam Convention states that parties shall encourage the World Customs Organization (WCO) to assign a Harmonized System (HS) customs code to individual chemicals or groups of chemicals listed in Annex III of the convention (art. 13.1), and the WCO subsequently created HS customs codes for these chemicals. The customs codes entered into force on 1 January 2007 as amendments to the Harmonized Commodity Description and Coding System, a goods classification system used by over 190 countries as a basis for their customs tariffs and for the collection of international trade statistics. Shipping documents for listed chemicals must bear the HS customs code. In this way, chemicals for export are effectively identified under a universal system of classification, which facilitates control and tracking of chemicals covered under the Rotterdam Convention.

Although the Rotterdam Convention is the most important instrument relevant to the international trade of pesticides, the Stockholm Convention also contains provisions affecting the import and export of POPs listed under its Annexes A and B. Importation and exportation of Annex A and B pesticides are only permitted for environmentally sound disposal or for a permitted use as to which the importing country has obtained an exemption (arts. 3 and 4).

BOX 7 - IMPORT/EXPORT CHECKLIST

Governments should:

- charge the competent authority with notifying the secretariat of the Rotterdam Convention of import decisions of Annex III listed chemicals;
- prohibit the importation of Annex III pesticides unless consent has been provided under the PIC procedure;
- prohibit the import of defective or substandard products;
- establish application procedures for a pesticide import permit;
- develop procedures and criteria for decisions on import permits;
- require inspection of pesticides at the point of entry;
- foster collaboration between the competent national authority and the customs department at points of entry;
- where desired, establish exceptions for donations or imports by public entities for specific purposes;
- consider establishing a licensing scheme for pesticide importers;
- require that exported pesticides meet the same quality standards as comparable domestic ones;
- prohibit the export of Rotterdam Annex III chemicals save in exceptional circumstances;
- list those exceptional circumstances;
- require the use of Harmonized System customs codes on shipping documents;
- if a Stockholm Convention party, prohibit import and export of POPs listed in Annex A and B except for disposal or an approved permitted use; and
- if a Basel Convention contracting party, prohibit the export of hazardous wastes, unless the exporting country has received the written consent of the country of import.

Under the Basel Convention, parties may generally prohibit the import or export of hazardous wastes, or may prohibit imports of specific types of hazardous wastes or specific shipments of hazardous wastes. Exporting states may only

move hazardous wastes across borders after providing prior written notification to the importing state and all transit states and having received written consent.³⁷

3.6. Licensing

A pesticide law generally requires that all persons or businesses that manufacture, pack, re-pack, label, sell, store or distribute a pesticide must be in possession of a valid licence. A licence is a formal written permission granted for a specific period by the competent authority. As already noted, some jurisdictions grant licences for pesticide importers. Licensing is an important instrument for the enforcement of legislation, most importantly to curb illegal trade, as is recognized in the Code of Conduct (art. 8). Naturally, the pesticides must be registered before an applicant can seek a licence, although licensing of individuals profiting from pesticide dealings has a significantly different function than registration. Registration is a review process over the product and the hazards that the product poses. Licensing is a review of the person, business or other entity to see if its dealings with already registered pesticides pose unacceptable risks. The review is therefore focused on the location, the proposed activity, the competence of the applicant and the evidence of the applicant's ability to safeguard against known risks. It is important to note that this may be an area of intersection with other national legislation governing general commercial licensing. But because of the risk involved and the specialized technical knowledge required to evaluate the risks of commercial enterprises dealing in pesticides, legislation should establish a pesticide-specific licensing scheme.

The pesticide law should charge the competent authority with receiving, evaluating, approving or denying applications for pesticide licences. Applications should be submitted in the form specified by the law, and are approved or denied according to specified procedures and for specified reasons. Portugal's Decree No. 341/1998, for example, establishes the principles to be applied in the evaluation. The authority may also be empowered to charge a fee for licences granted under the law. Where the application for a licence is denied, the authority should provide notice of the reasons for the denial. Finally, the law should establish the term of validity and the procedures for renewal.

³⁷ The contracting parties have contemplated an outright ban on exports of hazardous wastes to certain countries, although this has yet to enter into force (see Section 2.2.2).

3.6.1. General requirements

In evaluating an application for a licence, the authority should consider whether:

- the information in the application is complete and accurate;
- the applicant is technically competent to operate the business as proposed;
- the applicant is aware of the toxicity of the pesticide and the risks involved in using or handling it;
- the applicant has knowledge of applicable pesticide legislation and the list of permitted or banned products;
- the pesticides included in the application are registered and the registration encompasses the proposed use;
- sufficient work safety measures are anticipated (use of protective gear, training, equipment and facilities to ensure the safe handling of the products, including the appropriate antidotes and first aid treatments);
- the location, land and facilities are appropriate for the proposed use without risk to human or animal health or the environment;
- the storage facilities and containers meet the necessary requirements for safety in general and in case of emergency;
- the pesticides can be adequately segregated from other products; and
- facilities and procedures are adequate to deal with leakage from pesticide containers.

Depending on the activity desired, other requirements may be imposed in connection with the grant of a licence. For example, licences may be granted subject to conditions, such as mandatory training in handling and safety or the availability of special equipment. Licensing systems may also be streamlined for less hazardous pesticides to provide an incentive for their use. A more rigorous review and/or a higher application fee may be appropriate for more hazardous pesticides.

The inspection system should ensure that all these requirements are met, initially by providing information to the competent authority in its determination of whether to grant the licence, as well as during the licence period to determine whether the conditions are still being met. Thus, inspectors should have the power to enter premises, make inspections, take

samples and request documentation. The competent authority should have the power to suspend or revoke a licence if inspections reveal that prerequisites are not met, if there is a violation of any conditions on which the licence was granted or if new facts come to light which would have led to the denial of the application in the first instance. There should also be an appeal procedure available for the denial, suspension or revocation of a licence issued under the law.

BOX 8 - LICENSING CHECKLIST

A pesticide law should:

- require licences for all persons or companies that manufacture, pack, re-pack, label, sell, store or distribute a pesticide;
- allow licensing only as to registered pesticides;
- establish a system to receive and evaluate applications, in order to assess risk;
- set out clear criteria for the grant or denial of the licence, as well as provisions for imposition of conditions, suspension and revocation;
- consider imposing more rigorous requirements for higher-risk pesticides;
- establish the term of validity and the procedures for renewal of the licence;
- back up the licensing scheme with inspections;
- enable the authority to impose fees for services associated with licensing; and
- set out an appeal process linked to the licensing scheme.

Some of the activities for which a licence may be required are explored in the next sections.

3.6.2. Manufacture

Licensing of persons and companies that manufacture pesticides (including those that formulate pesticides) provides the government with assurance that the applicants are aware of the hazardous nature of the product they are dealing with and that they are technically competent with regard to its

formulation or manufacture, taking into consideration the necessary precautions and safety measures. Legal provisions in the area of licensing for pesticide manufacture differ greatly depending on national circumstances. As noted earlier, many developing countries and countries with economies in transition do not formulate or manufacture pesticides but rather rely on imports. In such circumstances, provisions on licences for pesticide manufacture or formulation can be more basic than in pesticide-exporting countries. By contrast, countries in which manufacture or formulation is common may require elaborate legal controls and licensing schemes to ensure product quality and to minimize risk.

Legal controls on pesticide manufacturing, implemented through the licensing scheme, can govern a wide range of actions (Code of Conduct, art. 5.5). First, they may address where manufacturing can take place geographically, such as limitations on proximity to densely populated areas or water sources. Next, provisions will set rules for the construction and operation of the manufacturing facilities. The legislation may also address the occupational health conditions for workers in the manufacturing plant, and the types of safety precautions the company must put in place. Anti-pollution devices are required and a quality control laboratory or provisions for quality control must be available (Code of Conduct, art. 4.3). The legislation may require that the facility employ a staff doctor or nurse who has undergone training in the management of pesticide poisoning and that there be a clinic or hospital nearby.

In most jurisdictions, the bulk of legal controls on manufacturing will be on the quality of the product and the safety measures in the manufacturing plant. The pesticide law and its subsidiary regulations should require products to conform to minimum standards in order to safeguard human health and the environment as well as to guarantee the efficacy of the product. The FAO and WHO specifications for pesticides created through the JMPS (see Section 3.4.2) can be used as a point of reference in developing the applicable quality standards. If the necessary expertise and testing capabilities are not available in the country, it may be better to ban the manufacture of pesticides entirely.

The manufacturing provisions in the pesticide law will also have to reflect international obligations. For example, under the Rotterdam Convention, an importing party that does not consent to the import of a listed chemical must also prohibit the chemical's production domestically through national legislation (art. 10.9(b)); for example, it could be included as a banned

chemical under the pesticide law. The same is true for any importing party that consents to the importation of a chemical with conditions: the same conditions must apply to domestic production (art. 10.9). Record-keeping is therefore imperative to ensure that chemicals rejected under the PIC procedure are not later approved for domestic production (or use).

Under the Stockholm Convention, parties must eliminate or take steps to eliminate the production of all POPs listed in Annex A and to reduce the production of chemicals listed in Annex B, with certain limited exceptions (arts. 3 and 4). Similarly, under the Montreal Protocol, parties must phase out the pesticide methyl bromide (see art. 2H), which might affect production, e.g. by requiring a temporary freeze on its production or prohibiting it entirely (see Section 2.2.2). The ILO conventions that apply to worker safety during manufacture will also have to be reflected in the pesticide legislation or in the national legislation on occupational health. (See *id.*)

BOX 9 - MANUFACTURE CHECKLIST

A pesticide law should:

- establish rules applicable to manufacture of pesticides, including permissible locations, construction and operation requirements, occupational health conditions (following the ILO conventions), safety guidelines, anti-pollution devices, quality control and provisions for poisoning cases;
- establish a licensing scheme for pesticide manufacturers, including criteria for the grant or denial of the licence, conditions for the grant and provisions for suspension or revocation;
- establish quality standards for manufactured pesticides, ideally using JMPS specifications;
- possibly ban manufacture if necessary controls are not feasible in the national context; and
- ensure that lists of banned pesticides for manufacture are in harmony with the country's international obligations.

3.6.3. Storage

Pesticides usually have to be stored before they are sold or used. Careful pesticide storage practices and stock control are essential – in particular when highly or extremely hazardous chemicals are involved – in order to prevent damage to the environment and human health. In most jurisdictions pesticide storage requires a specific licence subject to certain circumstances.

The Code of Conduct requires industry and governments to take necessary measures to ensure that the storage of pesticides conforms to relevant guidelines (art. 10.3.1). The most important of these are the FAO Guidelines for Retail Distribution of Pesticides with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries (1988) and the Pesticide Storage and Stock Control Manual (1996).

Thus, the national legislation will establish general requirements for the storage of pesticides, for example that they never be stored in close proximity to or otherwise in the same area as food products or other consumables. The legislation may also specify that storage must be safe from animals but never near hospitals, schools or shops, accessible to children or exposed to rain or other water damage. These general provisions would apply to all pesticide storage (i.e. large-quantity commercial storage as well as household storage), but the legislation will likely differentiate among uses, imposing additional requirements for facilities where pesticide products are to be stored in large quantities or for facilities storing acutely toxic pesticides. Requirements for the storage of large quantities of pesticides generally include elements such as availability of equipment to deal with emergencies; ventilation; ramps; security; and access to safety data sheets for products stored (see Section 3.8). The law should also impose record-keeping requirements on storage facilities and ban the reuse of pesticide containers for any non-pesticide storage reason unless authorized by the competent national authority.

Provisions in the pesticide law and regulations will address containers for storing pesticides and the design of storage buildings, including impermeable flooring, facilities for easy loading and access in case of emergency. In the course of evaluating an application for a licence to store pesticides commercially or in bulk or a licence to store hazardous pesticides, inspectors will evaluate the safety of the facility before approval may be given by the competent authority.

Specific procedures are required for obsolete pesticide stocks in storage. Any person or entity with such stocks is generally required under the law to notify the competent authority regarding the specific amounts, types, locations and ages of the pesticide products that are no longer usable. The authority then determines the best course of action, which will depend on the disposal options available in the country (see Section 3.12).

BOX 10 - STORAGE CHECKLIST

A pesticide law should:

- specify how and where pesticide products may be stored;
- differentiate between private, end-user or home storage and bulk or commercial storage;
- impose record-keeping requirements on those storing pesticides;
- prohibit the reuse of a pesticide container for any non-pesticide storage reason unless authorized;
- indicate the type of containers required;
- set out rules for the construction of storage buildings; and
- establish special requirements for storage of obsolete pesticide stocks.

3.6.4. Sale

The sale of pesticides requires oversight to protect the purchasers who will apply or use the pesticides. The Code of Conduct refers to the establishment of a licensing scheme to ensure that only sellers with competency and training are permitted to sell pesticides, so that buyers receive sound information regarding pesticide use and the associated risks (art. 8.1.1).

Pesticide retail shops are those authorized to sell their products to the end user. Licensing of these shops facilitates enforcement of regulatory measures related to pesticide registration since only registered pesticides may be sold. The criteria for the grant of the licence will include an evaluation of the facilities for storage and display, the training and knowledge requirements of the seller, record-keeping, safety equipment and actions to be taken in case of fire, flood, leakage, spillage or poisoning of people or animals. In

developing countries, the premises should be inspected by the competent authority to assess compliance with the Guidelines on Retail Distribution with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries (1988).

BOX 11 - SALE CHECKLIST

A pesticide law should:

- set requirements so that only those with competency and training may be licensed to sell pesticides; and
- include among the decision-making criteria for the grant of a licence issues such as storage, display, training, knowledge, record-keeping, safety equipment and emergency plans.

3.6.5. Commercial operators

Some countries will include in the legislation a licensing scheme for persons applying pesticides for pay, such as pest control operators. In this context, the licensing scheme is designed to guarantee the responsible and proper use of the pesticides, while raising awareness regarding the inherent risks of indiscriminate use and misuse. Licensing contributes to protecting the health and safety of those doing the ground or aerial application of pesticides and to reducing the risks to human and animal life and health and the environment due to the uncontrolled or incorrect application of the pesticides.

Pest control operators normally handle the more toxic formulations and applications. Some of the requirements the competent authority is likely to impose before granting a licence are that: (1) the operator must take the prescribed training course and receive the necessary accreditation; (2) the accredited person must be the one who supervises and trains others working in the same company; (3) all pest control contracts must specify the use of the pesticides to be applied; (4) the business must be equipped with the required safety equipment and protective clothing for those doing the applying; (5) the company must have an occupational health programme for workers exposed to pesticides; (6) the company must put in place a maintenance programme for the spray equipment; and (7) the company must

keep records of all pesticide-related operations. FAO's Guidelines on Good Practice for Ground Application of Pesticides (2001) and Guidelines on Good Practice for Aerial Application of Pesticides (2001) provide further guidance.

BOX 12 - COMMERCIAL OPERATORS CHECKLIST

A pesticide law should:

- set requirements so that only those with competency and training may be licensed to apply pesticides;
- require pesticide contracts to specify the use of the pesticides to be applied; and
- include among the decision-making criteria for the grant of a licence the existence of training, supervision, adequate equipment with a maintenance programme, protective clothing, an occupational health programme and satisfactory record-keeping.

3.7. Packaging and re-packaging

Poorly packaged pesticide products can pose significant dangers to human health and the environment, while good packaging can reduce confusion about the contents while also lowering the risk of reuse or inappropriate disposal of the container. Packaging that degrades after long-term exposure to the product or to surrounding conditions may leak and contaminate the area or cause pesticide poisoning in those who handle the product. For these reasons, governments must effectively control the packaging and re-packaging of pesticides in national legislation.

According to the Code of Conduct, packaging means the container together with the protective wrapping used to convey pesticide products via wholesale or retail distribution to users, while re-packaging refers to the authorized transfer of a pesticide from any commercial package into any other, usually smaller, container for subsequent sale (art. 2). The pesticide law (or more likely, the subsidiary regulations) should specify the technical requirements for safe and effective packaging and re-packaging of pesticides. Most useful in this context will be FAO's Guidelines for the Packaging and Storage of Pesticides (1985), which give specifications for the different types of

packaging appropriate for different types of pesticide products, and the FAO Pesticide Storage and Stock Control Manual (1996).

As noted earlier, pesticides packages are generally approved under a registration scheme, with the applicant supplying an exemplar before the pesticide can be registered (see Section 3.4.2). However, the law or its regulations should also enumerate some basic packaging requirements. The law should forbid any person to pack, re-pack, sell, import, transport or distribute any pesticide unless it is in packaging that:

- is safe for storage, handling and use and does not present undue danger to human health or the environment;
- will not degrade under normal conditions of storage in the country and normal conditions of use for a specified time period (at least two years);
- does not resemble common packaging for consumable goods;
- has a safety mechanism that prevents children from inadvertently opening the container;
- prominently displays the approved label; and
- is difficult to reuse or is unattractive for reuse, for refilling or for storing substances other than pesticides once the packaging is empty.

The law should also specify exactly which products are covered by the packaging requirements.

The Code of Conduct specifies that industry and government should ensure that packaging conforms to relevant international guidelines (art. 10.3.1). Packaging or re-packaging may be carried out "only on licensed premises where the competent authority is satisfied that staff are adequately protected against toxic hazards" (art. 10.3.2). The Code of Conduct also calls on governments "to prohibit the re-packaging or decanting of any pesticide into food or beverage containers" and to "enforce punitive measures that effectively deter such practices" (art. 10.4). It may be advisable to ban all re-packaging of pesticides if effective controls are not feasible in a particular country. However, if re-packaging is necessary (for example to ensure that containers are appropriate for the local climatic conditions), then the pesticide legislation should establish the applicable standards. In either case, the law should make clear whether re-packaging is permitted and if so, what provisions apply.

Although the Rotterdam Convention does not give specific requirements for packaging, it does state in its preamble that the parties to the convention desire to ensure that exported hazardous chemicals are packaged (and labelled) in a manner that adequately protects human health and the environment and is consistent with the principles of the Code of Conduct.

BOX 13 - PACKAGING AND RE-PACKAGING CHECKLIST

A pesticide law should:

- specify the technical requirements for packaging and re-packaging;
- incorporate a packaging requirement into the registration process;
- follow international guidelines in developing packaging rules;
- require packaging that is safe, will not degrade under normal conditions, does not resemble common packaging of consumable goods, has a child safety mechanism, prominently displays the approved label and is difficult or unattractive for reuse;
- specify the products to which the packaging requirements apply;
- require that packaging or re-packaging only take place on licensed premises where staff are adequately protected;
- prohibit the re-packaging or decanting of pesticide into food or drink containers; and
- consider banning re-packaging if effective controls are not possible in the national context.

3.8. Labelling and safety data sheets³⁸

Proper labelling of pesticide products is a key tool to reducing environmental and health impacts of pesticides, insofar as the label conveys to the end user the information needed to make decisions on how, when and how much of the product to use. It is therefore essential that end users understand the message of the label sufficiently to motivate them to use the pesticide properly and to take reasonable precautions. Country

³⁸ Although the Code of Conduct (art. 8.2.7) uses the term "material safety data sheet," "safety data sheet" is used in the Rotterdam Convention (art. 13(4)), the Stockholm Convention (art. 10(4)) and documentation of the World Health Organization (see www.who.int). It is also used more frequently in national legislation.

conditions should be carefully considered when regulating labels. In developing countries or in countries with economies in transition, end users may be illiterate or literate only in a local language or dialect, or have other barriers to properly understanding the contents of a label. Accordingly, the label should be in the national language and should make use of internationally recognized pictograms.

Labelling requirements should apply equally to imported and manufactured products. The pesticide legislation, most likely the subsidiary instruments under the pesticide law, should specify what information needs to be conveyed in a label, including at least:

- the contents of the package, including the commercial or distinguishing name of the product, the formulation and names of all active ingredients with their quantities and a description of the formulation's use, including the target crops or pests;
- the hazard presented by the product, including, if appropriate, the WHO hazard classification or the future GHS;³⁹
- warning and cautionary statements, symbols or pictograms, including signs and symptoms of poisoning and information on appropriate safety, health and first aid measures, as well as warnings about inappropriate uses that may raise hazards and about reuse of containers;
- how, when and where to use the product (including, if applicable, how to dilute it);
- instructions for storage, taking into account the product's stability;
- equipment necessary to use the product in a way that entails the least possible risk;
- how to clean equipment and store or dispose of extra product;
- the required protective gear;
- instructions on the disposal of used pesticide containers;
- the name and address of the holder of the registration certificate or of the provisional approval;
- the registration number or other registration identification;
- contact information for the manufacturer; and
- the date of formulation, batch number, shelf life and expiry date.

³⁹ There will be a transitional period for both systems.

The legislation should impose requirements on the unit size that must be labelled, for example that the label must be affixed to the smallest unit available for sale or to a larger unit that contains multiple smaller units, if the package of the larger unit is likely to be seen or used by the customer. However, inner packages in contact with the pesticide product may be excluded if those packages could not be sold without an outer package. Rules may also state that in the event that all of the information cannot fit on the label directly affixed to the packaging, an accompanying leaflet is permissible, but only where the affixed label clearly indicates the need to read the leaflet and still includes the most crucial information. The FAO Guidelines on Good Labelling Practice for Pesticides (1995)⁴⁰ should be used in devising the national requirements.

The pesticide law and subsidiary regulations should dictate how the required information should be communicated. Depending on the national context, this may include the size of the label, the system of weights and measures to be used, multiple translations, translation into local rather than national languages, pictorial representations and/or requirements that vendors read labels to customers at the time of purchase. The legislation should also require that labels be resistant to normal wear and tear encountered in transport, storage and use over the course of the several years it may take for the product to reach the end user and be used. Labels should also be printed in non-fading ink colours and be firmly affixed to the packaging.

As noted earlier, the registration of a product is generally contingent on the approval of a sample label for the product submitted with the registration application to the registration authority (see Section 3.4.2). The registration authority can therefore determine if all essential information is contained on the label, if the label is in the appropriate form and if it uses the right means to communicate the information. The law will generally prohibit the sale of a pesticide unless it bears a label that has been approved by the competent authority. The label should also comply with general requirements established in any other labelling legislation in force.

The Rotterdam Convention encourages the labelling of all exported products in a manner consistent with the Code of Conduct (Preamble, arts. 13.2 and 13.3). Specifically, parties must use one of the official languages of the

⁴⁰ New updated guidelines are under preparation, in light of recent developments including the implementation of GHS (see Section 2.2.1).

importing country to convey the information on the label (art. 13.5). Recall that the convention also requires that labels include the appropriate customs code as designated by the World Customs Organization (art. 13.1).⁴¹ Under the Rotterdam Convention, exported chemicals are "subject to labelling requirements that ensure adequate availability of information with regard to risks and/or hazards to human health or the environment, taking into account relevant international standards" (arts. 13.2 and 13.3). This is an area where the registration authority will need to work closely with other governmental agencies, namely the customs and border control units, to ensure that these provisions are fully enforced.

The Code of Conduct does not call for specific government action regarding labelling, although it does require that all pesticide containers be labelled in accordance with the FAO Guidelines on Good Labelling Practice for Pesticides (1995) (Code of Conduct, art. 10.1). The Code of Conduct does specify standards that industry should adhere to when creating labels, such as inclusion of appropriate symbols and pictures, provision of written instructions in an appropriate language or languages, compliance with international labelling requirements for dangerous goods, display of the WHO hazard classification, identification of lot or batch numbers, indication of the release date and storage stability, inclusion of warnings against reuse of containers and instructions for disposal (art. 10.2).

Legislation may also establish requirements for the elaboration of a safety data sheet (SDS) for each pesticide or pesticide product. An SDS is a specific form containing information on the hazard potential of the pesticide product, usually provided by the supplier (e.g. manufacturer, importer or formulator). In contrast to labels, which are attached to the pesticide product or its package, an SDS is a separate sheet including similar but more comprehensive information. An SDS usually includes more specific data regarding ingredients of the pesticide, toxicology, first aid measures, handling, storage, personal protection, disposal and transport. As it did for labels, the pesticide legislation will establish requirements for the form and language of an SDS in the national context.

The Rotterdam Convention obliges exporting parties to require that an SDS be sent to each importer (art. 13.4), and the SDS must be consistent with international standards (art. 13.4). The SDS must set out the most up-to-date

⁴¹ See Section 3.5.

information available and be in one of the official languages of the importing party (if practicable) (art. 13.5). The Stockholm Convention encourages parties to use SDS to provide information on POPs (art. 10.4).

BOX 14 - LABELLING AND SAFETY DATA SHEETS CHECKLISTS

Pesticide labelling provisions should:

- apply equally to manufactured and imported pesticides;
- specify the information that must be contained, including, e.g. contents, formulation, proposed use, hazard classification, warnings, instructions, equipment and care, disposal, registrant, manufacturer, date of formulation, expiry date;
- follow international guidelines;
- require that labels be in the language(s) of the country and include pictorial representations adequate to the national literacy level;
- outline physical requirements for the label and rules for affixing labels on packages;
- require that labels be subject to pre-approval by the registration authority during the registration process; and
- to comply with the Rotterdam Convention, require that labels include the appropriate WCO customs code.

In regulating safety data sheets, governments should:

- specify the information that must be contained in an SDS;
- establish form and language requirements;
- follow international standards; and
- to comply with Rotterdam, require that an SDS be sent to each importer.

3.9. Use

After the registration system has identified which pesticides are permitted in the country, other provisions will dictate how the registered pesticides may be used. These are essential because even approved pesticides, when used improperly, can pose serious threats to the environment and to human health.

To reduce environmental risks, pesticide legislation may include specific provisions to this effect or may simply refer to the country's environmental legislation. There may be a number of situations or places that are especially susceptible to potential harms from pesticide use and which may warrant enhanced protection. These could include protected areas, natural parks, aquaculture facilities and organic farms. Schools, hospitals and nursing homes may also be subject to special protection.

To reduce the risks to the environment and to human health, the Code of Conduct calls on governments to prohibit the use of pesticides in an unsafe manner. Thus, the pesticide law should:

- prohibit the use of a pesticide in a manner other than that prescribed on the label or contrary to any conditions attached to the product's registration;
- prohibit employers from requiring employees to use a pesticide in such a manner;
- require employers to provide any necessary training and personal protective equipment to employees who handle pesticides; and
- require employers to provide periodic health evaluations to assess and treat any pesticide-related illness or injury.

According to the Code of Conduct, governments should also implement health-protection programmes, including training (arts. 1.6 and 3.10), monitoring (arts. 4.5 and 5.1.3) and data collection (arts. 5.1.6 and 6.1.8). The Code of Conduct also provides that governments should regulate the types of pesticide application equipment and personal protective equipment sold on the market in order to ensure that these conform to established standards (art. 6.1.9). National rules for required personal protective equipment in tropical climates should be based on FAO's *Guidelines on Personal Protection When Working with Pesticides in Tropical Climates* (1990).

In general, governments should look closely at protections for workers exposed to pesticide products.⁴² As noted in Section 2.2.2, agriculture tends to be omitted from the occupational safety and health legislation of many countries. Moreover, frequently only those employed under full contracts of employment are entitled to full protection, while family members, informal labourers, temporary and seasonal workers and self-employed workers are not.

⁴² FAO is preparing new *Guidelines on Pesticide Occupational Health and Safety*.

The Code of Conduct charges governments with creating programmes to safeguard the health of their citizens with respect to pesticides, including by monitoring the health of persons exposed to pesticides as a result of their occupation (art. 5.1.3); training health workers on how to treat suspected pesticide poisoning (art. 5.1.4); establishing a national or regional poison information centre (art. 5.1.5); and collecting data on the human health effects of pesticides (art. 5.1.6).

BOX 15 - PESTICIDE USE CHECKLIST

Governments should:

- enact specific provisions to prevent harm to the environment or otherwise ensure that pesticide use is covered under existing environmental legislation;
- prohibit the use of pesticides in an unsafe manner that poses a threat to human health or the environment;
- prohibit the use of pesticides in ways not prescribed by the label or contrary to conditions attached to the registration;
- prohibit employers from obliging employees to use pesticides in improper ways;
- require employers to provide necessary training and equipment to employees who handle pesticides;
- require employers to carry out periodic health evaluations to assess and treat any pesticide-related injury;
- set standards for pesticide application equipment and pesticide protective equipment;
- ensure that all workers, including those in agriculture, are protected under the legal framework; and
- create programmes to safeguard health, including through collecting data, monitoring worker health, training the health sector and establishing an information centre.

3.10. Advertising

Advertising can have a powerful effect on decisions to purchase and use a product, and thus any effective system to manage pesticides must include restrictions on advertising. Although many countries may already have

general legislation on false or misleading advertising, provisions directed specifically at pesticides are likely to have more effect.

The Code of Conduct calls on states to control pesticide advertising (art. 11.1), which it defines as "the promotion of the sale and use of pesticides by printed and electronic media, signs, displays, gift, demonstration or word of mouth." Because advertising of pesticides may take many different forms, legislation must have broad coverage to be effective, especially in developing countries with low literacy rates where printed media are used for only a small fraction of promotional activities.

In addition to setting out a clear definition of advertising, the legislation should designate the authority responsible for enforcement. FAO's draft Guidelines on Pesticide Advertising provide detailed suggestions in this area. The guidelines recommend the designation of a competent authority to promote information about advertising standards, receive complaints about violations and liaise with appropriate law enforcement officials to impose sanctions or penalties. In developing countries or countries with economies in transition where resources are limited, the body responsible for pesticide registration could oversee the advertising provisions as well, using the corps of inspectors for this purpose.

The substantive provisions on pesticides should prohibit advertising any unregistered or illegal pesticide; advertising any pesticide in a false or misleading manner or in a manner intended to deceive; and advertising in a way that is contrary to the conditions of the registration of the pesticide or contrary to its approved label. Subsidiary regulations could be used to address very specific words, phrases or claims that are prohibited in the course of advertising pesticides or pesticide products. National circumstances and the types of advertising recognized as problematic should be taken into account when elaborating these types of provisions.

Regulations could:

- require certain disclosures when advertising a pesticide, such as the name of the active ingredient, the name of the company producing the product, the contact information for the company and any dangers associated with the product;
- require the advertiser to indicate any limitations or restrictions associated with the product to reduce its potential risks, such as the

use of personal protective equipment, proper maintenance of application equipment, special measures to protect children or pregnant women or other precautionary measures;

- require a statement urging users to read and follow the label instructions;
- require all claims to have a scientific basis and be supported by the results of scientific research;
- prohibit the use of the fact of registration or approval in another country to bolster a claim of safety or efficacy;
- prohibit or limit the general advertising of pesticide products that are only approved for use by trained professionals;
- limit the time, place or manner of advertising pesticides;
- forbid inappropriate incentives or gifts to encourage the purchase or use of pesticides, unless in the case of promotion of a less toxic pesticide for substitution, if permitted by the registration authority; and
- prohibit claims about the safety of a pesticide product or service, claims of environmental or health benefits or claims of more profits or higher yields with use of the product. This could include barring specific categorical statements such as "environmentally friendly," "safe," "green," "non-toxic," "compatible with integrated pest management" or "natural." It could also limit claims that a public health pesticide will prevent a disease without additional measures.

The legislation could also prohibit print or visual advertisements without prior approval by the competent authority, although this will depend on the resources of the enforcement authority.

It is important to note that the Code of Conduct calls on the pesticide industry itself to voluntarily adhere to a very specific list of advertising requirements, including a ban on false or misleading advertising, a ban on advertising not based on scientific knowledge, a ban on advertising that does not properly warn or advise about necessary precautions and a ban on advertising that promotes unsafe uses of pesticides (art. 11.2). The Code of Conduct also calls on international non-governmental organizations to call attention to breaches of these standards (art. 11.3).

BOX 16 - ADVERTISING CHECKLIST

Pesticide legislation should:

- set out specific requirements for pesticide advertising;
- define pesticide advertising broadly to cover all forms;
- designate the authority responsible for enforcement;
- prohibit the advertising of unregistered or illegal pesticides, false or misleading advertising of pesticides and advertising contrary to approved uses or label instructions;
- elaborate detailed requirements in subsidiary regulations, e.g. prohibiting certain phrases, requiring certain disclosures, requiring specific statements in the course of pesticide advertising, restricting the time or manner of pesticide advertising and forbidding incentives or gifts; and
- possibly require prior approval of print or visual advertisements by the competent authority.

3.11. Transport

Transport of pesticide products and pesticide-related waste is rarely covered by pesticide legislation, even though it is an important part of the pesticide life cycle. Instead, it is usually covered by national transportation legislation implementing the relevant international standards for transport of dangerous goods by air, sea, road and rail, such as the United Nations Recommendations on the Transport of Dangerous Goods, the International Maritime Dangerous Goods Code and the Technical Instructions for the Transport of Dangerous Goods by Air. Thus, national pesticide legislation might only refer to existing applicable legislation on transportation. But if there is no general transportation law or if that law does not cover pesticides, the national pesticide law should include some basic provisions on transport.

The law should establish requirements for vehicles and containers used for transport of pesticides. It should also provide that pesticides not travel in the same vehicles as passengers, animals, foodstuffs, animal feeds or other items meant for human consumption. Where joint transport is unavoidable, the pesticides should be physically separated. The FAO Pesticide Storage and

Stock Control Manual (1996) provides more detailed guidance on requirements for the transport of pesticides.

Under the Basel Convention, any movement of hazardous wastes (which may include pesticides) should be accompanied by a movement document, and should adhere to generally accepted and recognized packaging, labelling and transport requirements (art. 4.7.b). Countries must also require proper documentation for such wastes in shipment (art. 4.7.c).

BOX 17 - TRANSPORT CHECKLIST

A pesticide law should:

- follow international standards for the transport of dangerous goods;
- cover the transport of pesticides;
- set out requirements for vehicles and containers;
- prohibit the transport of pesticides in the same vehicle as passengers, animals, food and animal feed;
- require physical separation in cases where joint transport is unavoidable; and
- follow Basel requirements for the transport of hazardous pesticide wastes.

3.12. Disposal

The pesticide law should address disposal of empty pesticide containers and other pesticide-related waste as well as disposal of unwanted, unusable or obsolete stocks of pesticides, in order to avoid harmful consequences for human health and the environment. This is encouraged by the Code of Conduct (art. 10.5), which requires that disposal be carried out in accordance with an action plan to be developed by governments with the collaboration of industry and multilateral cooperation (art. 10.5). Most useful will be the FAO Guidelines for the Management of Small Quantities of Unwanted and Obsolete Pesticides (1999), the FAO Guidelines on Disposal of Bulk Quantities of Obsolete Pesticides in Developing Countries (1996), the FAO Provisional Guidelines on Prevention of

Accumulation of Obsolete Stocks (1995) and the FAO Guidelines on the Management and Disposal of Used Containers (2007).

At a minimum, the following actions should be banned in the national law:

- pouring pesticides down drains or into water sources or drainage channels;
- burying pesticide-related waste or dumping pesticide-related waste in general landfills instead of in approved landfill sites designed to prevent contamination; and
- burning pesticide-related waste, unless in an approved incinerator.

Often, national legislation on (hazardous) waste is already in place and should be taken into account.

Under the Code of Conduct, industry is encouraged to assist in disposing of any banned or obsolete pesticides and disposing of used containers in an environmentally sound manner (art. 10.6). Thus, in addition to the more general prohibitions just listed, legislation could also place affirmative duties on pesticide manufacturers, importers and distributors to ensure proper disposal. For example, provisions could mandate that points of sale for pesticide products act as collection sites for used pesticide containers and could require that suppliers be responsible for disposal of the containers of their products.

The Code of Conduct calls for measures to prevent the accumulation of obsolete pesticides (art. 10.7). Accumulation of obsolete pesticides often arises from excess donations or from imports of pesticides to deal with emergencies, in quantities far in excess of what was needed. Other causes are where: (1) products have already been bought but are subsequently banned (e.g. certain POPs such as dieldrin once used widely against locusts in Africa); (2) products are physically deteriorated due to prolonged or improper storage; or (3) stock is poorly managed, for instance due to poor record keeping. To prevent accumulation, legislation should include provisions for phasing-out periods when pesticides are to be banned or de-registered. Furthermore, legislation should include provisions requiring inventories of obsolete pesticide stocks or other measures to promote proper stock management.

Waste contaminated with or consisting of pesticide products poses a particularly grave problem for many developing countries and countries with economies in transition, in that proper disposal facilities may be scarce and users may have inadequate knowledge of the hazards posed by improper disposal. Legislation should require that any person or entity wishing to carry out disposal of pesticide-related waste seek authorization from the competent authority and give notice of the disposal plan. Disposal, and remediation of contaminated sites, must take place in an environmentally sound manner, the details of which will be established in legislation.

The Basel Convention is particularly apposite with regard to disposal of hazardous wastes, as it would apply to many, if not most, obsolete pesticide stores and pesticide-related wastes. Although the convention's primary objective is to prohibit the dumping of hazardous wastes in other countries (art. 4.1) and to control waste exports on a shipment-by-shipment basis through the PIC procedure (art. 6), it also contains obligations regarding domestic disposal (art. 4.2). To comply with the Basel Convention, national legislation should prohibit removal of hazardous wastes to another country without the proper notification, receipt of permission through the country's focal point or competent authority and proof that a contract has been concluded between the exporter and the disposer providing that such wastes will be managed in an environmentally sound manner. The legislation should also prohibit the import of hazardous pesticide wastes from another country without consent.

Since several POPs are pesticides, the Stockholm Convention has to be taken into account when assessing the national legal framework for pesticide-related disposal. The convention addresses the identification and environmentally sound management of stockpiles, waste and contaminated sites containing POPs (art. 6). Some POPs containing waste have to be disposed of in such a way that the POPs content is destroyed or irreversibly transformed into non-POPs. And like Basel, the Stockholm Convention advocates waste prevention and minimization.

As both the Stockholm and Basel Conventions cover the same stage of the pesticide life cycle, the Stockholm Convention calls for coordinated action with Basel in this regard (art. 6.2). The Basel Convention Open-ended Working Group is developing general technical guidelines on environmentally sound management of waste which consists of, contains or is contaminated with POPs. The guidelines include a section on the

legislative and regulatory framework necessary to meet the obligations arising from the Basel and Stockholm Conventions with respect to POPs wastes. The framework includes provisions on requirements for hazardous waste treatment, disposal facilities and contaminated sites.

BOX 18 - DISPOSAL CHECKLIST

A pesticide law should:

- follow international guidelines for disposal of empty pesticide containers, related waste and unused or obsolete pesticide stocks;
- ban certain types of activities in relation to pesticide waste, including pouring it down drains or into water sources, burying it in unapproved sites and burning it in unapproved incinerators;
- place affirmative duties on industry to assist in proper disposal;
- call for the development of inventories of obsolete pesticide stockpiles and other mechanisms to promote proper stock management;
- require any person or entity seeking to dispose of pesticides or pesticide waste to seek authorization from the competent authority;
- require the disposal of obsolete pesticide stocks and the remediation of contaminated sites in an environmentally sound manner;
- ban reuse of pesticide containers for purposes other than the packaging of pesticides;
- to comply with Basel, prohibit removal of hazardous wastes to another country without proper permission, and prohibit the import of same; and
- to comply with Stockholm, require POPs to be disposed of in the requisite manner.

3.13. Data collection and monitoring

The collection of information about pesticides in a country is crucial because the details of current risks and incidents inform policy choices, strategies and actions. For example, a programme that monitors which pesticides are causing problems can help determine whether a pesticide should continue to be registered for use or whether that use should be limited in some way (see Section 3.4.4). Furthermore, information on the risks associated with

pesticide use can be used to build an effective public information campaign to raise awareness about those risks. It may also alter the decision to approve particular packaging or labelling, since either or both of these may increase or decrease the risks associated with a product.

Legislation comes into play in the identification of the competent authority and in the assignment of powers and obligations regarding monitoring and data collection. Pesticide legislation should in particular charge the authority with collecting information and should also give the authority the power to require others to keep and convey information. For example, the authority may have the power to require manufacturers, importers, distributors and sellers of pesticide products to keep records for a specified time period, to make their books and records available for inspection at all reasonable times and to report any incidents of health problems or environmental contamination resulting from pesticide use. These rules should be in accordance with FAO's draft Guidelines on Monitoring Incidents of Pesticide Poisoning and Adverse Environmental Effects/Conditions, while also taking into account specific national circumstances.

Inspectors serve an important information-gathering function in a pesticide management system. As inspectors serve as the front line of enforcement of the pesticide law, they will collect vital information about adulterated pesticides, overstocking, mishandling, misuse and mislabelling of pesticides. Inspectors can also take samples of pesticides to evaluate the quality and type of pesticides on the market. This can then be taken into account in the registration authority's decision-making on registration applications, and can inform further regulatory changes. The Guidelines on Post-Registration Surveillance and other Activities in the Field of Pesticides (1988) provide a comprehensive list of the types of post-registration information that should be gathered to inform registration decisions.

Various international instruments have requirements for monitoring and reporting on pesticides. For example, the Code of Conduct provides that governments and the pesticide industry should "collaborate in post-registration surveillance or conducting monitoring studies to determine the fate of pesticides and their health and environmental effects under field conditions" (art. 4.5). Thus the legislation should provide the registration authority with powers to carry out post-registration monitoring, which might address the quality of the formulations on the market, whether or not pesticides are being

used in accordance with label directions, pesticide residue levels in food, environmental impacts of pesticide use and accidental poisoning incidents.

It is not only the competent authority for pesticides that will have responsibility for data collection. Labour law legislation may oblige employers to keep a record of incidents causing injuries to workers and to make such reports available to the pesticide authority. The health ministry or agency is likely to have significant responsibilities. It should keep records of all cases of pesticide poisoning as this will be of considerable utility in monitoring pesticide hazards under actual use conditions. This can lead to modification of the registration conditions, or even to cancellation of the registration of a pesticide. Under the Code of Conduct, governments are asked to carry out health surveillance programmes of individuals who are occupationally exposed to pesticides (art. 5.1.3) and to collect and maintain data on health consequences of pesticides (art. 5.1.6).

Similarly, the effects of pesticides on the environment should be monitored and any unacceptable adverse effects notified so that, if required, uses can be modified or even banned or severely restricted. The Code of Conduct requires governments to collect and maintain reliable data on environmental contamination and incidents involving pesticides (art. 5.1.9). Coordination will be essential to ensure the sharing of information among the relevant government entities that collect these types of information.

In addition, it should be noted that the Rotterdam Convention has some information-gathering requirements, for instance that any country's proposal to list a severely hazardous pesticide formulation in Annex III contain a clear description of any incidents that have occurred (Annex IV, Part I, para. g). The Stockholm Convention requires parties, within their capabilities, to encourage or undertake appropriate monitoring of POPs, including their sources and releases into the environment; presence, levels and trends in humans and the environment; environmental transport, fate and transformation; and effects on human health and the environment (art. 11.1). The Basel Convention requires parties to report any accident connected to the transboundary movement of hazardous waste (art. 13.1). In addition, Article 13(3) provides that each party should transmit an annual report to the Conference of the Parties containing, *inter alia*, information regarding transboundary movements of hazardous wastes with which it has been involved, as well as information on disposal options within its jurisdiction.

BOX 19 - DATA COLLECTION AND MONITORING CHECKLIST

Governments should:

- assign responsibility for mandatory monitoring and data collection with respect to pesticides;
- set out the powers and responsibilities of the responsible body and the inspection corps with regard to information-gathering;
- impose reporting requirements on manufacturers, importers, distributors and sellers of pesticides;
- require reporting of pesticide-related incidents to the competent authority;
- coordinate functions among all public entities collecting information on pesticides;
- collect information on environmental contamination arising from pesticides incidents (to comply with the Code of Conduct);
- keep detailed information on pesticide incidents (to comply with the Rotterdam Convention);
- collect information on POPs (to comply with the Stockholm Convention); and
- monitor and report on the management of hazardous wastes (to comply with the Basel Convention).

3.14. Enforcement

The pesticide law will contain enforcement provisions, namely, a list of offences as well as the penalties associated with each violation and the procedures applicable once an offence has been committed. As will be discussed in Part IV, although offences and penalties are not the only available enforcement tool, they do play an essential role in ensuring compliance with the pesticide law. In addition to deciding which compliance tool or tools to use, governments will have to make several other policy decisions in crafting the offences and penalties provisions in the pesticide law.

3.14.1. Offences

The first task will be to establish the offences under the law. These should include actions not only by the general public and industry, but also by persons acting officially on behalf of the competent authority. Some of the possible offences that can be committed by the former include:

- manufacturing, packaging, re-packaging, labelling, selling, importing, exporting, storing, distributing, applying or using a pesticide that has not been registered;
- selling or distributing a pesticide that does not meet the specifications as stated when the product was registered or a pesticide that is adulterated;
- performing any function for which a licence is required without obtaining that licence;
- failing to comply with any conditions of registration or licensing;
- violating the packaging, re-packaging, labelling, advertising, storage, use or disposal requirements;
- supplying a pesticide in a container that has deteriorated or been damaged;
- selling or distributing a pesticide without an approved label attached to it;
- detaching, altering or destroying any label on the container of a pesticide product;
- using a pesticide in a manner that is not consistent with the approved label;
- advertising in a false or misleading way;
- making false or misleading statements or providing false or misleading information in an application for registration or licensing or in required reports or records;
- participating in the illegal traffic of pesticide products (including transporting pesticide-related waste across an international border);
- making shipments contrary to the import decisions of a country under the Rotterdam Convention or under the Basel Convention;
- failing to report incidents related to pesticides that are subject to mandatory reporting, or otherwise failing to keep required records; and
- hindering or impeding an inspection or assaulting an inspector.

Provisions governing the behaviour of inspectors and other officials serving in any of the pesticide-related administrative bodies created under a pesticides law will guarantee the safety of information and propriety of actions taken by the competent authority and ensure that industry has appropriate confidence in the regulators. Offences in this category could include:

- knowingly disclosing any confidential information acquired in the course of official duties, except in limited circumstances (e.g. court proceedings);
- accepting, rejecting or otherwise acting on any application for registration or for a licence for any reasons other than those enumerated by the pesticide legislation as applicable criteria; and
- participating in any administrative decision in which the individual has a personal interest including a familial relationship or financial stake.

After identifying the offences, the next task will be to decide which activities will be criminal offences and which will be administrative ones. In some countries, the answer may already be provided for in the constitution (or in other countries, the criminal code); the answer may also be a function of the country's international commitments. For example, the Basel Convention requires that parties consider illegal traffic in hazardous wastes or other wastes a criminal activity (art. 9); parties to that convention are required to introduce appropriate domestic legislation to prevent and punish illegal traffic, and must cooperate with other parties toward this end (art. 9(5)).

In other jurisdictions, it may be possible to define some offences as administrative violations, meaning that the power to find violations is vested in the administrative agency, not a judicial body. Thus the competent authority or pesticide board would have the power to punish certain kinds of violations. Because administrative penalties are imposed outside the judicial process, the evidentiary standards are lower and criminal court procedures do not apply. In some circumstances, where permitted, they can be a viable alternative enforcement mechanism which can be more cost-effective, timely and practical than judicially imposed sanctions.

3.14.2. Penalties

Having defined the offences and categorized them as criminal or administrative, the legislation must then outline the applicable penalties, which may take different forms. These include fines; suspension or revocation of registration or

a licence; and forfeiture of products or other items used in the commission of an offence. Other sanctions might impose the cost of clean-up, disposal or other necessary measures to mitigate the damage caused by the offence. Imposition of a term of imprisonment is permissible for criminal offences but not for administrative ones.

Different penalties may be assigned to different offences according to the severity of the offence or its consequences. Aggravating factors, which would increase a penalty, could apply in certain circumstances, such as where the offence caused irrevocable damage, permanent disability or death of an individual.

It is important to ensure that the level of the penalties is high enough to be a deterrent while at the same time low enough not to be disproportionate to the offence committed. In many countries, the prescribed fines and penalties contained in the pesticide law are low or otherwise not deterrent enough, in part because of the devaluation of the country's currency over time. Because the listed penalties are embodied in the parent enactment, the penalties remain at the same level for years or decades while their deterrent value declines due to inflation. One solution is to enact a separate law which includes a multiplier, i.e. which states that all penalties listed in the pesticide law are multiplied by 100, 500 or 1 000, as the case may be. Another strategy is to avoid listing specific penalties in the law but instead to list a range, and to assign to the enforcement authority the power to select the appropriate penalty within the listed range. So long as the upper level is sufficiently high, such a strategy can avoid the effects of inflation for a number of years, although it may still only be effective for a limited time.

One innovative solution is to tie the penalties to a neutral economic parameter, for instance the monthly salary of a civil servant of a particular grade. Thus, a minor offence might be defined as one quarter the monthly salary of a civil servant from a medium management level, while a serious offence might attract a penalty equivalent to ten times that same monthly salary. The advantage of this method is that it does not name particular amounts, and thus the penalties can be expected to rise over time – assuming that the government eventually raises its civil servants' salaries. Where this is not a valid assumption, tying the penalties to a reliable cost-of-living index, if available, may be a better solution. Any of these alternatives could be an improvement over listing a fixed amount in a law that may take years to be enacted – during which time the currency may already have devalued and may continue to decline.

The law should next set out the procedures applicable once an offence has been committed (unless this is governed by a criminal or administrative procedure code). The main purpose of procedural rules in legislation of all kinds, including pesticide legislation, is to guarantee constitutional or other basic legal rights. Procedures regarding notice, the right to a hearing and the right to appeal a negative decision are designed to protect an individual's rights, particularly the right to due process and to a proper defence. Thus, in most pesticide laws, once a violation has been committed, notice is served upon the offender to inform him or her of the facts, the date and nature of the offence and the assessed sanction. Notice is served prior to the imposition of a penalty so as to afford the accused a reasonable opportunity to object, either in writing or in person. In addition, an offender is granted the right to appeal a decision of the authority to a higher body or to civil or administrative courts, within a specified period. This is one of the issues addressed in the next section.

BOX 20 - ENFORCEMENT CHECKLIST

A pesticide law should:

- determine which conduct is to be considered an offence;
- include offences by individuals as well as offences by persons taking official action under the law;
- within the limitations of the legal system, decide which offences will be criminal and which administrative;
- decide which penalties will apply to which offences under the pesticide law;
- link the level of the penalties to the severity or consequences of the offence;
- set the penalties at a level likely to be a deterrent for years to come;
- identify applicable procedures coming into play when an offence has been committed; and
- define other consequences of the infringement, such as the revocation of a licence or forfeiture of materials used in connection with the commission of the offence.

3.15. Miscellaneous provisions

Pesticide laws routinely contain provisions covering other outstanding issues that do not fit into any of the categories already addressed. For example, miscellaneous provisions may address liability issues, stating that inspectors or officials are not liable for anything done in good faith in the performance of their functions under the law. Other provisions may specify the liability of corporate officers in the case of a corporation committing an offence under the law.

The law may also specify legal presumptions applicable under the law, although this will depend on the legislative practice of the country, since in some countries presumptions will be contained in a civil procedure or criminal procedure law applicable to all proceedings and all legislation. Typical presumptions include the presumption that a certificate of analysis purporting to be signed by the director or head of an official laboratory shall be accepted as *prima facie* evidence of the facts contained in it; the presumption that a package that bears the name and address of a manufacturer was manufactured by that person; and the presumption that all the contents of a container or consignment from which a sample was taken are the same as the sample.

The legislation should also include provisions for appeals against negative administrative decisions of the competent authority. For example, an applicant for registration should be granted the right to appeal a negative decision by the authority, for example to deny or suspend registration or a licence. The law will have to indicate which party or body will hear the appeal (such as the head of the competent authority, the minister responsible for enforcement of the pesticide law or a specially created appeals board). In some jurisdictions the appeals can be or will have to be channelled through the normal court system.

When drafting a new pesticide law, it is important to explicitly refer to any existing law or legal provisions that are superseded by the new law. If an earlier pesticide law is being replaced, then the new law will either state that the old law is repealed in its entirety, or it may list specific provisions that have been repealed. The new pesticide law may also include some transitional provisions that continue registrations and licences granted or regulations issued under the previous legislation, until a specific time or until

a specified action takes place. It is also routine to include a clause that renders anything inconsistent with the new law superseded.

Most pesticide laws include a provision listing the many subject matters that the minister (or other person in whom the power has been vested, such as the head of the competent authority or the pesticide board) may address through regulations in order to carry out the purposes of the law. Depending on local practice, the list of regulations may be extremely detailed or it may simply give broad outlines of the kinds of topics that may be addressed. In either case, the power to make regulations is rarely limited, since the law usually contains a general statement that the relevant authority may make all regulations deemed necessary to achieve the purposes of the law. Depending on the subject matter, the competent authority can be assisted in the preparation of regulations and other subsidiary instruments by the pesticide board, technical committees or the various units involved in pesticide management.

Among the topics normally addressed in such subsidiary regulations are provisions on the organization and functioning of the pesticide board established in the main law; detailed procedures for the issuance and repeal of licences, including the criteria to be used by the competent authority in the licensing decisions; and how inspectors should go about their work inspecting consignments and taking samples. Regulations may also define the qualifications of inspectors and analysts operating under the pesticide law, as well as training requirements for commercial operators.

The dividing line between what should be contained in the basic law and what should be included in regulations and other subsidiary instruments under the law will depend on local practice. But as a general matter, parliamentary-level laws fix the basic obligations, standards and institutional arrangements and establish criminal offences, while regulations or other subsidiary instruments provide details for the implementation of these basic obligations. Relegating the details to subsidiary instruments (regulations and the like) serves two purposes. First, it facilitates passage of the principal legislation, because the more general the law, the less likely it is to be objectionable to other ministries and government authorities. Second, keeping the legislation basic ensures that any needed amendments based on scientific advancements or changing political circumstances can more quickly and easily be made, since they require only the action of one minister rather than of the parliament as a whole. In some countries, regulations must be

presented to the cabinet if they have wider implications, but this is still a more speedy process than reverting to the parliament to change details if they have been unwisely included in the main law.

Subsidiary instruments should serve the purposes and objects of the main pesticide law and not create powers themselves, as these may be challenged. Inspectors should not, for example, be given in regulations the power to stop and search vehicles, since citizens could thereafter challenge the government action as *ultra vires* because not underpinned by the main statute.

The dividing line between what is to be included in the parliamentary-level law and what should be in the subsidiary instruments depends on the legislative tradition of the country, but some general observations can be made. First, as already noted, elements that are likely to change should not be part of the main pesticide law. These would include provisions based on the state of scientific or technological knowledge, as well as any provisions that depend on a particular set of empirical circumstances. Therefore, it would not be advisable for the main law, in establishing the membership of a pesticide board, to include too detailed a list of members (especially if the list has been developed with particular people in mind), since with time, those self-same people may move to different jobs within the same institutions or to different positions altogether. If the law identifies the membership too closely, future ministers or heads of the competent authority would nonetheless be bound by those provisions. By the same logic, the specific minister, ministry, department or division will not generally be named in the main law, as portfolios may change, which risks making at least one provision of the law obsolete. Generally, the law will refer to the "minister responsible for agriculture" or the "minister responsible for health" rather than listing the full name.

Naturally, subsidiary instruments should not conflict with the main pesticide law. Terms defined in the parent law should not have divergent definitions in the regulations, and procedures set out in the principal legislation should be used as the skeleton on which to build more comprehensive procedures in the subsidiary instruments. Equally, every effort should be made to ensure that the pesticide regulations create a comprehensive whole in their own right. This is so that if at some future date the parent pesticide law is repealed, the system established in the subsidiary instruments – for example the system of pesticide registration or licensing of pesticide operators – could remain. If the system is well designed, then the new repealing law could

provide, as already noted, that all subsidiary regulations issued under the repealed law remain valid as if made under the new pesticide law, unless and until they are specifically repealed.

BOX 21 - MISCELLANEOUS PROVISIONS CHECKLIST

A pesticide law should:

- exempt officials from liability for good-faith action or inaction in the course of official duties under the law;
- specify the liability of corporate officers where a corporation commits an offence;
- specify any applicable presumptions;
- consider including provisions for appeals;
- define which provisions of existing legislation need to be repealed and which will continue in force;
- include a blanket provision stating that anything inconsistent with the new law is superseded;
- identify the person or agency that will make regulations under the law; and
- depending on the context, provide a detailed list of the subject matters of regulations.

IV. CHANGING THE NATIONAL POLICY AND LEGAL FRAMEWORK

4.1. Considerations in reviewing and revising national legislation

The preceding part provided general guidelines for what to include in the national legal framework for pesticides. Nonetheless, pesticides legislation needs to be tailored to national circumstances: each country should work within the context of its own basic legal framework and traditions. The type of legislation that will be developed or revised in a particular country will depend on a number of factors, each of which is explored below.

4.1.1. Constitution

The first question to be answered is what is the fundamental legal text (usually a constitution) underpinning the draft pesticide law. The constitution, or other fundamental law, sets out the functions and limits of public power and action. The provisions of the constitution may determine how international law should be incorporated into national law, and may also affect the types of change that are feasible within the country's legal system.

A constitution often creates an enumerated list of citizens' individual rights. Substantive provisions relevant to pesticides might consist of constitutional rights to health, a clean environment, adequate food and water and the right to take part in decisions affecting one's community. In drafting national laws, it may be useful to refer to these rights, for example by stating in a preamble or statement of purpose that the pesticide law is intended to promote and protect human health or a clean environment.

In nations with a federal government structure, the constitution may provide for a division of powers among the different levels of government. If some of the powers are granted solely to one level of government, this may affect the assignment of powers within the pesticide law.

4.1.2. Other national legislation

After the constitution, the next area to be examined is the national legislation in force. Most countries will already have a legal and institutional framework addressing pesticide management. Before developing new pesticide legislation, it is essential to identify and analyse the existing legal provisions on pesticides. This helps determine the types of changes that will be necessary, while outlining the parameters within which any new legislative action will take place.

Naturally, the review should begin with specific pesticide legislation already in force, as well as provisions directly or indirectly affecting the many aspects of pesticide management. Because pesticide management is cross-sectoral, much other legislation will be relevant. The review should cover legislation on environmental protection, public health, occupational health, water, wildlife, marine protection, plant protection and general chemicals management, in order to determine whether and how existing provisions govern pesticides in some way. For example, as already noted, transportation

of pesticide products is rarely covered by pesticide legislation. Instead, it is covered by national transport law for dangerous goods implementing the relevant international standards on transport of dangerous goods by air, sea, road and rail.

Customs and border protection legislation, as well as general legislation on import and export, may also be relevant. Biosafety legislation (legislation on genetically modified organisms establishing a permit system based on risk assessment) should also be taken into account, in order to capture a more recent phenomenon: genetically engineered plant-incorporated protectants, which are pesticide-like substances produced by plants from added genetic material.

Another type of law that will almost certainly intersect with pesticide management is a food law, which, as noted earlier, in its subsidiary legislation will generally incorporate maximum residue limits (MRLs) for pesticides on food products. International MRLs are set by the Codex Alimentarius Commission, and many countries adopt or adapt these in their national legislation.

Finally, national tort laws are a relevant area for examination in connection with the revision of pesticide legislation. Tort laws provide private or civil causes of action which may be brought by an injured party against another private party, for negligent, reckless or intentional acts. The examination should assess whether the existing general tort causes of action would apply in the case of pesticide poisoning. Nonetheless, a more specific provision in the pesticide law may serve to give notice to those manufacturing, importing, labelling, handling, transporting, applying and disposing of pesticides that both criminal and civil liability may attach, requiring a greater standard of care.

The review of these other laws is carried out for the purpose of determining how those provisions relate to the proposed new pesticide law. If any of the provisions are duplicative, a provision in the new pesticide law will state that, as pertaining to pesticides, it prevails. Or, it may be necessary to specify that provisions under both laws apply, if they serve different ends (see Section 3.15).

4.1.3. Policies and priorities

In every country, a variety of policies, strategies and priorities of national, regional or international provenance affect the development of the legal

framework relevant to pesticide management. An important policy with implications for pesticide regulation is the overall agricultural policy; others include environment, public health, protection of workers and more specifically the promotion and development of pesticide alternatives (e.g. IPM). Good governance policies, such as access to information, participation in decision-making, transparency and accountability will also affect the legislative design and influence the way a particular government interacts with civil society on matters related to legislative design and enforcement. In some situations, governments are obligated to incorporate certain policies in their national legislation, while in others they may simply choose to do so.

As an example, many countries have embraced the decentralization of government responsibilities and the devolution of powers to provincial or lower levels of government. The purpose is to ensure public participation in decision-making and to promote more effective management of resources, since local authorities are generally more familiar with their regulatory needs and staffing and other resource constraints. In practice, the existence of a decentralization policy or decentralization law might mean that in any new pesticides law, local authorities might be given the power to regulate on certain defined issues, such as carrying out inspections and issuing licences to pesticide sellers or operators, while the central authority might retain a broader policy-making role.

Other policy influences on national legislation include international trade and regionalization. Regional agreements and standards adopted by major trading partners are especially important to small and developing nations because they assist in establishing transparent and uniform standards and fostering relationships with trading partners. The desire to join regional organizations, such as the European Union, MERCOSUR or CARICOM, may spur countries to update their legislation and ensure its conformity with regional standards. There may also be an overall policy on the integration and participation of the country in the global economy and in international organizations, which might affect the design of the national pesticides law.

4.1.4. Implementation

A thorough analysis of the legal framework consists not only of an assessment of the legal system and a review of the relevant legislation and policies in force. It is also important to assess the actual effect that relevant

legislation has in practice, examining how it is applied and the ways in which it influences the behaviour of individuals and institutions. Often, there are gaps between the objectives and policy goals of a law and what is actually achieved once it is enacted. This kind of analysis is important because if the reasons the current legislation governing pesticides is not enforced are not addressed in the first place, then any new laws and regulations are unlikely to work any better.

Acknowledging politics and the human element

The effectiveness of a new pesticides law may be undercut by the failure of officials or institutions to devote sufficient resources or energy to its implementation. In many cases this is due to a simple lack of resources or capacity. In other circumstances, the passage of a pesticides law may have been a way to demonstrate political commitment to reforms about which the government is actually ambivalent. Implementation may in some instances be compromised by corruption, a problem that governments may be unable or unwilling to combat with the necessary vigour.

The lack of necessary political commitment to ensure effective implementation may also be related to the manner in which the new law has been formulated and adopted. For instance, governments may have responded to pressure from large pesticides companies, donors or advocacy groups, any of which may have influenced the formulation of the pesticide law. As another example, one ministry with a particularly powerful minister may successfully push for the enactment of a new pesticides law without garnering the support of the other ministries whose duties and responsibilities will be altered by the new law, or which may be called upon to help in its implementation. Where this is the case, necessary collaboration may fall victim to institutional jealousies, turf-defending behaviour and passive resistance of government institutions and officials who feel their interests were not taken into account in the enactment of the new legislation. As will be discussed below, government officials should be regarded as a stakeholder group whose interests must be considered during the process of elaboration of the legal framework for pesticide management. Widespread participation as part of a policy of good governance is vital to the process of legal change.

Taking implementation into account in the legislative design

In some cases, legislation may be difficult to implement simply because of a lack of resources or because of the failure to anticipate the pragmatic details of putting the law into effect, such as modes of enforcement and costs of implementation. There are many examples of well-drafted laws that have been enacted without sufficient attention paid to the country's resources and its level of development and which, as a result, have proven difficult to implement.

For example, in many countries the resolution of legal disputes is the responsibility of a court system that is overburdened and underfinanced, while alternatives to the traditional court system may be few or nonexistent. As a result, even good pesticide laws may not be properly enforced for lack of judicial mechanisms. A viable enforcement tool that the law can provide quite easily is the use of administrative remedies, i.e. sanctions imposed by an administrative agency or an independent institution for violations (see Section 3.14.2). Such sanctions might include a simple warning, suspension or revocation of specific licences (such as a licence to sell pesticides) or a monetary penalty.

As another example, a pesticides law may create various boards, committees and procedures in an attempt to coordinate and structure pesticide management in the country, but these may require financial or human resources that the government does not have. Law-makers should be realistic about the government's ability to fulfil its mandate, taking into account the fact that inspection services, both at the borders and within the territory, are often understaffed and lacking in basic infrastructure, such as buildings, equipment and vehicles. In addition, where laboratories do exist, they may not have the appropriate equipment, supplies or staffing to perform necessary analyses.

Collecting stakeholder inputs

Both the quality of a law and its successful implementation will depend in large part on the effective engagement of civil society in its preparation. In the pesticides area, as already noted, stakeholders include governmental and non-governmental actors, central and local authorities, manufacturers, farmers, consumers, scientific and academic interests, the tourism industry and many private sector organizations.

In some instances, when the law is finally enacted, stakeholders may have a formal role in the institutional structures established (e.g. they may be included among the members of the country's pesticide advisory committee). Ensuring access to pesticide-related information held by public authorities is another important element, or even a precondition, to ensuring substantial stakeholder participation. Stakeholders may also contribute where there is a period of public comment required under the law before any new regulations can be adopted.

By helping create a consensus in favour of the law, broad participation improves compliance and fosters a sense of "ownership." Where the law reflects the perceptions and views of all stakeholders, this may inspire organized support and acceptance of the law and active pressure for its enforcement, as opposed to indifference or passive resistance, which can sometimes hinder implementation as effectively as active opposition does. Equally, the absence of widespread understanding and support on the part of those doing the regulating can seriously undermine implementation just as it can for those against whom the legislation will be enforced.

A number of international instruments encourage or require access to information and public participation. The most prominent example is Principle 10 of the non-binding Rio Declaration on Environment and Development (1992), which states that "environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available." Under the auspices of the United Nations Economic Commission for Europe, Principle 10 is captured in the legally binding Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, which contains detailed provisions on these issues.

Pesticide-specific international instruments support these more general recommendations. For instance, the Code of Conduct encourages governments to develop laws and regulations that permit the provision of information to the public about pesticide risks (art. 9.2.1). Furthermore,

governments should develop administrative procedures that are transparent and facilitate the participation of the public in the regulatory process (art. 9.2.2). The Stockholm Convention calls on its parties to ensure public participation in addressing POPs and their health and environmental effects and in developing adequate responses (art. 10.1.d).

4.2. Tools for implementing change

Legislation is not the only instrument that can be used to effect policy changes at the national level. Governments also have available economic instruments, education and awareness-raising measures. Each of these will now be examined in turn.

4.2.1. Economic instruments

Economic instruments, which seek to influence behaviour through financial incentives and disincentives, can be used in pesticides management both to control environmental contamination and to influence demand. Because legislation is usually required to put economic instruments into place, it is not always possible to make a precise demarcation between legal and economic instruments. The main difference is that the latter, even if they are created by legislation, seek to achieve compliance by reliance on market mechanisms and pricing rather than through the imposition of penalties.

In recent decades, economic instruments such as taxes and charges, subsidies and fiscal incentives, have often been used to protect the environment. Proponents consider them more effective in achieving policy goals and less resource-intensive for day-to-day enforcement than legal instruments alone. The use of market mechanisms has also proven beneficial in the development of cleaner technologies. Some commentators, however, believe that current instruments have failed to provide adequate economic incentives to limit environmentally damaging activities and that they have therefore failed at their environmental objectives.⁴³

In the pesticide realm, economic instruments include the imposition of a "price" on the effects of polluting activities related to pesticide products ("external costs") which thereby forces the polluter to consider these costs ("internalize the costs"). The logic behind such pricing, which reflects this

⁴³ Falconer & Hodge (2000), pp. 175–194.

"polluter pays" principle, is that stakeholders have a choice between paying the price or investing in mechanisms to reduce negative impacts on the environment and human health. However, this might not be realistic in the case of (small-scale) farmers in developing countries. These farmers often lack the resources and flexibility to afford and implement alternatives, and competition with larger-scale farmers puts them at a disadvantage. Therefore, in many countries and situations the "polluter pays" principle may not be appropriate or should be structured so as to accommodate the interests of stakeholders at all economic and social levels.

Charges and taxes on inputs (e.g. fertilizers, pesticides) are another example. For instance, a taxation system could distinguish between different potential negative effects on health and the environment, allowing for higher taxation of the less desirable products. Pesticide sales taxes could also be used to fund empty pesticide container management schemes. Or, a deposit might be charged with the initial purchase so as to encourage users to bring back empty containers.

Subsidy schemes or tax abatements for farmers who adopt certain farming practices (e.g. IPM or Good Agricultural Practices (GAP)) are another option for policy-makers. Financial incentives could also encourage the use of less hazardous products, where such options exist.⁴⁴

4.2.2. Public-private partnerships, voluntary agreements and private codes of conduct

In addition to legislation and economic tools, other measures are available to governments seeking to improve their pesticide management systems. These include public-private partnerships between government and research institutions, private companies, the pesticide and food industries, farmers' associations and non-governmental organizations in order to develop and evaluate new pest control practices and new technologies to replace highly toxic pesticides.⁴⁵ Some international agreements encourage the use of such voluntary measures (see, e.g. Rotterdam Convention, art. 15.1.c).

⁴⁴ Any such measures will have to conform to multilateral trade rules, such as the "Green Box" of the WTO, which covers incentives in the agricultural realm.

⁴⁵ COAG, 20th Session, Rome, 25–28 April 2007, New Initiative for Pesticide Risk Reduction, para. 10 (COAG/2007/Inf. 14).

There are two primary ways to structure participation in such initiatives: co-regulation and self-regulation. Co-regulation is when the government provides the legislative framework but entrusts industry and other stakeholders with the responsibility for setting standards pursuant to the established legislative objectives. Such partnerships are usually established through a negotiated process and may consist of voluntary agreements between government and industry, or between government and other stakeholders. Self-regulation means industry codes of conduct drafted and approved directly by industries and operators from the private sector. These codes of conduct have regulatory force without direct government involvement. For example, trade associations of pesticide manufacturers and non-governmental organizations may set up a voluntary scheme for the management of empty pesticide containers. Sometimes self-regulation is promoted by government action or arises out of negotiations between the government and the private actors involved; elsewhere, the threat by government to establish a legally mandatory scheme – especially a compliance mechanism with sanctions – can be a sufficient incentive for industry to establish a voluntary scheme.

Voluntary industry initiatives can be a viable tool complementing government action and promoting the involvement of private actors in the regulation of pesticides. However, governments should keep close track of these private standards, and should ensure that such standards promote the public interest, in particular protection of consumers and the environment. Because of the potential harms, it may be that voluntary industry initiatives are not the most appropriate tool where they touch on controversial or sensitive areas of pesticide management – areas where public consensus is lacking. Standards in more technical areas may be the better province for private action.

4.2.3. Education and awareness raising

Educational programmes can be used to support implementation of government policies aiming to reduce the negative human health and environmental impacts of pesticide use. These programmes are usually coupled with an incentive programme to reduce pesticide use and pesticide risk. Farmers can be encouraged to use fewer pesticides by applying GAP or IPM and to protect themselves and others through proper use of pesticides and protective equipment. Such programmes may establish farmer organizations or farmer field schools that support farmers organizing and implementing their own IPM activities. IPM programmes usually involve

farmers and field staff from national and local government units and non-governmental organizations, enhancing ecological awareness, decision-making, business skills and farmer confidence. IPM therefore has long-lasting socioeconomic benefits beyond the field of plant protection, making it an optimal tool for implementing change.

V. CONCLUSION

The cross-sectoral nature of pesticide management calls for a comprehensive life cycle approach, covering all steps from registration to disposal. In countries with limited resources, governments often give serious consideration to the adoption of some of the alternative implementation tools just seen. However, these should only complement – and not be seen as an alternative to – the laws and regulations needed to manage pesticides effectively throughout their life cycle. Leaving pesticides management to be governed solely by the market or by industry actors will lead to unacceptable risks to human health and the environment.

The cardinal feature of the traditional legislative approach is the creation of offences and the establishment of penalties if the rules are not observed. This model of command and control regulates behaviour by establishing norms of conduct, monitoring compliance and imposing penalties in the event of breach.

The parliamentary law provides the regulating authorities with adequate powers, allocates responsibilities and establishes institutional mandates on a firm ground. The law can also establish new rights and impose new obligations. The law, finally, provides the basis for the system of registration of pesticides and licences, formalizes cooperation between public and private actors and establishes a mechanism for the settlement of disputes.

A modern pesticide law and a comprehensive legislative framework for pesticides, although essential, cannot alone meet the goals of pest reduction and environmentally sound pesticide management. Governments must also establish and implement policies and programmes aimed at eliminating pesticide over-use, reducing reliance on pesticides and encouraging the use of less harmful products. IPM is a key element of such policies. A vast array of complementary methods such as natural predators and parasites, pest resistant varieties, preventive cultural practices and biological controls can be employed, leaving pesticides as a last resort. Regulatory measures against

certain pesticide uses can be accompanied by assistance to farmers outlining how to grow crops differently.

Comprehensive and effective national pest and pesticide management schemes combine regulatory control with promotion of IPM, access to alternative pest management products and education and training in proper pesticide management. These measures, underpinned by a solid national legislative framework – based on the elements explored in this text – can assist in achieving sound management of pesticides, reducing human and environmental exposure to hazardous chemicals while contributing to sustainable agricultural development.

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ANNEX

Selected FAO Guidelines to the Code of Conduct

Harmonized Glossary

- Glossary of Terms and Definitions for the Guidelines in support of the Code of Conduct (continuously updated)

Guidelines on Monitoring and Observance of the Code of Conduct

- Guidelines on Monitoring and Observance of the Code of Conduct (2006)

Pest and Pesticide Management Policy Guidelines

- Guidelines on Pest and Pesticide Management Policy (to be developed)

Pesticide Legislation Guidelines

- Legislation on the Control of Pesticides (1989)

Implementation Guidelines

General

- Guidelines for Government and Industry on the Implementation of the Code of Conduct (to be developed)

Registration

- Guidelines on Collaboration and Harmonization for Pesticide Registration and Management (in development)
- Guidelines on Data Requirements for the Registration of Pesticides (in development)
- Guidelines on Registration (in development)
- Manual on the Submission and Evaluation of Pesticide Residues Data for the Estimation of Maximum Residue Limits in Food and Feed (2002)
- Initial Introduction and Subsequent Development of a Simple National Pesticide Registration and Control Scheme (1991)
- Addenda to the Registration and Control of Pesticides (1988)
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- Guidelines on Efficacy Data for the Registration of Pesticides for Plant Protection (1985)

Labelling

- Guidelines on Good Labelling Practice for Pesticides (in development)
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Packaging

- Guidelines on Pesticide Packaging Requirements (to be developed)
- Guidelines for the Packaging and Storage of Pesticides (1985)

Registration and certification of application equipment

- Guidelines on Procedures for the Registration, Certification and Testing of New Pesticide Application Equipment (2001)

Compliance and Enforcement

- Guidelines on Compliance and Enforcement of a Pesticide Regulatory Programme (2006)

Distribution and Sales

- Guidelines on Pesticide Advertising (in development)
- Pesticide Storage and Stock Control Manual (1996)
- Provisional Guidelines on Tender Procedures on the Procurement of Pesticides (1994)
- Guidelines for Retail Distribution of Pesticides with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries (1988)

Use

- Guidelines on Pesticide Occupational Health and Safety (to be developed)
- Guideline on Using Pesticides Within an IPM Approach (to be developed)
- Guidelines on Good Practice for Aerial Application of Pesticides (2001)
- Guidelines on Good Practice for Ground Application of Pesticides (2001)
- Guidelines on Personal Protection When Working with Pesticides in Tropical Climates (1990)

Training and Awareness

- Guidelines on Public Awareness Building and Information Provision on Issues Related to Pesticide Use (to be developed)
- Guidelines on Training Activities in the Field of Pesticide Management and Use (to be developed)
- Guidelines on Organization and Operation of Training Schemes and Certification Procedures for Operators of Pesticide Application Equipment (2001)

Prevention and Disposal of Obsolete Stocks

- Guidelines on the Management and Disposal of Used Containers (2007)
- Guidelines for the Management of Small Quantities of Unwanted and Obsolete Pesticides (1999)
- Guidelines on Disposal of Bulk Quantities of Obsolete Pesticides in Developing Countries (1996)
- Provisional Guidelines on Prevention of Accumulation of Obsolete Stocks (1995)

Post-Registration Surveillance

- Guidelines on Monitoring Incidents of Pesticide Poisoning and Adverse Environmental Effects (in development)
- Guidelines on Development of Pesticide Export, Import, Manufacture, Sales and Use Data (to be developed)
- Guidelines on Monitoring of Pesticide Residues in Food and Feed (to be developed)
- Guidelines on Pesticide Quality Control (to be developed)
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