4. Accessibility of pesticides

4.1 What causes high accessibility of pesticides?

The consequences of pesticide use in developing countries can to a high extent be attributed to the easy accessibility of the most toxic pesticides. The reason for this is insufficient regulation and lack of control of pesticide production and use, which enable the sale of illegal pesticides to users without the appropriate knowledge about adequate application of pesticides. This leads to pesticide poisonings (2).

Furthermore easy availability of pesticides has made it a popular method of committing suicide in many rural regions (2). A proper national legislation on pesticide production, sale and use therefore seems to be crucial in preventing pesticide poisonings.

4.2 International conventions and guidelines

International regulations restrict the use of the most toxic or persistent pesticides, set limits for residues in foods, regulate occupational exposure, control the trade and set standards for dumping of hazardous waste products. They can be either legally binding or non-binding (4).

- Voluntary regulations include: plans of action, declarations, codes of conduct, guidelines and technical standards.
- Legally binding regulations become legally binding when ratified by the country.

In the following an overview of the most important regulations is presented.

4.3 Voluntary regulations

4.3.1 FAO International Code of Conduct on the Distribution and Use of Pesticides

The International Code of Conduct on the Distribution and Use of Pesticides was adopted in 1985 by FAO (Food and Agriculture Organization of the United Nations). The primary objectives of The Code of Conduct are as follows:

"The objectives of this Code are to establish voluntary standards of conduct for all public and private entities engaged in or associated with the distribution and use of pesticides, particularly where there is inadequate or no national legislation to regulate pesticides" (5).

The Code of Conduct was revised in 2002 and includes the Prior Informed Consent Procedure (see description of the Rotterdam Convention below). It is intended to provide guidance on all aspects

of pesticide distribution and use. It provides specific suggestions on how to design national pesticide legislation and encourages Integrated Pest Management (IPM) (4).

4.3.2. Standards of the Codex Committee on Pesticide Residues (CCPR)

CCPR is a subsidiary body of The Codex Alimentarius Comission (Codex), which is a joint body of FAO and WHO. CCPR has developed international standards for maximum concentrations of pesticides (mg/kg) permitted in food items of importance in international trade (maximum residue limits - MRL's) (4).

For further reading on International voluntary regulations:

- FAO: Designing National Pesticide Legislation: Vapnek, Jessica et al., 2007: ftp://ftp.fao.org/docrep/fao/010/a1467e/a1467e00.pdf

4.4 Legally binding regulations

4.4.1 The Rotterdam Convention

The Rotterdam Convention became legally binding in 2004. It incorporates The Prior Informed Consent (PIC) Procedure, which aims to (7):

- Help countries that import pesticides to learn more about the potential hazards of chemicals being imported.
- Establish a decision-making process on future imports.
- Encourage exporting countries to prevent the export of unwanted pesticides.

When a chemical is added to Annex III all parties to the Rotterdam Convention have to implement the PIC with respect to that chemical. In 2011 24 pesticides were listed in Annex III of the Rotterdam Convention (7).

4.4.2 The Stockholm Convention

In 2004 the Stockholm Convention on Persistent Organic Pollutants (POP's) came into force (8). It aims at eliminating the production and use of chemicals that are considered to be POP's. Nine pesticides are listed on the POP's list. Chemicals are part of the list if they have persistence, bioaccumulation, evidence of adverse effects and long-range environmental transport.

For further reading on the international legally binding conventions:

- Vapnek, J. Et al.: Designing national pesticide legislation, FAO, 2007: ftp://ftp.fao.org/docrep/fao/010/a1467e/a1467e00.pdf

4.5 Legislations in the European Union

In the European Union, no plant protection product can be used unless there is existence of scientific evidence that (9):

1. They have no harmful effects on consumers, farmers and local residents and passers-by;
2. They do not cause unacceptable effects on the environment;
3. They are sufficiently effective against pests.

The most relevant legislations on pesticide use within the EU are:

- Directive 91/414 from 1991: the aim of Directive 91/414 is to prevent health and environmental risks of plant protection products through a risk assessment of each active substance and the products containing the active substances before they can be authorized for use (10).
- Regulation (EC) No. 396 /2005 from 2005: sets maximum residue levels (MRLs) of pesticides in food and feed to limit the exposure of consumers (11).
- In the EU a great responsibility is placed on the pesticide industry through REACH, Registration, Evaluation, Authorization and restriction of Chemicals, to manage the risks of chemicals and to provide safety information on the active substances (12).

For further reading on EU pesticide legislation:

- Health and Safety Executive (HSE): http://www.hse.gov.uk/
- EU legislation on plant protection products: http://ec.europa.eu/food/plant/protection/evaluation/index_en.htm

Box 4.1 The legislations in EU countries vs. the legislations in Bolivia

Ratification of legally binding legislations on the international and regional level in EU countries and Bolivia.

	EU countries	Bolivia
Ratification of legally binding legislations on the international level	The Rotterdam Convention The Stockholm Convention ILO Convention No. 184 and No. 170: legally binding (only some EU countries have ratified the ILO conventions)	The Rotterdam Convention The Stockholm Convention
Ratification of legally binding legislations on the regional level	The regulations within the European Commission OECD's Pesticides Programme (not all EU countries are represented)	

4.6 Legislations in Bolivia

National laws on pesticide use in Bolivia:

- The registration, control of import, distribution, sale, use and supervision of pesticides in agriculture is administered by Servicio Nacional de Sanidad Agropecuaria (SENASAG) within the Ministry of Agriculture (MACIA) (law no. 2061). Furthermore SENASAG has developed a list of pesticides and active substances allowed in Bolivia (3).
- The Ministry of Health has the responsibility of evaluating the toxicological aspects of pesticides (Art. Nos. 1 and 5 of the Health Codex) (13).
- The Ministry of Finance has the responsibility of controlling the import of pesticides (The General Law of the Customs Art. 85) (13).
- The Norma Andina No. 436 within The Andean Pact: The Andean Community which consists of Bolivia, Columbia, Ecuador and Peru has established requirements and harmonized procedures for the registration, control and handling of chemical pesticide use in agriculture. The Norma Andina No. 436 is not legally binding to its parties (14).

Box 4.2 Examples of differences between European and Bolivian legislation on central issues

	EU countries	Bolivia
Are pesticides already in use/ on the market checked for safety (registration)?	There are a number of ways in which pesticides with a government license are checked (1): ▪ Sale: the EU checks that all approved pesticides meet modern safety standards, if not the product is removed from the market. ▪ Food: Chemicals Regulation Directorate (CRD) carries out regular surveys of pesticide residue levels in food. ▪ Drinking water: The Drinking Water Inspectorate checks pesticide residue levels in water. ▪ Health complaints: The Pesticide Incidents Appraisal Panel monitors health complaints in humans associated with pesticides. ▪ Wildlife: The Wildlife Incidence Investigation Scheme monitors poisoning of wildlife and pets.	The main instrument of SENASAG in controlling food-safety is the "Registro Sanitario". Since 2002 all pre-packaged processed food has to be (3): ▪ Registered ▪ Bear the registration number, name and address of the producer ▪ Bear the date of expiry. However, the registration of all the operators and the process of inspection and certification is not yet complete and there are still a lot of products on the market (especially open air markets) that are not labeled nor controlled according to the law.
Who can use and sell pesticides (authorization)?	By law, everyone who uses pesticides professionally (employers, self-employed people, operators, technicians) must have received adequate training in using pesticides safely. A 'certificate of competence' is needed if you supply, store or use agricultural pesticides. If you sell pesticides you must have a certificate or be working under the direct supervision of someone with a certificate (1).	An authorization is needed to sell pesticides, but as there is no control, and pesticides can be sold by everyone as seen in the streets and on open markets. Only some of the shopkeepers seem to have the authorization to sell. No autorization of the pesticide purchaser is needed (6).
How to make sure that the controls on pesticides are followed (enforcement)?	Health and Security Executive (HSE) make sure that the controls on pesticides are followed by (1): ▪ Publishing guidance on how to use pesticides safely/ properly ▪ Checks if the amount of pesticides in food are within legal limits (Maximum Residue Levels). ▪ Incidents involving pesticides are investigated. ▪ Where there is evidence that harm was caused by someone using pesticides incorrectly HSE will take enforcement action (e.g. warning letter, enforcement notice, prosecution, etc.).	The only agricultural products which are controlled regularly by the SENASAG are export products, because they need a complete sanitary documentation to leave the country (3).

For further reading on Bolivian pesticide legislation:

- SENASAG: Registro Oficial de Plaguicidas, Fertilizantes y Sustancias Afines de Uso Agricola Registrados en Bolivia al 31. de Diciembre de 2000. MAGDR, La Paz, Bolivia 2000
- FAO: Program de Colaboración para la Eliminación de Plaguicides Caducados. Estudio de Plaguicidas Obsoletos en Bolivia. FAO. La Paz, mayo 2003
- Cervantes R, Henao GL, Morales L et al: "Fortalicimiento de la Vigilancia en Salud Pública de Los Plaguicidas entre Columbia-Bolivia, Informe Final. La Paz OPS/OMS/INS/INSO 2006

4.7 Legislative problems in developing countries

International conventions are quite general and often they do not provide specific mechanisms for achieving the goals that are set. This leaves each country free to determine exactly how the obligations will be implemented (4). However, the voluntary decision on the application of international conventions can result in less effective implementation of international conventions in their member countries.

The most effective way to apply an international convention is to adjust national legislation in accordance with international obligations, which requires the implementation and reinforcement of international regulations as well as the national laws of the country in question (4). It seems to be a problem for many governments to apply international conventions this way due to lack of resources, contradicting interests or lack of conscience about the dangers of pesticide use (15-17).

For further reading on legislative problems in developing countries:

- FAO: Analysis of Government Responses to the Second Questionnaire on the State of Implementation of the International Code of Conduct on the Distribution and Use of Pesticides. www.fao.org; 15. december 1998
- Watterson A. Pesticide health and safety and the work an impact of international agencies: Partial successes and major failures. Int J Occup Environ Health 2001;7:339-47

4.8 What are the consequences?

When national regulations are not implemented and reinforced it has a lot of consequences (13, 18-21):

- Illegal pesticides are entering the country and sold in the open
- Highly toxic and banned pesticides are still in use

- Transport, storage and sale of pesticides is taking place in close connection with human and animal foods
- Safe elimination of obsolete pesticides and containers is non-existent
- Pesticides are sold non-licensed personnel without sufficient knowledge about dangers and appropriate use
- The accessibility and use of personal protective equipment is very limited among small-scale or subsistence farmers
- Nationally controlled education of dealers or farmers is not taking place
- High pesticide residues in foods are found on the markets

4.9 Self-poisoning

Pesticides are a very common method to commit suicide in developing countries. It is associated with a high mortality rate (22), and it kills an estimated 258.234 people each year on a global basis, which accounts for 30 % of suicides globally (23).

The main reasons for the severity of the problem in developing countries are:

- The easy accessibility of the most toxic pesticides (2).
- Unsafe storage of pesticides at the residence of the consumer (23).
- Poor quality of care of poisonings and scarce evidence for treatment (22).
- To address these problems, implementation and enforcement of international and national laws on the production of pesticides seem to be obvious solutions, but as mentioned in "Legislative problems in developing countries," there are barriers to this. Eddleston has proposed a method to reduce the availability of the most toxic pesticides, a Minimum Pesticides List (2). The Minimum Pesticides List identifies a number of less dangerous pesticides to do specific tasks within IPM with focus on the use of safer and more effective alternatives to the most toxic pesticides (2) (see fact sheet 6: Prevention of pesticide poisonings).

For further reading on self-poisoning:

- See fact sheet 2: Health effects of pesticides
- Eddleston, Michael; Buckley, Nick A; Dawson, Andrew H.: Management of acute organophosphorus pesticide poisoning, The Lancet, 371:597-607, 2008
- Gunnell, David; Eddleston, Michael; Phillips; Michael R.; Konradsen, Flemming: The global distribution of fatal pesticide self-poisoning: Systematic review, BMC Public Health, 7:357, 2007

Educative session

Educative videos

1. Missing legislation - too many illegal pesticides in Bolivia: Rafael Cervantes, medical doctor at the Fundación Plagbol, tells about the reasons for the easy accessibility of pesticides in Bolivia and the consequences it leads to.

2. Suicide by pesticide ingestion - poison easy available:

   - Esmaralda Choquehaunca, promotor in IPM, tells about a woman in her neighborhood that tried to commit suicide.
   - Rafael Cervantes, medical doctor in public health at the Fundación Plagbol, links the easy availability in the streets and the improper storage at home with suicide.

Study questions

- Mention the three most important international legislations on pesticide production and use.
- Why is there a difference in the control of pesticide production and use in EU countries and Bolivia?
- Why do you think it can be difficult to enforce pesticide legislation in developing countries?

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    Partial successes and major failures. Int J of Occup Environ Health 2001;7.
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