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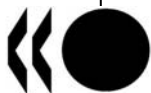
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**ENVIRONMENT DIRECTORATE  
JOINT MEETING OF THE CHEMICALS COMMITTEE AND  
THE WORKING PARTY ON CHEMICALS, PESTICIDES AND BIOTECHNOLOGY**

**REPORT OF THE OECD PESTICIDE RISK REDUCTION STEERING GROUP SEMINAR ON RISK  
REDUCTION THROUGH BETTER WORKER SAFETY AND TRAINING**

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**OECD Environment, Health and Safety Publications**

**Series on Pesticides**

**No. 42**

**REPORT OF THE OECD PESTICIDE RISK  
REDUCTION STEERING GROUP SEMINAR  
ON  
RISK REDUCTION THROUGH BETTER  
WORKER SAFETY AND TRAINING**

**IOMC**

**INTER-ORGANISATION PROGRAMME FOR THE  
SOUND MANAGEMENT OF CHEMICALS**

**A cooperative agreement among  
UNEP, ILO, FAO, WHO, UNIDO, UNITAR and OECD**

**Environment Directorate  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT  
Paris 2008**

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- No. 23 *OECD Guidance for Industry Data Submissions for Microbial Pest Control Product and their Microbial Pest Control Agents (Dossier Guidance for Microbials) (2004)*
- No. 24 *Report of the OECD Pesticide Risk Reduction Steering Group Seminar on Compliance (2004)*
- No. 25 *The Assessment of Persistency and Bioaccumulation in the Pesticide Registration Frameworks within the OECD Region*
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- No. 33 *Overview of Country and Regional Review Procedures for Agricultural Pesticides and Relevant Documents*
- No. 34 *Frequently Asked Questions about Work Sharing on Pesticide Registration Reviews*
- No. 35 *Report of the OECD pesticide Risk Reduction Steering Group Seminar "Pesticide Risk Reduction through Better Application Technology"*
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*OECD Guidance for Country Data Review Reports on Plant Protection Products and their Active Substances-Monograph Guidance* (1998, revised 2001, 2005, 2006)

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*Report of the Pesticide Aquatic Risk Indicators Expert Group* (2000)

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## ABOUT THE OECD

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation in which representatives of 30 industrialised countries in North America, Europe and the Asia and Pacific region, as well as the European Commission, meet to co-ordinate and harmonise policies, discuss issues of mutual concern, and work together to respond to international problems. Most of the OECD's work is carried out by more than 200 specialised committees and working groups composed of member country delegates. Observers from several countries with special status at the OECD, and from interested international organisations, attend many of the OECD's workshops and other meetings. Committees and working groups are served by the OECD Secretariat, located in Paris, France, which is organised into directorates and divisions.

The Pesticide Programme was created in 1992 within the OECD's Environmental Health and Safety Division to help OECD countries:

- harmonise their pesticide review procedures,
- share the work of evaluating pesticides, and
- reduce risks associated with pesticide use.

The Pesticide Programme is directed by the Working Group on Pesticides, composed primarily of delegates from OECD Member countries, but also including representatives from the European Commission and other international organisations (*e.g.* United Nations Food and Agriculture Organization, United Nations Environment Programme, World Health Organization, Council of Europe), and observers from the pesticide industry and public interest organisations (NGOs).

The Environment, Health and Safety Division publishes free-of-charge documents in ten different series: **Testing and Assessment; Good Laboratory Practice and Compliance Monitoring; Pesticides and Biocides; Risk Management; Harmonisation of Regulatory Oversight in Biotechnology; Safety of Novel Foods and Feeds; Chemical Accidents; Pollutant Release and Transfer Registers; Emission Scenario Documents; and the Safety of Manufactured Nanomaterials.** More information about the Environment, Health and Safety Programme and EHS publications is available on the OECD's World Wide Web site (<http://www.oecd.org/ehs/>).

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The Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995 by UNEP, ILO, FAO, WHO, UNIDO and the OECD (the Participating Organizations), following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international co-ordination in the field of chemical safety. UNITAR joined the IOMC in 1997 to become the seventh Participating Organization. The purpose of the IOMC is to promote co-ordination of the policies and activities pursued by the Participating Organizations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

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## INTRODUCTION

1. This report presents the results of an OECD seminar on ways to achieve pesticide risk reduction through worker safety and training.

2. The seminar was hosted by Czech State Phytosanitary Administration, in Brno, Czech Republic, on 21 March 2007. It was chaired by Dr. Wolfgang Zornbach of the German Federal Ministry of Consumer Protection, Food and Agriculture.

3. This was the eighth in a series of seminars organised by the OECD Pesticide Risk Reduction Steering Group, a sub-group of the OECD Working Group on Pesticides. These seminars focus on key issues in pesticide risk reduction of concern to OECD governments. The seminars are intended to provide an opportunity for OECD governments to discuss the issues together with non-governmental stakeholders and to develop recommendations for further OECD activities. The reports from these seminars are available on the OECD public web site:

<http://www.oecd.org/env/pesticides>, under “Risk Reduction.”

4. The members of the Risk Reduction Steering Group selected ‘Worker Safety and Training’ as the topic of this seminar considering its significance for pesticide risk reduction in the fields of human health (worker protection) and the environment. The importance of training to worker safety was noted during the earlier OECD seminars and a workshop (i.e. the seminar on Compliance and Risk Reduction (2003), the seminar on Better Application Technology (2005), and the User Compliance Workshop (2006)) and in the OECD Second Risk Reduction Survey (2004-2005) on national risk reduction activities.

5. Insufficient communication and lack of education and training contributed to non-compliance and resulted in higher risks for human health and the environment. Not all farmers receive sufficient information, education and on-going training. It is important to ensure that farmers have knowledge on the hazards and risks of agricultural pesticides, understand the laws, and keep abreast of changes in pesticide authorizations and restrictions. Through effective training, workers dealing with pesticides need to have sufficient advance notice of upcoming changes, and an opportunity to be involved in decision making; and sufficient explanation for the conflicting risk evaluations and pesticide approvals made by different countries.

6. With particular concern of the safe use of pesticide application equipments, the seminar on Better Application Technology also addressed the importance of training for applicators and field workers. Education and training play a crucial role in reducing risk. They are an efficient and effective way of delivering complicated information to farmers. Without good training, use of even the best equipment may not lead to the desired result of lower risk.

7. In the OECD Second Risk Reduction Survey, many member countries expressed their interests in further work on “education/training and certification (mandatory or voluntary) and extension service.” Nine respondents, namely, Canada, Germany, Hungary, Ireland, Korea, Netherlands, Sweden, Switzerland, the US, listed examples of training and extension services that they consider to be effective. Member countries’ concerns and current national efforts are described in the survey report. This seminar on Worker Safety and Training was intended to provide an opportunity for the member countries to exchange more information on national and international practices further to the results from the Second Risk Reduction Survey.

## PARTICIPANTS

8. People attending the seminar included representatives of:
- The pesticide regulatory authorities of various countries and the European Commission;
  - CropLife International (the international association of pesticide manufacturers);
  - The International Labour Organisation (ILO); and
  - The International Federation of Agricultural Producers (IFAP).
9. A participant list is attached as Annex 2.

## PURPOSE AND SCOPE OF THE SEMINAR

10. The main objectives of the seminar included:
- to identify key issues concerning pesticide risk reduction through better training and measures for the protection of worker safety;
  - to get a better overview of national and international legislative and non-legislative activities for worker safety and training to reduce risks from handling and using agricultural pesticides;
  - to exchange information of OECD countries' current activities in the areas of risk assessment and management to protect worker safety;
  - to identify possible ways of contributing to the goal of reducing risks related to pesticides in general;
  - to suggest options of further steps that can be available to OECD countries and key stakeholders in OECD and non-OECD countries to address the identified issues; and
  - to recommend possible future work for OECD.
11. The seminar focused broadly on two aspects of protecting worker safety and training:
- Safety of applicators including re-entry requirements and safety of field workers. The primary focus was on worker safety and training rather than occupational risk assessment that includes hazard information and re-entry regulations. Issues regarding registrant data requirements or safety of bystanders were not included;
  - Training of applicators, including legal provisions and national training and user certification programmes focusing on risk reduction in the context of handling and use of agricultural pesticides. Issues of medical training, emergency measures and other health care programmes associated with pesticide-related injuries were also addressed.

## STRUCTURE OF THE SEMINAR

12. The first part of the seminar was devoted to presentations from government representatives and other stakeholders. The second part was devoted to round table discussions, conclusions and recommendations to the various types of stakeholders.

## **GOVERNMENT AND STAKEHOLDER EXPERIENCE WITH SAFETY AND TRAINING OF WORKERS**

13. Government representatives of Switzerland, USA, Hungary, and Czech Republic presented their experiences with worker safety and training. In addition, the Hellenic experience in operator exposure estimations and protective measures was presented and a representative of ILO gave a presentation on the ILO perspective of workers' safety training. Representatives of CropLife International presented their actions in terms of training and a representative from IFAP presented the farmers' concerns. Presentations are available in Annex 3.

### **ROUNDTABLE DISCUSSION**

14. After the presentations reviewing existing worker safety and training schemes and portraying perspectives of various stakeholders, the floor was opened to all seminar participants for a roundtable discussion. They reviewed the various aspects of worker safety programmes and the main areas for improvements. The participants identified several barriers to implementing measures for improving worker safety and training, and how they could be overcome. Finally they made recommendations on what different stakeholders could do to help further promote better worker safety and training in OECD countries.

#### ***Minimum technical requirements and/or standards for worker safety measures***

15. Participants discussed whether minimum requirements and/or standards are necessary to improve worker safety.

16. They noted that there is room for technical improvement of equipment (tractor cabs, application equipment and personal protective equipment) and that research should be made on these particular items. Establishing standards for the safety of operators when they are inside the tractor cabs as well as for spraying equipment and protective clothing could be a way of making progress (for the moment Germany is the most advanced country in this area; there are also a few draft standards being developed by CEN on the safety of tractor cabs and by ISO on protective clothing).

17. Without going as far as developing standards, another solution could be to provide and disseminate reliable data on performance of equipment so that farmers and applicators can make their own judgment.

18. An overview of existing good practices was also felt to be missing. Good professional practices in plant protection which include the proper use of agricultural pesticides are different in the various OECD Member countries. Therefore, the same level of safety may be reached in various ways.

#### ***How to ensure that minimum requirements are met through education and training?***

19. Seminar participants were of the view that governments should decide how to reach safety standards (through mandatory or voluntary programmes).

20. Recommendations or guidance should not be so high that they would be impossible to follow. Specific conditions have to be taken into account: standards on personal protective equipment for example should differ for open field treatments and for treatments in glass houses, they should also take into account the climatic conditions of the regions where they will be used.

21. Acceptance of personal protective equipment or of new measures is fundamental for the success of safety measures. Acceptance will be improved if there is awareness of safety issues thanks to information.

***Economic aspects related to training and safety measures***

22. Safety measures should not be too expensive: certification of users means additional costs for users, equipment should be affordable.

23. The seminar participants discussed who should bear training costs and were of the view that costs should be shared by the various types of stakeholders (governments, industry, farmers' community).

24. Training costs can be mitigated by spreading individual training costs on farmers or agriculture employers' associations that could develop training packages together.

25. Economic incentives could be given to employers (e.g. a low rate of work accidents would reduce their contribution to the training budget of the employers association).

***Barriers to and solutions for meeting the technical and regulatory requirements for worker safety***

26. Many agricultural workers are temporary workers and specific solutions should be sought for them (e.g. "training passports").

27. The hazard part of the risk should not be forgotten, especially for acute toxic pesticides, as sometimes the exposure part of it only is taken into account.

28. Lack of adequate information and communication is a barrier to reaching defined objectives in terms of safety.

***The way to communicate messages***

29. It was stressed that the way messages are communicated to the various targets is as important as the content of the message.

30. It appears for example that farmers are much less receptive to health messages than to technical or economic messages. This has to be taken into account when elaborating messages for farmers. Crop-related messages seem also to be a good way of communicating safety messages.

31. Short and clear messages have to be developed.

***Overall conclusions***

32. An overall training and safety strategy should be developed as this would impact not only on worker safety but also on consumer safety and on protection of the environment. Everybody gets benefits from sustainable use of pesticides. Therefore, safety should be a shared responsibility of all stakeholders.

### **RECOMMENDED NEXT STEPS**

33. The group considered what different stakeholder groups could do to improve worker safety and training. In this regard, the following areas were identified as possible next steps that could be taken by governments, industry, and the OECD:

- exchange information on the type of fabrics for personal protective equipment and their efficacy;
- exchange information on evaluation surveys to measure how farmers react to training;
- exchange information on existing good agricultural practices schemes;
- exchange information on worker protection surveys;
- assess costs and impacts of certification schemes;
- make an evaluation of risk indicator schemes.

34. The OECD could promote information exchange by providing links on the OECD website on the issues mentioned above.

## ANNEX 1

**Seminar Programme**

**Pesticide Risk Reduction Steering Group  
Seminar on Risk Reduction through Worker Safety and Training**

**21 March 2007  
Brno, Czech Republic**

<p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• Purpose and structure of the seminar</li> <li>• Tour de table to introduce participants</li> </ul>
<p><b>Government Experience and Perspectives</b></p> <ul style="list-style-type: none"> <li>• <b>Switzerland:</b> <i>Provisions for the professional use of pesticides in Switzerland</i> (Roland von Arx, Federal Office for the Environment, Soil Section)</li> <li>• <b>USA:</b> <i>EPA Pesticide Worker Safety Programme</i> (Anne Lindsay, EPA's Office of Pesticide Programs)</li> <li>• <b>Hungary:</b> <i>Hungary's Experience on Pesticide Risk Reduction</i> (Janos Molnar, Ministry of Agriculture and Rural Development)</li> <li>• <b>Greece:</b> <i>The Hellenic experience in operator exposure estimations and protective measures</i> (Agathi Charistou, Benaki Phytopathological Institute, Department of Pesticides Control)</li> <li>• <b>Czech Republic</b> <i>Professional Qualification for Plant Protection Products Handling in Czech Republic</i> (Josef Svaricek, State Phytosanitary Administration, Plant Protection Products)</li> </ul>
<p>Coffee</p>
<p><b>Stakeholder Experience and Perspectives</b></p> <p><b>Industry:</b></p> <ul style="list-style-type: none"> <li>• <b>CropLife International:</b> <i>Industry stewardship, worker safety and training programmes</i> (Keith Jones, Croplife International, Hans Felber, European Safe Use Initiative, Heinrich Wicke, Bayer CropScience)</li> </ul> <p><b>Farmers:</b></p> <ul style="list-style-type: none"> <li>• <b>International Federation of Agricultural Producers COPA-COGECA</b> <i>safety guidelines for spray operators</i> (Luc Peeters, COPA-COGECA Working Group on Phytosanitary Affairs)</li> </ul> <p><b>Intergovernmental International Organisations:</b></p> <ul style="list-style-type: none"> <li>• <b>International Labour Organisation:</b> <i>Workers' safety training: An ILO perspective</i> (Ann Herbert, Agriculture Specialist)</li> </ul>
<p>Lunch</p>

<b>Round-table Discussion</b> <ul style="list-style-type: none"><li>• Minimum technical requirements and/or standards for worker safety measures via education and training (worker protection, operator exposure, environment protection)</li><li>• Regulatory requirements that exist in different countries, and existing guidance and other voluntary measures concerning worker safety for risk reduction</li><li>• Economic aspects related to innovation and adoption of lower risk pesticides handling; what could governments and others do to promote them?</li></ul>
Coffee
<b>Round-table Discussion (continued)</b> <ul style="list-style-type: none"><li>• Good practices and innovative approaches</li><li>• Barriers to and solutions for meeting the technical and regulatory requirements for worker safety</li><li>• Opportunities for further development for all stakeholders</li></ul>
<b>Summary of the Discussion, Ideas for Follow-up, Recommendations for possible further OECD work</b>
End of the seminar

## ANNEX 2

## Participants List for Seminar on Worker Safety and Training

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21/3/2007

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## ANNEX 3

### Seminar Presentations

#### *Government Experiences*

- **Switzerland:** *Provisions for the Professional Use of Pesticides in Switzerland* (Roland von Arx, Federal Office for the Environment, Soil Section)
- **USA:** *EPA Pesticide Worker Safety Programme* (Anne Lindsay, EPA's Office of Pesticide Programs)
- **France:** *Health and Safety in Agriculture: Worker Safety and Training in France* (Fabienne Collet, Ministry of Agriculture, Regulations and Safety at Work Bureau)
- **Greece:** *The Hellenic experience in operator exposure estimations and protective measures* (Agathi Charistou, Benaki Phytopathological Institute, Department of Pesticides Control)
- **Czech Republic** *Professional Qualification for Plant Protection Products Handling in Czech Republic* (Josef Svaricek, State Phytosanitary Administration, Plant Protection Products)

#### *Other Stakeholder Perspectives*

##### **Industry:**


- **CropLife International:** *Industry stewardship, worker safety and training programmes* (Keith Jones, Croplife International, Hans Felber, European Safe Use Initiative, Heinrich Wicke, Bayer CropScience)

##### **Farmers:**

- **International Federation of Agricultural Producers COPA-COGECA** *safety guidelines for spray operators* (Luc Peeters, COPA-COGECA Working Group on Phytosanitary Affairs)



##### **Intergovernmental International Organisations:**

- **International Labour Organisation:** *Workers' safety training: An ILO perspective* (Ann Herbert, Agriculture Specialist)



 Schweizerische Eidgenossenschaft  
 Confédération suisse  
 Confederazione Svizzera  
 Confederaziun svizra  
 Swiss Confederation

Federal Department of the Environment,  
 Transport, Energy and Communications, DETEC  
 Federal Office for the Environment FOEN  
 Roland von Arx

## Provisions for the professional use of pesticides in Switzerland

OECD RRSRG Seminar, Brno, 20 March 2007


**Special Certificates**

In Switzerland special certificates are required for:


- Pesticide vendors
- Pesticide applicators

▼

Ordinance on Risk Reduction related to  
Chemical Products (ORRChem)

[www.bafu.admin.ch/chemikalien](http://www.bafu.admin.ch/chemikalien)

Provisions for Pesticide Use in Switzerland | R. von Arx 2



**Special Certificates**

Pesticides may be used occupationally only by persons with an appropriate certificate or with a qualification regarded as equivalent, or under the supervision of such persons.

Special certificates are required for the:

- occupational or commercial use of plant protection products in agriculture and in horticulture, in forestry and in other special fields (e.g. railway tracks)
- occupational or commercial use of wood preservatives
- use of fumigants for pest control
- occupational or commercial use of biocides for the control of harmful organisms.

Provisions for Pesticide Use in Switzerland | R. von Arx 3


 **Proof of specialist knowledge**

A test is required to obtain a pesticide user license. Knowledge of the following topics is examined:

- a. the basic principles of ecology and toxicology;
- b. legislation on the protection of the environment, health and workers;
- c. measures aimed at protecting the environment and health;
- d. environmental compatibility as well as the correct use and disposal of pesticide products;
- e. application equipment and its correct handling.

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Provisions for Pesticide Use in Switzerland | R. von Aez 4


 **Equivalent Qualifications**


The FOEN may accept qualifications from colleges or vocational education institutions if they meet the requirements (Ordinances on Special Licenses).

**Certificates for professional farmers and gardeners are accepted as equivalent, as the educations of these users fulfil the requirements.**

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Provisions for Pesticide Use in Switzerland | R. von Aez 5

 **Switzerland within Europe**



- Distance to the boarder < 100 km
- Intensive exchange of goods and people
- Influence of EU regulations

---

Provisions for Pesticide Use in Switzerland | R. von Aez 6

## Equivalence of foreign Qualifications

- The recognition of qualifications from colleges or vocational education institutions is not restricted to Swiss qualifications.
- Certificates from member states of the European Union (EU) and the European Free Trade Association (EFTA) are automatically treated as equivalent to Swiss certificates without reciprocity.
- Harmonised standards are missing but would be helpful and reciprocity very welcome!

Provisions for Pesticide Use in Switzerland | R. von Aez

7

## Switzerland within Europe



Provisions for Pesticide Use in Switzerland | R. von Aez

8

## The Language Problem (1)

- The label must be in at least 2 official languages, one of them in the language of the sales area.
- Training is either in German, French or Italian
- Often, there is only a limited number of participants for training courses in Italian

### In addition:

- Workers from all over Europe are applying pesticides.

➔ Label instructions are often not understood or not observed (non-compliance)

Provisions for Pesticide Use in Switzerland | R. von Aez

9



**Solutions to the Language Problem (2)**




Symbols are widely comprehensible



Provisions for Pesticide Use in Switzerland | R. von Aez

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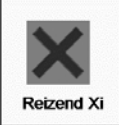




**Airblast Application**



Provisions for Pesticide Use in Switzerland | R. von Aez

14

**Pictograms**

<b>New (EU)</b>			
	Umweltgefährlich N	Reizend Xi	Sehr giftig T+
<b>Old (CH)</b>			
	Fischgift	Bienengift	Grundwassergefährdung

Provisions for Pesticide Use in Switzerland | R. von Aez

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 **Organisation**

Professional organisations are responsible for the training and the tests to obtain a licence:



Swiss Farmers Union



Bildung für nachhaltige Entwicklung



www.bul.ch  
Training Center for Worker Safety in Agriculture



Fédération Suisse des Désinfestateurs  
Verband Schweizerischer Schädlingsbekämpfer  
Federazione Svizzera dei Disinfestatori



Swiss Gardeners Union




BILDUNGSZENTRUM WALD  
CENTRO FORMAZIONE BOSCO  
CENTER FORMAZIUN GUAUD  
CH-7304 MARENFIELD



Bern University of Applied Sciences  
Architecture, Wood and Civil Engineering


Provisions for Pesticide Use in Switzerland | R. von Aez 16

 **Training manuals**

Manuals and guidance documents for the different target groups to assist educators and trainers are provided by the Government. They cover the:

- Protection of the environment
- Health protection
- Worker safety

Provisions for Pesticide Use in Switzerland | R. von Aez 17

 **Validity of Certificates**


A Recertification after 5 or 10 years was proposed at the last revision of the ordinances in 2005 but unfortunately not supported by a majority. Arguments were:

- Additional costs and administration
- Not a standard in the EU

Therefore:

- only a general obligation to regularly acquire knowledge about the best practices and to follow continued training.

Provisions for Pesticide Use in Switzerland | R. von Aez 18

 **Conclusions**

- Continued training and certification for pesticide application is important for risk reduction.
- Harmonized standards for education and training and minimum requirements for certification at least within Europe would be very useful.
- We have to solve the language problem (simplification, e.g. with better pictograms)

### EPA's Pesticide Worker Safety Program: Enhancements in Protections



1

### Goals of the Pesticide Worker Safety Program



Protect human health and the environment by ensuring the competency of pesticide applicators.

Minimize pesticide exposure to occupational pesticide users and agricultural field workers.

Assure proper containment, storage and disposal of pesticides.

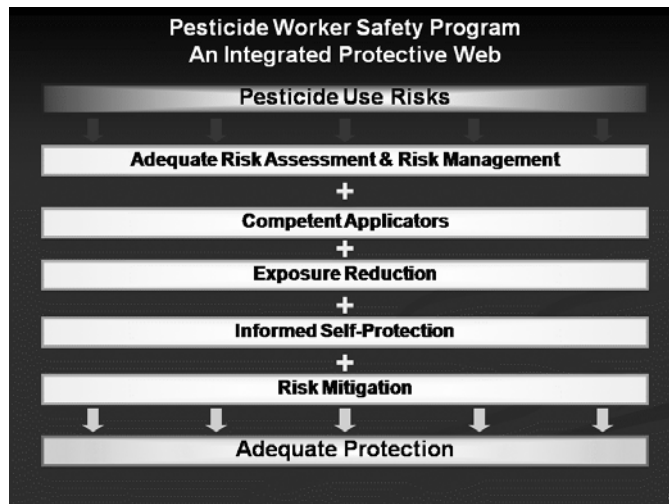
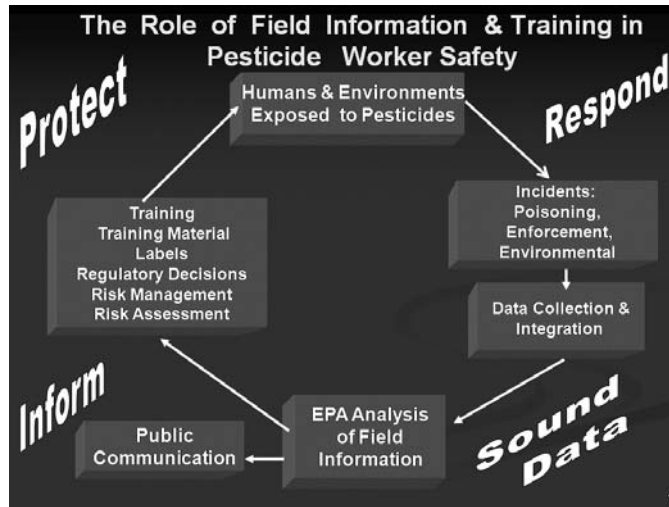
Engage health care providers in improving the recognition and management of pesticide poisonings.

2

### Pesticide Worker Safety: The Field Programs' Strategic Framework



3



### Pesticide Applicator Certification Regulation

Promulgated in 1974. Requires applicators to meet competency requirements before they use, or supervise the use of, restricted use products (RUPs).

Coverage / scope

- Applies to RUPs
- Applies to private and commercial applicators
- 11 federal categories with specific standards of competency
- Uncertified may apply "under direct supervision" of certified applicator

## Pesticide Applicator Certification Regulation

### Competency

Commercial applicators are certified as competent based on specific standards for the certification category

- FIFRA prohibits federal requirements for testing private applicators
- Recertification to maintain competency usually occurs every 3-5 years

### Implementation

To certify applicators, states, tribes, territories, or federal agencies must have an EPA-approved plan

- Annual reporting requirements

7

## Agricultural Worker Protection Regulation

Promulgated in 1992, implementation delayed until 1995.

- Intended to protect agricultural workers and pesticide handlers from the risk of pesticide poisonings on farms, forests, nurseries and greenhouses.

### Basic Components

#### Risk Communication

- Basic safety training
- Safety poster
- Notification of workers
- Central posting: label & site information



## Agricultural Worker Protection Regulation

### Protection

- Protective clothing/gear
- Restricted entry interval
- Protection during applications

### Mitigation

- Decontamination supplies
- Emergency assistance


8



### The Need for Regulatory Change

Risk Reduction

- Close gaps in intended protection of the original rules
- Deal with unaddressed risks identified since original rules
- Part of comprehensive response to broad stakeholder reviews
- Raise minimal federal standards to decrease variation among states



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### The Need for Regulatory Change

Program Improvements

- Good government requires periodic assessments and action
- Clarity and transparency in national programs and guidelines
- Meet statutory requirements in balance with economic and risk analyses

Program Efficiency

- Clarify existing rules
- Improve federal standards to promote reciprocity between states

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**Proposed Areas of Change**

**Applicator Competence**

**Protective Requirements**

- Ensure all occupational users possess appropriate competence for safe pesticide use
- Match competency standards for occupational users to correlate with level of risk

**Operational Efficiencies**

- Promote national consistency & improve administration of the applicator certification program to ensure efficient, cost-effective use of government resources

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**Proposed Areas of Change**

**Agricultural Worker Safety**

**Protective Requirements**

- Equip agricultural workers with meaningful and understandable information on risks and self-protective actions

**Operational Efficiencies**

- Simplify complex regulatory language and clarify coverage req'ts
- Improve the administration of the worker protection program to ensure efficient, cost-effective use of government resources and for the purposes of accountability

**Label Regulations**

Amend labeling regulations to conform to these changes

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**General Areas for Change -- Applicators**

**Certified Applicators: 40 CFR 171**

**Protective: Appropriate Coverage & Raise Competency**

1. Expand users subject to demonstrate competency
2. More clearly define "under-the-supervision"
3. Require RUP dealers to prove competency
4. Require trainers to prove competency
5. Set minimum age for occupational users
6. Require testing for commercial occupational users
7. Set standard requirements for testing
8. Competency requirements consistent with risk
9. Evaluate ongoing competency
10. Ensure continued evidence of competency



### General Areas for Change -- Applicators

#### Efficiency

1. Develop standard certification categories
2. Equalize standards for states/tribes/territories
3. Assure program accountability

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### General Areas for Change – Agricultural Workers

#### Agricultural Worker Protection: 40 CFR 170

#### Protective: Inform Workers

1. Ensure meaningful hazard communications
2. Ensure meaningful training
3. Require trainers to demonstrate competency
4. Establish training verification system
5. Protect children from pesticide-treated fields



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### General Areas for Change – Agricultural Workers

#### Efficiency

1. Clarify vague WPS provisions
2. Clarify exceptions
3. Exempt certified crop advisors & aerial applicators from WPS
4. Require handlers to demonstrate competency
5. Express regulation in plain English
6. Assure program accountability

18

# Hungary's Experience on Pesticide Risk Reduction



## Introduction



- Wide range understanding of risk reduction
- Risk assessment
- Regulation systems
- Supervising systems

21 March 2007

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2

## Risk assessment



- Hazard
- Risk identification
  - Physical-chemical
  - Residue
  - Toxicology
  - Fate and behaviour
  - Ecotoxicology
- Risk management

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3

## Regulations - overview

- Historical initiations on time
- PP Law – in 2000
- PP decrees – after 2000
- Working documents updated
- Harmonized with EU
- Periodic assessment & action
- Clarity & transparency

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4

## Regulations – Health & Enviro

- Official statements of Health Ministry: „assessment of PPPs and active substances in respect of environmental and occupational health and of food hygienics, in particular the classification by properties imposing risk to humans, pre-harvest interval and re-entry time, establishing of maximum residue levels in plants and plant products, the necessary protective clothing and equipment to be worn by the users of PPPs and the first aid measures”
- Official statements of Environment Protection Ministry: „environmental fate and behaviour of the PPP, its ecotoxicological properties, impacts on environment and nature protection, and conditions of its use required for environment and nature protection and classification as to environmental hazards”

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5

## Regulations – Agmin, DNA, etc.

- Ministry of Agriculture – responsible for legislation
- Plant Protection, Soil Conservation and Agri-environment Directorate of Central Agricultural Office – responsible for implementation
  - from 2004 – DNA (Designated National Authority)
  - from 2007 – DNA + health & enviro tasks
  - GLP laboratories, ISO qualifications
- Involving rep & civil organizations
  - PP associations
  - PP Chamber
  - Etc.

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## Regulations - special prescriptions

- Label info reducing risk from handling/using PPP
- Categories for bees & water living organisms
- Buffer zones based on risk assessment
- Specially developed PP treatment not to damage bees
- Pesticide trade categories (I-II-III: education & training)
- IPM categories (pesticides: red - yellow - green)
- Information on first aid & medical training for doctors
- Special nozzles & additives for drift reduction
- Trainings of ground & aerial (g&a) applicators
- Validation of g&a application equipments
- Collecting & disposal of pesticide packaging

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7

## Buffer zones

Categories based on the most sensitive water living organism	Endpoint	Buffer zone	
	LC/EC <sub>50</sub> mg/L	without risk assessment	with risk assessment
Slightly dangerous	10 - 100	20 m	5 m
Moderately dangerous	1 - 10	50 m	20 m
Extremely dangerous	< 1	200 m	50 m

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8

## Pesticide trade categories

- Three marketing categories based on human toxicology, phys-chem. properties, fate and behaviour, ecotoxicology and other endpoints
- Commerce, purchase, usage up to:
  - Category I (No: 395) qualification / university
  - Category II (No: 244) qualification / training course
  - Category III (No: 418) free market
- Other rules of categories (e.g. usage, storage)

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## IPM objectives

- General principles developed by IOBC & implemented in Hungarian practice
- Classification of PPPs on human & environment risk assessment (red – yellow - green)
- Assessment of pest management programs (can the protection of a particular crop be managed by IPM or not?)
- Support system: from EU and national sources
- Control system: administrative, on-the-spot, analytical. It is a feedback, as well
- Conditions for granting the label

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10

## Supervising systems

- Supervising by PP county inspectors
  - Pesticide trade (distributors, retailers, etc.)
  - Pesticide labels, packaging, storage
  - Pesticide handling/using, complains
  - Plant protection sanctions/fees
  - Prevention of Ambrosia pollen causing allergy
- Supervising by auditors
  - Pesticide authorization / residues
- Checking by rep & civil organizations
  - PP associations / Chamber

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### RISK ASSESSMENT

HAZARD

RISK IDENTIFICATION

RISK MANAGEMENT



Hugh Tilson (ICT VIII, Paris, 1998)

21 March 2007

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12



## The Hellenic experience in operator exposure estimations and protective measures

Agathi Charistou and Dr. Kyriaki Macherera

Laboratory of Pesticides Toxicology  
Department of Pesticides Control  
Benaki Phytopathological Institute  
7 Ekalis Street, Kifissia, Athens 14 561 HELLAS  
Tel. +30-210-818 0343/0346 - FAX +30-210-8077506  
e-mail : A.Charistou@bpi.gr ; K.Macherera@bpi.gr

OECD Pesticide Risk Reduction Steering Group  
Seminar on Risk Reduction through Worker Safety and Training  
21 March 2007 - Brno, Czech Republic

1

### The current National & EU legislation considers the personal protection of those involved in agricultural tasks and especially of the operators (sprayers) of the plant protection products (ppps) as a primary need.

2

### Estimation of operator exposure levels (1)


Calculation models widely used :

**UK POEM** Available application scenarios

- Tractor mounted/trailed boom sprayer: hydraulic nozzles
- Tractor mounted/trailed boom sprayer: rotary atomizers
- Tractor mounted/trailed broadcast air-assisted sprayer: 500, 100, 50L/ha
- Hand-held sprayer (15l tank): hydraulic nozzles, Outdoor, low level target
- Hand-held rotary atomizer equipment (2.5l tank). Outdoor
- Home garden sprayer (5l tank). Outdoor, low level target

**German model** Available application scenarios

- Tractor mounted/trailed boom sprayer: hydraulic nozzles
- Tractor mounted/trailed broadcast air-assisted sprayer
- Hand-held sprayer (15l tank): hydraulic nozzles, Outdoor, high level target



No available scenario concerning greenhouse & bait applications

3

## Estimation of operator exposure levels (2)

### *greenhouse application*

Operator exposure levels are estimated by modification of the available calculation models (UKPOEM & German) in order to have a more realistic approach. For example:

- Use of *Handheld equipment* data for application (low & high level targets) in combination with *tractor* data for the mixing/loading procedure.

OR

Estimation is based on field studies conducted with certain ppps for similar application patterns and/or mixing/loading procedures. For example:

- "Operator exposure in Greenhouses During Practical Use of Plant Protection Products", June 6, 1996 - Sponsor: Industrierverband Agrar e.V.
- TNO studies

4

## Measurement of operator exposure levels

The most reliable way of determining the exposure is by measuring it.

Several field trials for operator exposure measurements during ppp applications have been conducted by the Laboratory of Pesticides Toxicology

5

## Categories of measurements conducted in Hellas

Simulation of ppp applications using visible tracers

Measurement of operator exposure levels during application of ppps

Measurement of exposure levels during the preparation of spraying liquid (mixing ppps) and loading the tank

Measurement of systemic operator exposure levels (biomonitoring)

Measurement of spray drift during application of ppps

6

### Measurement of operator exposure levels

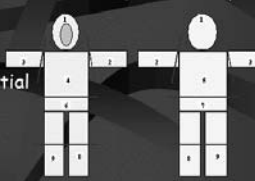
OECD148 (1997) testing method, whole body measurement

**Trunk exposure**  
External cotton coverall: Determination of potential dermal exposure of operator during spraying  
Internal coverall: Determination of the permeability of the external coverall and the degree of the provided protection

**Hand exposure**  
External gloves : Determination of potential operator exposure  
Internal cotton gloves: Determination of permeability of the external gloves

**Inhalation**  
Portable pumps with air samplers

**Systemic exposure**  
Urine analysis



Sample storage in the field and during transportation in dry ice, extraction & analysis based on the appropriate methodology

7

### General conclusions of experimentation

- The pump pressure is of particular significance for the exposure during greenhouse applications.
- The spraying liquid distribution on the operator's coverall differs depending on the crop and the application conditions.
- High variability of hand exposure
- Significantly high hand exposure during mixing and loading
- Depending on the a.i. considerable amount detected in urine during greenhouse applications.
- The degree of protection provided by the cotton coverall for some of the applications was satisfactory.
- **The measured dermal exposure levels were significantly higher than those estimated based on the calculation models.**

8

### Measurement/estimation of operator exposure levels in Hellas : CONCLUSION

The risk assessment for the Greek farmer during ppp application *in some cases is not reliable*

9

**BUT what are the main reasons for the observed differences from the model calculations?**

### UK POEM & German model

- They have been established on the basis of North European conditions.
- They consider different plant protection strategies (e.g low spraying volumes, different application scenarios *etc*).
- They take into account personal protective equipment (PPE) not applicable for Hellenic climatic conditions .

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### **Measures for the improvement of the reliability of calculation models**

1. Modification of the Data base and adjustment of the parameters & assumptions used in the calculation models.
2. Development of an agricultural standard for protective clothing
3. Development of appropriate protective clothing for the Southern European conditions.

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### **Risk management & PPE (1)**

In terms of *risk management*, there should be:

- Specification of the PPE recommended for agriculture.
- Performance measurements of the recommended PPE.
- More informative label (symbols & risk phrases, safety/precaution phrases).
- Control of PPE maintenance.

12

### Risk management & PPE (2)

Under the current EU legislation (Dir. 89/686/EEC) there is no differentiation of the degree of the required protection between the industrial worker and the applicator of plant protection products

```
graph TD; A[Under the current EU legislation (Dir. 89/686/EEC) there is no differentiation of the degree of the required protection between the industrial worker and the applicator of plant protection products] --> B(Over-protection & Additional stress); A --> C(Inadequate protection); B --> D[worker/operator is not safe]; C --> D;
```

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### Training of farmers

- O.G.E.E.K.A. DIMITRA  
Organization of Agricultural Vocational Education Training and Employment
- The training of the workers is rather linked to the crop than directly to safety issues.
- Training programs for safety in agriculture have just started but no certification is provided.

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### Safe Use Initiative (SUI) South Europe

Cooperation of:

- ECPA (European Crop Protection Association)
- H.C.P.A. (Hellenic Crop Protection Association)
- B.P.I. (Benaki Phytopathological Institute)

Aim: Study & development of appropriate PPE suitable for Southern European conditions.

15

### Safe Use Initiative (SUI)

---

**BASELINE SURVEY** conducted in Ierapetra (Crete) - 2005

#### Objectives

- To record the extend of personal protection measures taken during crop spraying.
- To record in detail which kind of personal protection measures are most commonly used.
- To understand why personal protection measures are not applied / are not correctly applied / are not applied to the extend they should be.
- To investigate ways to increase self-involvement towards personal protection during spraying.

**Methodology:** Observation & Face to Face Interviews to 200 vegetable growers

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### SUI-Baseline survey (Hellas)

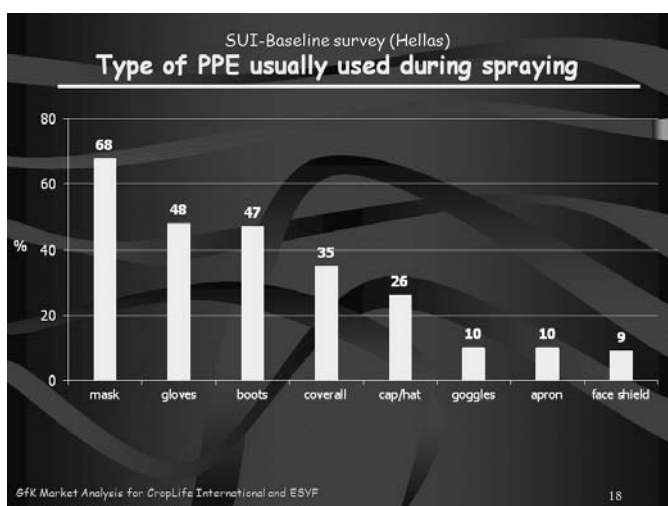
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#### Results

- 7 out of 10 farmers read always the label of a ppp before use
- Less than 10% of those farmers who read a ppp label pay attention to the use precautions
- About 20% of those farmers who read some part of a ppp label, do not pay any attention to the recommended PPE
- 4 out of 10 farmers state that the coverall is uncomfortable and not necessary to use
- Half of the farmers do not use gloves because they are uncomfortable
- 4 out of 10 farmers use mask and boots depending on the toxicity of products
- Half of the farmers believe that face shield is not necessary to use

GfK Market Analysis for CropLife International and ESVP

17



**SUI - Baseline Survey (Hellas) - Outcome**

---

The **BASELINE SURVEY** in Ierapetra provided certain key messages concerning the use of PPE by operators.

↓

No additional stress is allowed from the use of PPE, especially under the climatic conditions of Hellas and all the South European countries.

↓

Development of the appropriate PPE & Training of the farmers

19

**SUI (Hellas)**

**Training - Development of the appropriate PPE**

---

Two demo-farms have been funded in Crete (Messara & Ierapetra) for Training (farmers & schools) targeted to cover the needs identified by the Baseline survey

... *Further more...* to the general public of the rural areas  
via, Posters  
Leaflets  
Media  
Radio-messages  
TV spots  
DVDs etc

All material provided is from the country.

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**SUI (Hellas)**

**Development of the appropriate PPE (1)**

---

10 type of fabrics were subjected to Laboratory Penetration test (pipette test, Maryland Univ.)

↓

4 type of fabrics were selected and then subjected to comfort test

↓

Finally, 2 type of fabrics were selected for Penetration test under real application conditions:

1. Cotton 100%, 287g/m<sup>2</sup>
2. Cotton/polyester with NanoPel finish (NanoTex Technology), 215g/m<sup>2</sup>

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SUI (Hellas)

**Development of the appropriate PPE (2)**

---

Penetration studies were conducted for ppp application  
under worst case conditions in greenhouse  
(crop: fully green pepper)

↓

The tested coveralls proved to protect operators  
sufficiently

1. Cotton 100% : penetration 0.26-1.78%.
2. Cotton/polyester with NanoPel finish: penetration 0.13-0.54%.

22

SUI (Hellas)

**Development of the appropriate PPE (3)**

---

- However, the tested coveralls do not fulfill the chemical protective clothing specifications, which are designed for use in chemical industry, but not appropriate for agriculture (where the operator is exposed occasionally to highly diluted chemicals).
- Currently, in Hellas, as in most EU MSs, there is no standard for PPE specifically designed to protect the workers in agriculture.

23

**Ag standard for protective clothing**

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- Germany is at the moment the only EU MS which links the protective clothing with risk assessments for the applicator of plant protection products.
- Germany has since many years an agricultural standard for protective clothing, now set up as DIN 32781
- At global level there was recently also an ISO standard set-up which is under review by the associated countries, but is far from being accepted.

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### Development of National Ag Standards for protective clothing : Adoption of DIN 32781

- Recently, in Hellas, the Hellenic Organization for Standardization, ELOT, has agreed in developing an Ag standard for PPE in accordance with the German DIN 32781 standard.
- In the meantime, in order for both 100% cotton & cotton/polyester NanoPel coveralls to be certified according to DIN 32781, they will be laboratory tested at STFI (Sächsisches Textil Forschungsinstitut) in Germany.
- Moreover, the Laboratory of Pesticides Toxicology in BPI continues testing NanoPel and cotton coveralls in other crops and application scenarios in the frames of the AKMON\* project.

<sup>25</sup>  
\* Funded by the General Secretariat for Research and Technology, Hellenic Ministry of Development.

## **Professional Qualification for Plant Protection Products Handling in the Czech Republic**

*(Josef Svaricek, Plant Protection Products Section, State Phytosanitary Administration)*

Requirements for professional qualification for Plant Protection Products handling in the Czech Republic are based on the Article 86 of the Act No 326/2004, on Plant Health and Amendments to Certain Related Acts, as last amended.

A natural person or legal entity whose business activity includes storage, sales to consumers, use or direct application of products and/or providing consultancy concerning use of products (hereinafter “product handling”) must employ or contract a professionally qualified natural person for performance of these activities. This provision does not apply to retailing of small packages of products for home and garden use.

A professionally qualified natural person should:

- have the qualification for handling highly toxic PPPs required by the Article 44b) of the Act No 258/2000, on Public Health Protection and Amendment of Certain Related Acts, as last amended
- comply with the conditions of professional qualifications pursuant to Article 82, paragraph 2 of the Act No 326/2004,
- hold a valid certificate of professional competence for handling products acquired on the basis of a successfully passed examination in front of an examination commission pursuant to Article 86, paragraph 5, letter a) of the Act No 326/2004,
- hold a valid certificate of professional competence for handling products, after completion of a professional course in good practice in plant protection and in safe handling of products and a successfully passed examination,

A professionally qualified natural person:

- is responsible to a natural person or legal entity for compliance with the rules of good plant protection practice and safe handling of products minimising the risk of their adverse side effects on human and animal health and the environment,
- shall organise annual training of persons who will directly manipulate with products concerning the rules and shall keep a record of the training for at least three years,
- shall instruct persons that will be directly manipulating with the product about the features and effects of the product and with the methods of its good and safe handling, prior to start of work with every product,
- may act for a natural person or legal entity at negotiations with the state administrative authorities authorized in matters concerning application of products.

Professional courses providing knowledge of good plant protection practice and safe handling of products are held by educational institutions authorised by the Ministry of Agriculture on the basis of a proposal of the State Phytosanitary Administration pursuant to the provision of Article 5, paragraph 2 of


the Act No 326/2004. As concerns knowledge of human health protection, the bodies of the public health protection are authorised by the Ministry of Health in that matter pursuant to Act No. 258/2000. The courses are covering 15 main topics in the overall extent of 40 hours.

Applications for test of professional qualifications (cca 7000 annually), including the administrative fee 200,- Czech crowns (CZK), are submitted to seven regional offices of the State Phytosanitary Administration, which:


- appoints on the basis of agreement with the local institutions of public health protection Commissions for Examination of Professional Qualifications for Handling Products (consists of three qualified experts) and issues the relevant certificates to natural persons that has successfully passed the examination, with the validity of five years from the date of passing the examination,
- keeps records of the authorised educational institutions, passed examinations and issued certificates.

The examination of professional qualification consists of two parts – written test (20 questions) and oral examination (three questions plus possibility of one supplemental question). At least 75 % of right answers is necessary to pass the examination.

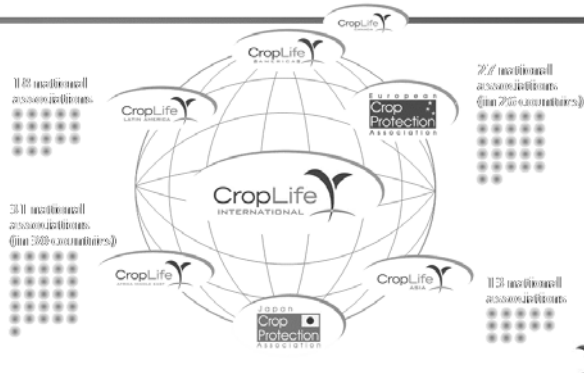
Ministerial Decree No 333/2004, on Professional Qualification for the Field of Phytosanitary Care, specifies the technical details, e.g. items of the application for carrying out an examination of professional qualifications, composition of the examination commission, conditions of the examination, requirements for knowledge of the examined persons, methods of issuing and items to be included in the certificates of professional qualifications, the curriculum and scope of a professional course in good plant protection practice and safe handling products, and requirements for the educational institutions authorised for organisation of the courses.

  
**Industry Stewardship: Worker Safety and Training Programmes - 3**  
**Global Overview: IPM & Responsible and Effective Use of Crop Protection Products**

**Keith Jones**  
**Manager, Stewardship & Sustainable Agriculture**




**CropLife's network of Associations in over 90 countries...**

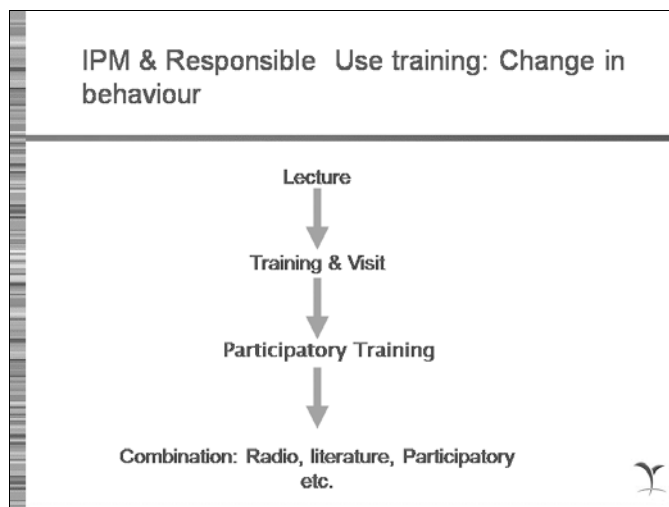


Region	Number of National Associations
North America	112
South America	31
Europe	27
Asia	113
Japan Crop Protection Association	1

**Integrated Pest Management & Responsible Use**

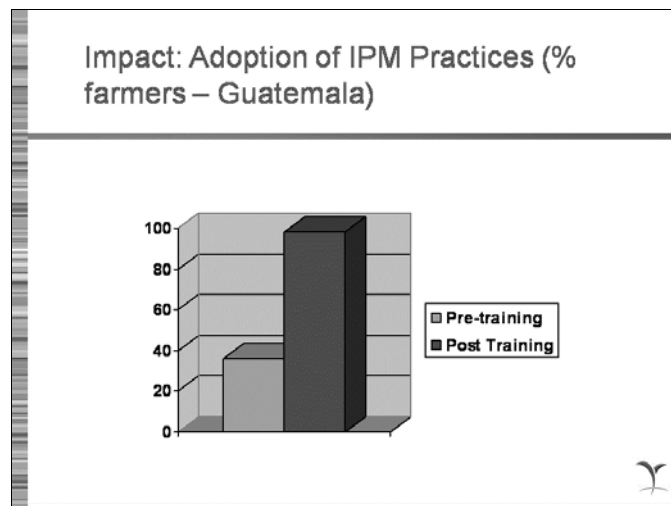
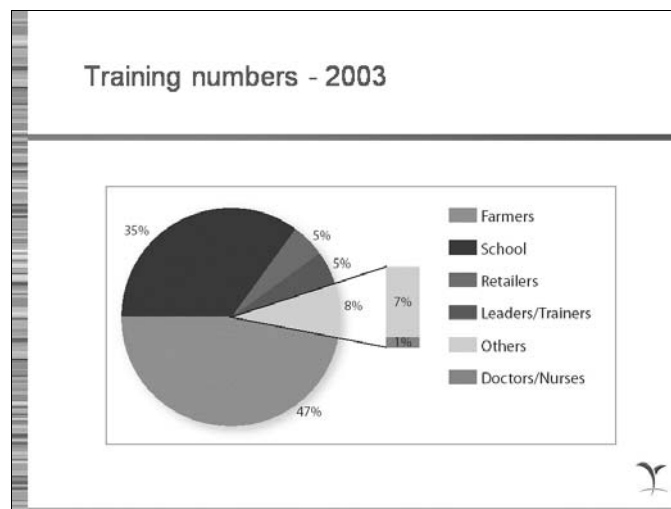
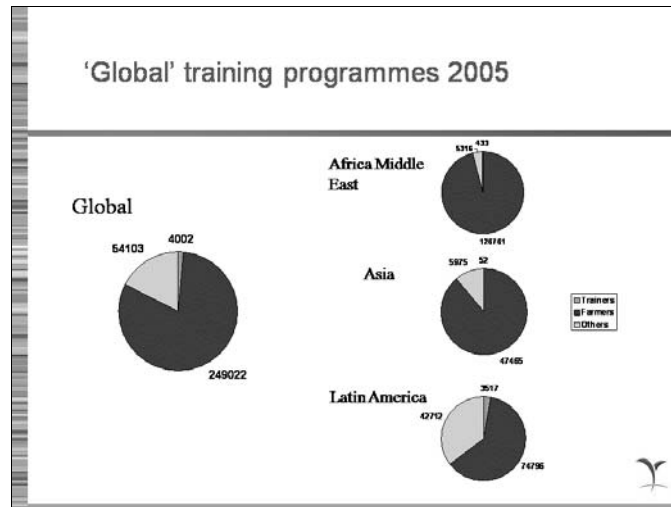
- The responsible use of crop protection products is undertaken within the context of promoting an IPM strategy.
- It is premised on the belief that a crop protection product should only be used when necessary – ‘as little as possible, as much as necessary.’
- That Responsible Use is part of IPM is implicit in the FAO Code of Conduct for the Distribution and Use of Pesticides which describes 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 risk to human health and the environment...’*

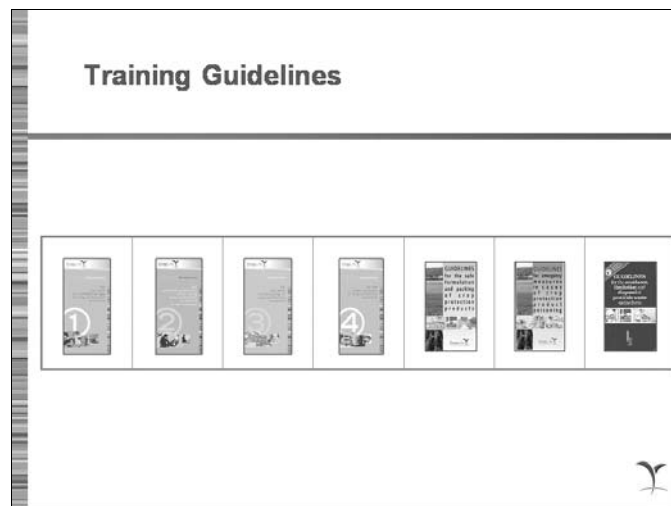
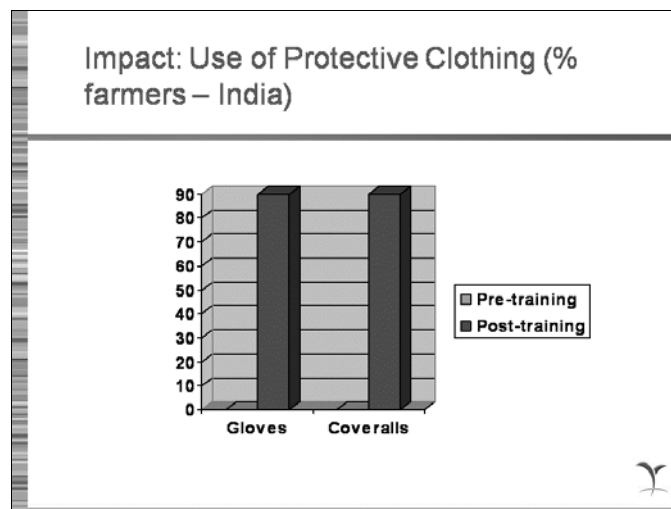
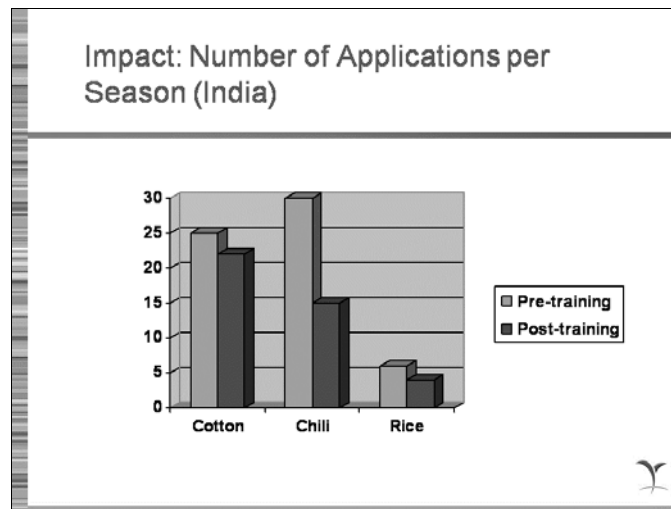





- ### Shift from Lecture to Participatory training
- Mobile training units
  - Mass media – community radio, television, newspapers
  - Printed material – brochures, posters
  - Practical application – ‘learning by doing’
  - Community drama
  - Competitions – children drawing
  - Follow-up and Community participation

- ### IPM and Responsible Use: Achievements
- Industry participation in 80+ countries
  - Over 3 million trained since 1991
  - In 2005, 300,000 people trained (including 4000 trainers) in circa 30 countries in Africa, Asia and Latin America;
  - Participation in programmes in developed countries, e.g. certification schemes
  - Independent audits show change in attitude and behaviour amongst farmers
    - » *Lesson learnt on improved training methodologies and monitoring behaviour change – will be incorporated in all programmes, participatory approach*
  - A growing number of multi-stakeholder partnerships e.g. IFAD, USEPA, Worldview network, USAID, IFDC, GTZ, AVRDC, governmental bodies – outreach & impact.





**Handling Methods and Equipment**



**Site access**

The site must provide suitable access for safe delivery and collection with a reasonable working area for loading and unloading of delivery vehicles. Ideally, the building should stand alone with a block of at least 20 metres between it and the surrounding property. The distance depends on the applicable loading zones and fire protection zones and on local legislation, e.g. if the warehouse contains flammables, the amount of material stored and the height of the fire wall can determine how far away other structures must be as a consequence, more buffers to the neighbouring property may be needed.

Access for emergency vehicles should preferably be provided from two sides. The emergency response vehicles (e.g. fire fighters) should be able to take a route that cannot be blocked.

The response to an emergency should be planned in advance, especially it is known that the approach to the building might be restricted for any reason.

**Site used to store to ensure that packages are correctly loaded using correct and consistent equipment. The use of automatic identification equipment, e.g. barcodes, as it can reduce the risk of human error.**




**Consider the use of suitable equipment or post-tensioning techniques can enhance storage capacities and increase the use of storage.**

**3. FORMULATIONS, PACKS, MEASURING AND MIXING**


**Formulations**

Crop protection products are formulated made up of active ingredients by manufacturers to optimize the efficacy and safety of each crop protection product and to accommodate the risks in order to be used.

There are many different types of formulation (solid and liquid) - most requiring to be diluted, usually with water, before use. Although some are used without dilution, the most common are either in solution or suspension. These also allow a degree of control over the amount of active ingredient and the amount of inert material in the formulation.

**Possible suitable access for fire fight**



**Vegetable IPM**

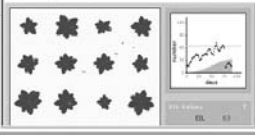
The past decade has seen a convergence of people from rural to urban environments in Asia and, indeed, in most developed countries. The migration is fuelled by the increased economic opportunities offered by an urban lifestyle. Improvements in the amount and quality of food production have resulted in an increased demand for a wider diversity of products and in particular high quality vegetables. To meet this demand, smallholder, peri-urban, vegetable production has expanded rapidly. This production provides nutrition, income and employment and is one of the greatest livelihoods in many developing regions. Currently, many vegetable farmers rely mainly on pesticides to control a wide range of devastating pests and diseases. A strategy which, when they are used wisely, enhances the health of smallholders and the per-urban ecosystems on which they depend.

**INTRODUCTION TO IPM**

**Economic Injury Simulator**

Use the EIS simulator below to see how tiller work. This EIS simulator allows you to adjust the parameters discussed on the previous screen in order to see how they affect the economic injury curve. The EIS on the screen below is set to adjust the tiller up and down. When you have set the EIS at the desired level, press play. When (or if) the pest population reaches the EIS level, the grey bar will knock the population back before economically damaging levels.

To see the effects of the pests on your harvest, you can adjust the number of pests to pests in the population bar and see the simulation. This will give you an idea of how much crop you can harvest in a completely pest free environment. You may also want to see the effect of economic or particularly damaging pests. Setting the initial pest population to a high number (e.g. 50) or setting the injury per pest or damage per injury levels high will certainly reduce harvest.



**agle@rnet**

**Network for Sustainable Agriculture**

**Introduction to IPM**

**Economic Injury Simulator**

## Local Guidelines/Material

**CropLife** شركة مصر للحياة النباتية


**دليل إعداد المدرب**  
**Train of Trainers Manual**

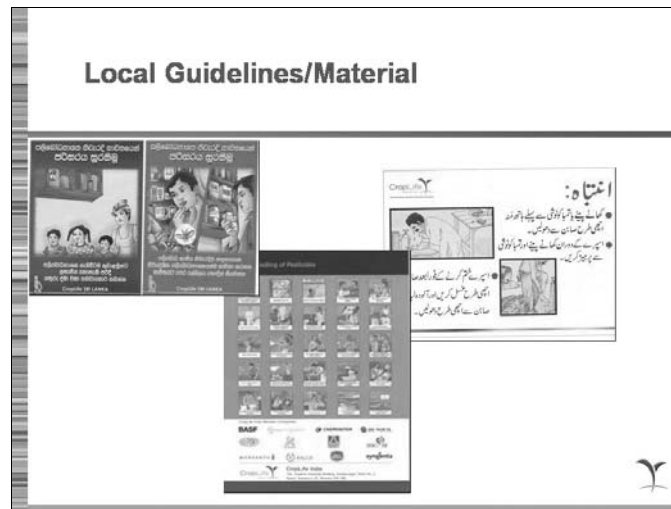
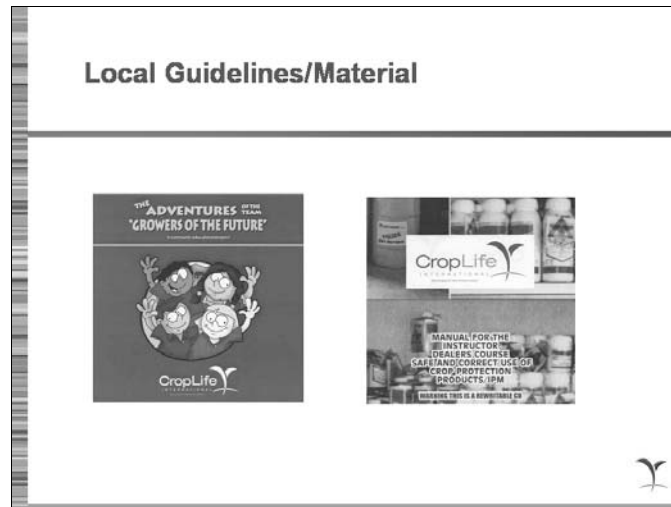
إعداد  
نوفمبر 2007  
**CropLife Egypt**

**CropLife** شركة مصر للحياة النباتية

**دليل المتدرب**  
**Trainee Manual**

إعداد  
نوفمبر 2007  
**CropLife Egypt**







## Industry stewardship worker safety and training programmes

**European Safe Use Initiative**

An industry approach  
in collaboration with  
main stakeholders

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Hans Felber      European Safe Use Initiative  
21st March 2007, Brno, Czech Republic

## Aim of the Safe Use Initiative

- Label compliance
- Reduction of potential operator exposure by innovative application techniques
- Reduction of dermal and inhalation exposures by appropriate PPE and its proper use
- Reduction of the environmental impact by container rinsing







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21st March 2007, Brno, Czech Republic

## Pilot Project Spain




**Kick-off period of 3 years (mid 2002 – mid 2005)**



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## Almería area

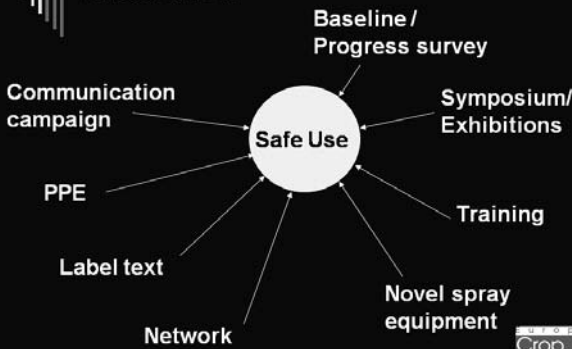


About 20,000 growers cultivate 35,000 ha of vegetables (tomatoes, cucumbers, peppers, beans, etc.) under plastic

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21st March 2007, Brno, Czech Republic



## Measures



Baseline / Progress survey

Symposium/ Exhibitions

Training

Novel spray equipment

Network


Label text

PPE

Communication campaign

Safe Use



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21st March 2007, Brno, Czech Republic




## Baseline survey 2002

200 growers/operators were observed and interviewed by the professional Market research institute Markin Spain

- Observation
- Face to face interview




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## Success factors

- From the baseline survey 30 success factors have been derived



- In order to monitor progress the success factors have been measured again in spring 2005

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## 12 safety messages

From the baseline survey 12 safety messages have been derived



The safety messages are repeatedly used in the communication campaign

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## Communication campaign




- Awareness campaign
  - Billboards/Poster
  - Radio
  - Advertising/Press releases
  - Farmer Exhibitions
- Technical campaign
  - Brochure/leaflets
  - Calendar
  - Web site
  - Video

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## Billboards




40 billboards were placed in the Almería region

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## Calendar



5000 Calendar 2004 with 12 safety messages were distributed via retailers and dealers to farmers

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## Web site www.cosechavida.com



www.cosechavida.com

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## Farmer exhibitions




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## Training

- Training and certification of farmers is mandatory in Spain
- There are 60 official trainers in Almería
- Up to 2007 almost all 20,000 have been trained and certified



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## Training



The 12 safety messages were integrated in the official and mandatory "Junta of Andalusia" training programme for pesticides handlers

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## Spray equipment



The mostly used application equipment is the spray gun

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## Reduction of potential exposure by novel application technology

Compared to spray gun application:


25 times less      70 times less




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## Coverall evaluation



24 different coveralls have been laboratory tested according to European Norms (EN)




9 different coveralls have been field tested concerning comfort, price, design, etc. in tomatoes and pepper




4 different coveralls have been field tested in pepper measuring the residues on cotton underwear (whole body inner dosimeters)

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## Coverall recommendation



Tyvek Classic Plus (Du Pont)  
 T45 (Kimberly-Clark)  
 Microchem 3000 (Orvec Microgard)  
 Chemsol 2-piece (Alpha Solvey)  
 Rain suit (not EN conform)


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## Progress survey 2005

- The same 200 growers/operators were observed and interviewed by the professional Market research institute MARKIN as in the baseline survey 2002
- In order to measure success, 30 factors from the baseline survey were compared with the progress survey
- All 30 factors showed a positive trend

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## Some success factors

Factor (in % of 200 growers observed and interviewed)	2002	2005
Mix/load: Gloves worn (observation)	38%	63%
Mix/load: Contamination unprotected hands	44%	17%
Application: Coveralls worn (observation)	58%	75%
Application: Boots worn (observation)	62%	77%
Application: Contamination of unprotected arms and legs	40%	14%
Use of novel spray technology	23%	32%

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### Reported intoxications in Almería region




Intoxications decreased from 98 reported cases in 2002 to 68 in 2004

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### SUI roll-out 2005-2007




NETHERLANDS BELGIUM LUXEMBOURG GERMANY POLAND Poland/Grójecko-Warecki orchards (2008-2010) CZECH REPUBLIC SLOVAKIA HUNGARY AUSTRIA ROMANIA FRANCE France/Bordeaux: grapes ITALY Italy/Apulia: vegetables (greenhouse and field) and table grapes GREECE Greece/Crete: greenhouse vegetables MALTA

PORTUGAL Portugal/Minho: vine grapes


Almería

Mediterranean Sea

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### Main issue: protective clothing



Selection of fabric from Greek and Portuguese manufacturers


Laboratory tests at the University of Maryland Eastern Shore, USA

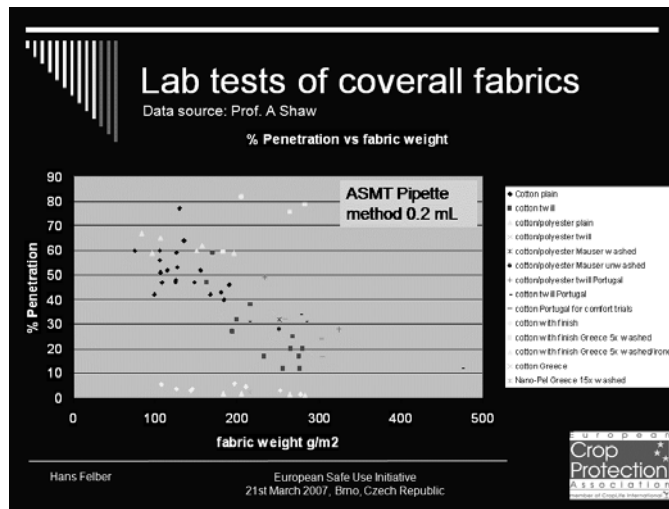
Comfort trials by farmers in the field

Exposure trials by operators in the field

Recommendation & Certification

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21st March 2007, Brno, Czech Republic





### Actual protective clothing work frame

European agricultural standard for protective clothing (DIN 32781)


Manufacturing of DIN 32781 certified protective clothing

DIN 32781 certification of protective clothing in test facility


Availability of DIN 32781 certified protective clothing in dealer shops

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European Safe Use Initiative  
21st March 2007, Brno, Czech Republic

Crop Protection ASSOCIATION




Luc Peeters - Chairman of COPA-COGECA Working Group Phytosanitary issues



**COPA-COGECA**

**OECD Seminar on Worker Safety and Training**  
**"EU farmers safety guidelines for spray operators"**  
**Brno, Czech Republic - 21 March 2007**



What is COPA-COGECA ?

---


**1. What is COPA-COGECA? ... two strong organisations**

COPA-COGECA represents:

- over 15 million people working on EU farm holdings either full-time or part-time and
- more than 40,000 cooperatives

COPA-COGECA has more than:

- 70 Member Organisations from all EU Member States



Internal organisational structure

---

**2. How is COPA-COGECA organised?**


COPA-COGECA's task is to defend the general interests of agriculture **and** to look for solutions that are in the common interest. This is done by getting **all** COPA-COGECA member organisations to reach a common position on an issue of common interest.



### Internal organisational structure

The COPA-COGECA presentation today is the reflection of the EU farming community as a whole : from North to South, from organic farmers, wine producers to cereal growers, from seed multipliers to forest owners ....


The specific part on training was developed by the employers organisation GEOPA with their EU Partner representing the workers in agriculture (EFA)



### Main topics to be discussed


#### Risk reduction through workers safety and training

- **Agriculture and the environment** : commission draft proposal for a frame work directive on the sustainable use of PPP.
- **Agriculture and the access to PPP** : Commission draft proposal for a regulation on the placing of the market of PPP.
- **Agriculture and the safety of the operators** : EU Instruction manual for spray operators of PPP.



### I. Agriculture and the Environment

COPA-COGECA's reaction to commission's draft proposal for a frame work directive on the sustainable use of pesticides.

 **General statement**


---

**I. Agriculture and the Environment**

COPA and COGECA members want to stress that the issue of environmental protection in general and sustainable use of pesticides / plant protection products in particular is of great importance to them.

EU farmers have undertaken numerous and various measures and programmes to maintain the environment in a healthy state (buffer zones, voluntary schemes, ....).

A great deal has already been achieved by EU farmers and they are committed to continue their efforts in this direction.

 **Key Messages : Agriculture and environment**


---

**1. Risk reduction and prevention**

**Risk reduction :** Positive approach as the strategy focuses on risk reduction and not on volume - however the proposal lacks options for developing alternative strategies.

**Training:** is essential - however only basic training should be provided for by the Directive, thus not supplementing what is being done by Member States.

**Testing of equipment :** Directive should avoid listing requirements too specifically as conditions of use and types of equipment vary considerably.


 **Key Messages : Agriculture and environment**

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**2. Information and data**

**Awareness programmes:** information should not only cover environment and health aspect of PPP but also why PPP are used and what are their benefits.


**Indicators :** needed to make data comparable throughout EU. Collection of data should be extended to development and evolution of pest/disease/weeds/fungi allowing to anticipate emerging diseases.




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**II. Agriculture and the access to PPP**

COPA-COGECA's reaction to commission's draft proposal for a Regulation for placing on the market of PPP.



**General statement**

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**II. Agriculture and the access to PPP**

It is important at this stage to remind that chemicals are used in agriculture as PPP to eliminate unwanted organisms.

These products are used to protect crops against weeds, insect pest and keep crops healthy thus also contribute to food quality and safety by ensuring their marketability.

They provide benefits not only in agriculture but also in horticulture, forestry and gardening.

They are highly regulated and their placing on the market is subject to strict rules.




**Key Messages : Agriculture and access to PPP**

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**1. Risk assessment by EFSA**

COPA and COGECA particularly welcome the PPP proposal, as it is a:

- Regulation and not a Directive, thus ensuring a uniform and harmonised application throughout the EU;
- aims at reinforcing the high level of protection of human health and the environment;
- updates the procedures, in particular to take account of the creation of the European Food Safety Authority, thus ensuring that EU legislation continues to be based on sound science.

 **Key Messages : Agriculture and access to PPP**


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**2. Simplified procedure for low risk substances**

COPA and COGECA welcome the introduction of a simplified procedure for 'low-risk' substances and plant protection products.


They consider however a definition of low risk should be provided for.

Moreover, COPA and COGECA believe that this procedure should be extended to non pathogenic microbial PPP (or Biological Control Agents – BCA) and to traditional low risk phytosanitary products.

 **III. Agriculture and the safety of the operators**

EU Instruction manual :

“ Instructions for spray operators “  
Spraying Methods, the environment and safety

 **General statement**

---


**III. Agriculture and the safety of operators**

A handbook has been jointly produced in 2001 by GEOPA and the EFA and sets out what they regard as the main guidelines which operators must be familiar with before spraying PPP.

This handbook is meant as a **tool** for all persons who through their work are in contact with pesticides, i.e. those who deliver, buy or deal, mix or use PPP, etc.

It provides an overview of the applicable law, information about handling PPP and their effects on health and the environment, and a lot more.

European Commission supported this initiative.



**Agriculture and the safety of operators**


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**1. Legislation**

Legislation, regulations and codes of practice as regards the safe use of pesticides vary a great deal between countries.

European directives in this area, based on the ILO Convention (which is generally accepted as the fundamental instrument regarding health and safety), require the exposure of workers to hazardous pesticides to be eliminated or reduced.

This can be achieved by a step-by-step process : Starting with risk assessment and ending with training of employees.




**Agriculture and the safety of operators**

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**2. PPP Handling**

Risk assesment and Safety regulations on :

- Storage
- Disposal of remants and empty containers
- Transport of PPP
- Toxicity classes and symbols




**Agriculture and the safety of operators**

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**3. The working environment**


First aid  
 Choice of personal protective equipment ( PPE )  
 Suppliers instructions  
 Workplace instructions  
 The spraying operations

 **Agriculture and the safety of operators**

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**4. PPP**

Description of the types and function of PPP  
Climatic influence  
Action periods / harvesting periods  
Use of additives  
Mixing procedures


 **Agriculture and the safety of operators**

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**5. Environmental impact**

PPP in the environment :


- Pollution risks
- Impact of PPP on plants and animals

 **Agriculture and the safety of operators**

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**6. Spraying**

Spraying technique  
Cleaning and maintenance  
Use of protective equipment ( PPE )  
Nozzles  
Waste management


 **Agriculture and the safety of operators**

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**7. Alternatives to PPP**

e.g : - IPM

- mechanical weed control
- observation and warning systems
- biological pest control
- etc.

 **CONCLUSION**

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**COPA – COGECA :**

- Welcome that legislation is based on risk reduction and not reduction of volume.  
This implies automatically a reduction of risk for the operator and ensures safety at work.
  
- States that initial training is basic....  
but continuous attention to safety is vital.
  
- Risk reduction is common sense.

## **Workers' safety training: An ILO perspective**

*by Ann Herbert, Agriculture specialist, International Labour Organization*

About a year and a half ago, as part of a training programme for labour inspectors on safety and health in agriculture, trainees and instructors went out on a field trip to visit two enterprises: one a sugar cane plantation, the other a commercial rice farm. During both visits, we were invited to observe workers applying pesticides.

In the first case, a team of sprayers were at work, with each man wearing a backpack sprayer and working in a designated part of the field, a certain distance from the others. Shortly after we arrived, their spray packs needed to be refilled so the four men gathered round the large plastic vat which held the pesticide and the large plastic tub with the water needed to dilute the product. Each was wearing cotton coveralls, rubber boots, rubber gloves, a respirator and eye shields. The one responsible for mixing the solution donned a protective apron and methodically diluted the product to the proper level and with assistance from his team mates they carefully poured the solution into the sprayers, sealed the containers, put their packs back on, and went back to work. It was clear from the methodical way they worked, from the fact that each man carried out his duties at the appropriate time and in an attentive, but natural way, that they were not putting on a safety demonstration, but were simply carrying out their normal tasks under the eye of some outside visitors. Earlier, we had seen the company changing facilities, laundry room and showers, where workers changed out of their protective clothing, left their coveralls for laundering, showered and dressed in their own clothes before going home.

Just a few kilometres away, on the rice farm, we observed a rather different scene. There the man applying the pesticide was dressed in a pair of shorts and a string T-shirt. He had a pair of flip-flops with him and had tied a bandana over his nose ostensibly to protect himself from the spray. He too was working with a backpack sprayer and as he walked between the rows of rice, he made a wide sweeping movement with his arm, cutting an arc of almost 270 degrees. As he progressed through the field, ever further downwind, he was, in effect, passing constantly through a pesticide shower – first, the one he had just sprayed, and later, the drift from his earlier passage a few rows upwind. When it came time to refill the pack, he mixed the solution in a bucket, next to a small gully and would either dip the bucket or a ladle into the gully water to dilute and stir the product. As he poured the solution into his backpack sprayer, there was considerable sloshing down the outside of the pack, which was perched precariously on the edge of the gully. He then swung the pack onto his back and continued with his work.

Only a few kilometres separated these two scenes, but they were a world apart in terms of safety management in agriculture. In the first case, the enterprise was aware of the hazards of pesticide use and had set up standard procedures to minimize the risks that workers faced in the course of their work. Workers were trained to follow safe work procedures and supervised to ensure compliance. The enterprise took its responsibilities seriously in terms of providing appropriate protective equipment, ensuring that it was properly used and maintained, and providing laundry and shower facilities to minimize the opportunity for pesticide traces to be borne home to their employees' families. They kept track of work schedules to avoid over-exposure and provided regular health checkups to those who worked with pesticides. Needless to say, none of these precautions were evident on the rice farm.

Almost every time I travel in a developing country, when the subject of pesticides is raised, I hear an account that generally unfolds along these lines. "We had a sad case of a poisoning here not too long ago. A small child took a drink from a coke bottle and died a terrible death. The parents are distraught and can't stop blaming themselves. They never imagined their little one would die from drinking a pesticide. It's really tragic. Something should be done."

I believe that we are gathered here today because we all agree that “something should be done” to minimize the possibility of illness and death resulting from the use (or misuse) of pesticides. I’ve been invited to tell you briefly about the work of the International Labour Organization in this domain. In the time allotted to me, I will try to give you a picture, painted in rather broad brushstrokes of the philosophy of our approach, the policy framework which we encourage, and some of the practical activities that we undertake with our constituents.

When I say “constituents”, I’m referring to our 179 member States and to the representative organizations of employers and workers that are active in each of these. Unlike other inter-governmental organizations, ILO is tripartite in its composition, governance structures and philosophy. Employers and workers’ organizations have an equal voice with governments in determining policies and programmes of the organization and in adopting international normative instruments, that is, the Conventions and Recommendations, which collectively are known as international labour standards.

The basic philosophy of the ILO boils down to a few key principles. Among these are tripartism and social dialogue which imbue the work of the ILO. They are seen as important means of achieving the overall objective of the Organization, which is to ensure that women and men have the opportunity to obtain decent and productive work in conditions of freedom, equity, security and human dignity.

Occupational safety and health has been a very fruitful area for social dialogue. International labour standards on occupational safety and health set out policy frameworks and encourage management processes, which can be developed and applied both at the national level as well as within enterprises. They also set out the respective responsibilities of public authorities, employers and workers in their implementation. This is true, for example, of the Occupational Safety and Health Convention, 1981 (No. 155), the Chemicals Convention, 1990 (No. 170) as well as the Safety and Health in Agriculture Convention, 2001 (No. 184). It is also true of the ILO Guidelines on occupational safety and health management systems (ILO-OSH 2001).

The overall approach of these instruments is to aim for systemic, rather than piecemeal improvements. Their principal method is to bring together those responsible for various parts of the solution to interact with each other, to consult each other and to cooperate in developing and implementing appropriate legal and policy frameworks as well as the control systems needed to make work safe.

Unlike some technical standards that are largely science-based, ILO standards focus on the human aspects of building safe systems: the legal architecture, the regulatory framework, enforcement procedures, the definition of roles and responsibilities among government agencies, employers and workers, management processes, not to mention the need for information-sharing, broad awareness-raising, and of course the training of workers.

We can see in practice how a few of these threads are intertwined in a key technical area such as the safe management of chemicals. The Chemicals Convention of 1990 provides that the competent authority shall establish systems and criteria for the classification of chemicals according to the type and degree of hazards they present, in accordance with national or international standards. All chemicals shall be marked, and in addition, all hazardous chemicals shall be labelled in a way that is easily understandable to workers as regards their classification, the hazards they present and the safety precautions to be observed. Chemical safety data sheets for hazardous chemicals shall be provided to employers.

Suppliers of chemicals, whether they are manufacturers, importers or distributors, are responsible for ensuring that such chemicals have been properly classified and marked, that the hazardous chemicals that they supply are labelled and that chemical safety sheets are prepared and provided to employers.

Employers, in turn, must ensure that all chemicals used at work are labelled or marked, that any necessary precautions are taken when they are used, and that records are maintained of the hazardous chemicals used at the workplace, cross-referenced to the appropriate chemical safety data sheets. This record shall be accessible to all workers concerned and to their representatives. Notice this aspect of communication of information among the concerned parties.

Employers are responsible for monitoring and recording the exposure of workers to hazardous chemicals and ensuring that they are not exposed to chemicals in excess of the exposure limits. They are responsible for carrying out risk assessments and for taking action to eliminate or minimize the risk through the choice of chemicals used, the choice of technology, the adoption of appropriate working systems and practices, the use of adequate engineering controls and where these do not suffice, through the provision and maintenance of personal protective equipment and clothing at no cost to the worker.

Importantly, employers have the duty to inform workers of the hazards they face in the workplace in terms of chemical exposure, to instruct workers on how to use the information provided on labels and chemical safety data sheets, to use the chemical safety data sheets as the basis for their instructions to workers, and finally to train workers on a continuing basis in the practices and procedures to be followed for safety in the use of chemicals at work. These employers' duties are mirrored by workers' rights to information on the identity and properties of chemicals used at work and the precautionary measures to be taken; as well as workers' right to education and training.

Employers and workers have reciprocal responsibilities to cooperate as closely as possible with each other with respect to safety in the use of chemicals at work. Workers additionally have a duty to comply with all chemical safety procedures and practices.

Let us think back now to the sugar cane plantation and to the rice farm. Think about how conscientiously the sugar cane workers protected themselves through the adoption of safe work methods. This was not due to chance, nor to the individual initiative of any one of them. It was clearly the result of a management system that took safety and health seriously. The employers provided information and training to the workforce, ensured that safe work practices became standard practice and made certain that the workers properly used the personal protective equipment provided to them. The employers backed this up with occupational hygiene measures. Workers and employers cooperated to minimize workers' exposure to chemical hazards and thereby protected their health, and the health of their families.

Now think back to the sprayer in the rice field and consider what the absence of a chemical management system means. An individual worker, particularly in a developing country, may know that he is carrying out potentially dangerous work, but he will not have the means to work safely unless a system is in place to provide the necessary protections. Alone, he will lack basic information about the hazards he faces, he will be unaware of the safe work practices he needs to adopt, he will probably be unable to afford the personal protective equipment needed and would not be instructed in its use and maintenance. In the case I witnessed, the bandana over his nose was the man's only protection.

Let us now step outside of the formal world of work, outside of an employment relationship and recall the child with the coke bottle. This too is an example of what the absence of a chemical management system can mean, but here we are talking about the lack of control over a chemical supply chain along which pesticides flow from the point of importation to the home of the ultimate user. In many countries, particularly poor developing countries, chemicals are imported in bulk and as they move down the distribution chain they are transferred from larger to smaller containers, until finally the small farmer buys a certain quantity of chemicals poured into whatever container he has brought from home. There is no label to indicate the name of the product, the level of toxicity, the proper dilution, nor the precautions to respect. He simply takes the jar or bottle home.

The WHO estimates that there are between two and five million pesticide poisonings each year, approximately 40,000 of which are fatal. Many of these are in developing countries. I am sure that we agree that “Something should be done”. But what? And by whom?

The answer, I believe, will involve many parties. For its part, the ILO has focused on raising the profile of OSH issues, and pushing them higher up the political agenda of its member States. Over the past four years, the International Labour Conference, which brings together roughly 3000 representatives of governments, employers and workers’ organizations, has adopted two major initiatives in this area: first, a global strategy which places considerable emphasis on promotion, awareness raising, advocacy and the dissemination of knowledge – and in particular to vulnerable workers and those in the informal economy; and second, a Promotional Framework Convention, adopted in 2006, based on the concept of continuous improvement of national occupational safety and health systems – in a sense, taking a management systems approach to the national level.

ILO has also worked with our tripartite constituents in a number of countries to develop training programmes both for agricultural enterprises, involving both safety manager and worker safety representatives, as well as for small farmers in rural communities. These stress the need for safe transport, handling, storage and disposal of chemicals. Agricultural employers and agricultural trade unions have been strong partners, strong message-bearers, in these efforts.

But when we talk about spreading a safety consciousness to a wider public, and in particular to small farmers, additional partners are needed. I have seen the thirst for information in rural communities in developing countries and can see opportunities for collaboration at various levels. There is clearly a need for greater collaboration among public agencies at the national and local levels that may not have worked together in this area before, for example, public health clinics, local schools, veterinary services, agricultural extension agencies, along with local community groups, farmers’ associations and rural workers’ organizations. International agencies working in agriculture and rural development could pool their efforts for greater impact, through technical cooperation activities. OECD countries could share their experience and expertise in chemical management systems with developing countries.

Today we hear a lot about corporate social responsibility and about public/private partnerships. Indeed, private companies have a key role to play in raising safety awareness. Suppliers of agrichemicals could use their commercial distribution channels as conduits of information, making sure that their distributors provide safety information along with the products they sell. They could ensure that their products are available pre-packaged in small quantities and clearly marked so that end-users would know what they were buying and how to use it properly. And they could tap the power of the market place to deliver potent safety messages. Agrichemical firms could earn the respect of their clients by delivering safety information through radio programmes, trade fairs, and their company’s own extension and training services.

Much of the work of the International Labour Organization in the area of safe management of chemicals has focused on developing systematic approaches to handling workplace challenges and using social dialogue to achieve this. This will continue to be the case, but if we are to move towards creating a preventive safety culture, this dialogue needs to be much wider. There’s a role for all of us to play and many voices need to be heard.