

Programme de Réduction des Pesticides et des Biocides

Programma voor de Reductie van Pesticiden en Biociden

Program for Reduction of Pesticides and Biocides



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Coordinator PRPB

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Time line

- | | |
|------|---|
| 1945 | Under-production of food in Europe |
| 195x | Agricultural development with fertilizers, pesticides & machinery |
| 196x | First global warnings related to pesticides |
| 198x | Reduction Program : Denmark, Norway, Sweden |
| 199x | Reduction Program : The Netherlands |
| 1991 | EU Dir PPP (91/414) |
| 1992 | EU Revision program of PPP substances |
| 1998 | EU Dir Biocides (98/8) |
| 1999 | Reduction Program : Flanders |
| 2005 | First PRPB |
| 2009 | <i>EU Framework Directive Sustainable Use of Pesticides</i> |
| 2012 | <i>Second PRPB = National Action Plan</i> |



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Objectives of the PRPB

For 2010: reduction of 50 % (25% in agriculture) of the risk from pesticides and biocides uses for environment and public health compared to 2001.

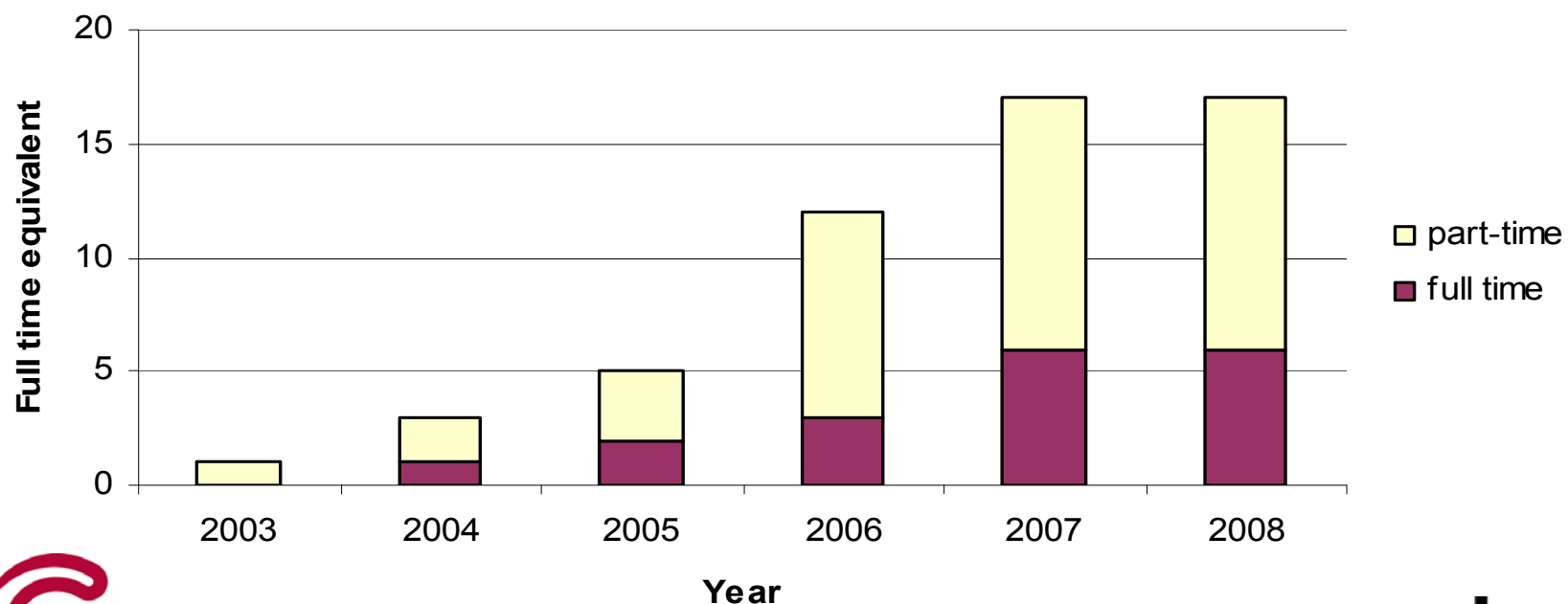
The risk is assessed by multi-compartmental indicators still in development.

The PRPB is updated every two years

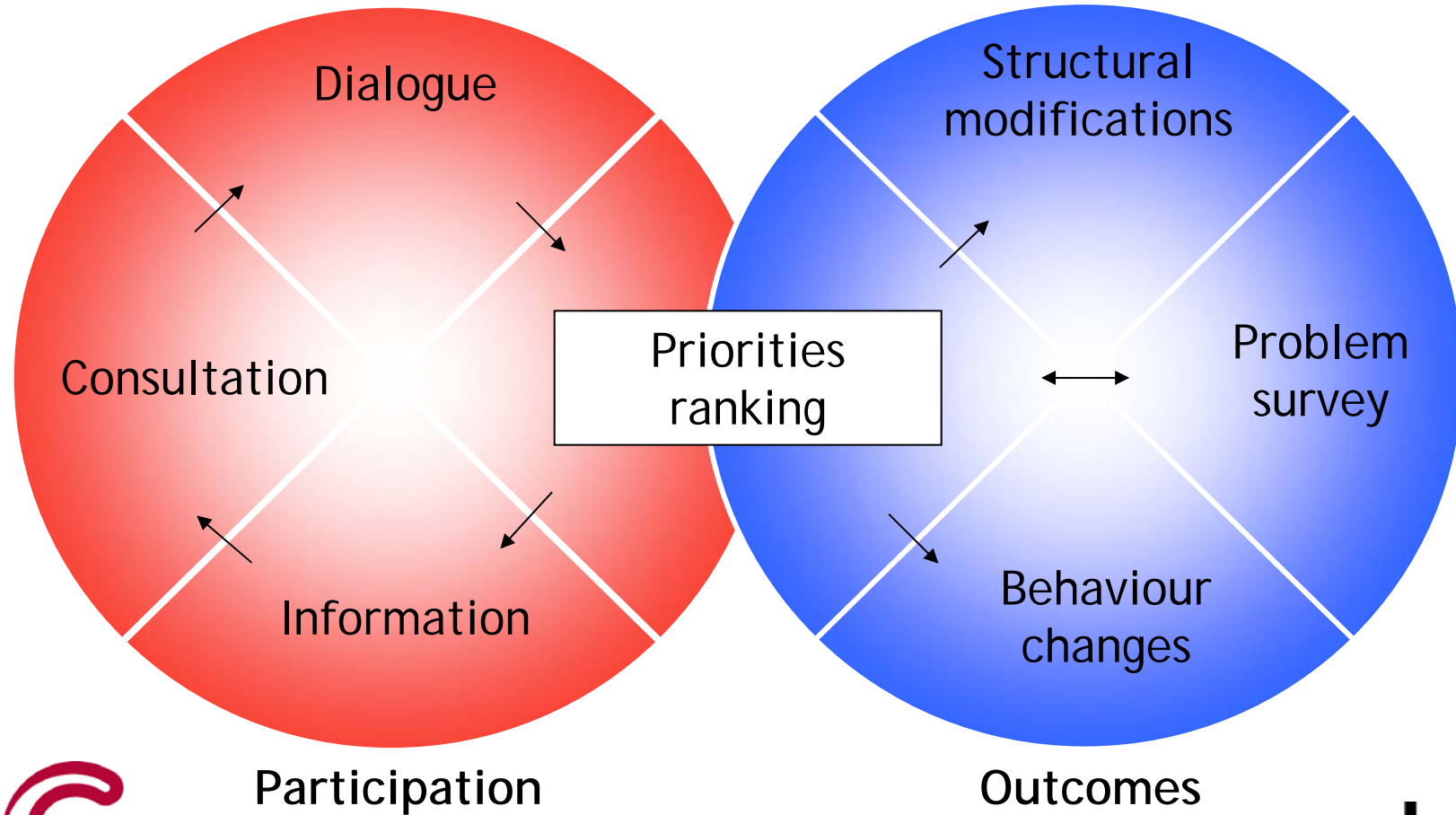


PRPB budget

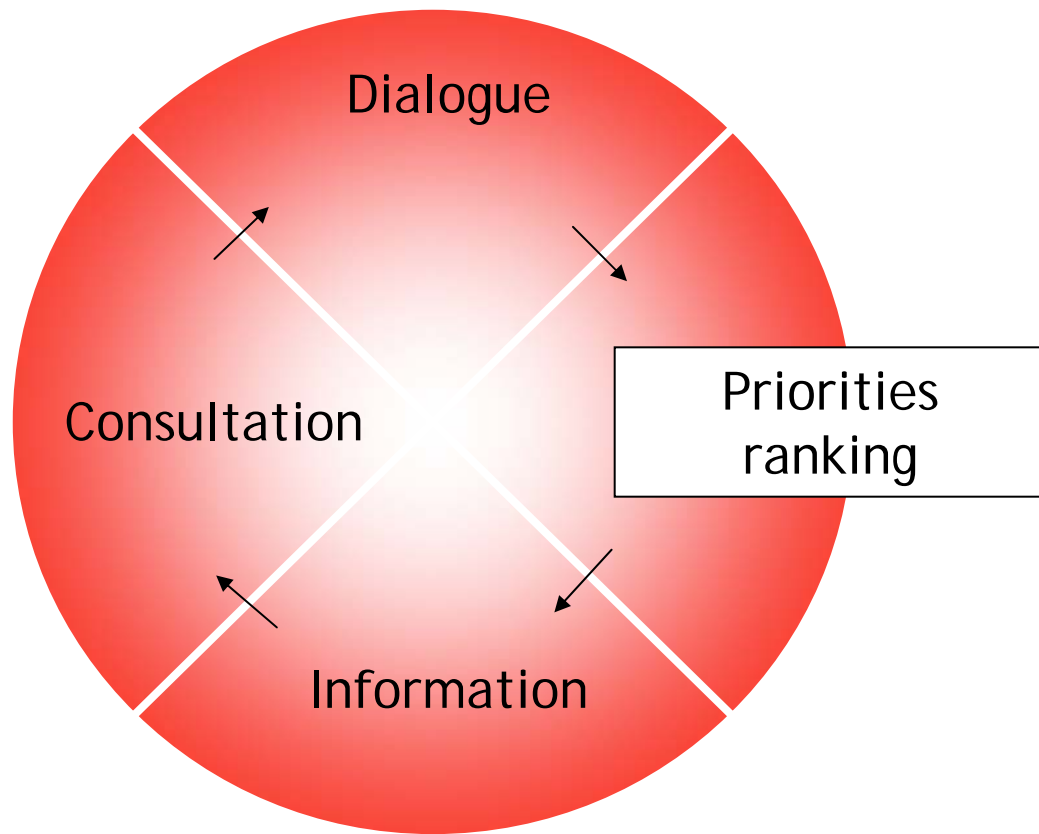
500 k€ / year, from a PPP & Biocide industry contribution : volume of the sale X specific hazard of product, for each product.



Risk management of the PRPB

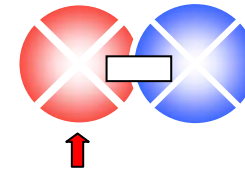


PRPB risk management: Participation



Participation

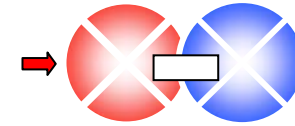
PRPB - Information



- Organisation of seminars to analyse and discuss the studies, research and consultation results. Ultimately, a national forum for exchange of information is foreseen.
- Answers to parliamentary questions
- Publishing of PRPB's activity reports :
 - Actively for stakeholders
 - Passively on the web sites www.prpb.be ;



PRPB - Consultation



Advisory Council of the PRPB composed of stakeholders (Authorities, Water distribution companies, Farmers, Environmental associations, Consumers, Scientists, PPP industry).

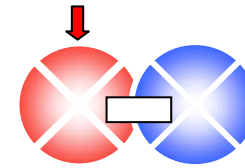
Organisation of various committees to obtain information or opinions on pesticides or biocides risk management:

Bees issues

15 thematic groups of experts and professional users

Indicators experts and stakeholders group





PRPB - Concertation

Organisation of dialogue structures

Belgian concertation committees where the NAP will be discussed

Pesticide Application Licence group

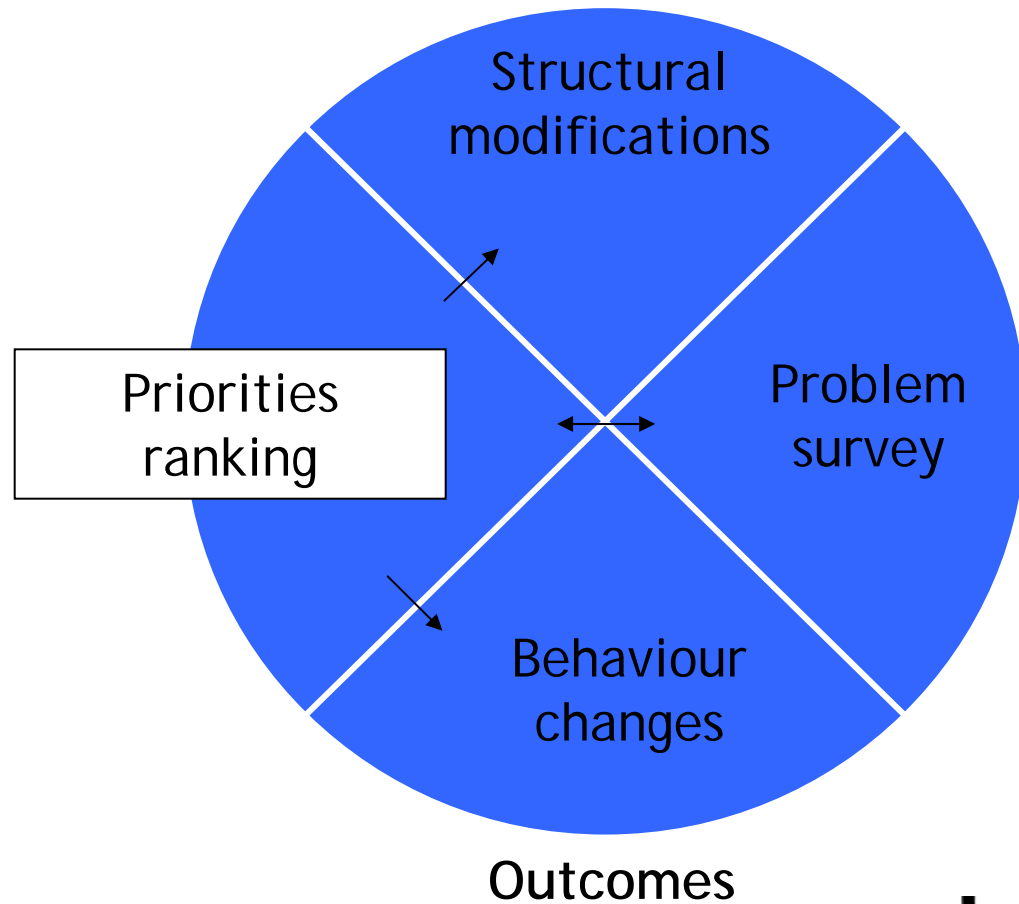
Participation to dialogue structures

Authorisation of placing on the market for pesticides and for biocides.

European debates and positions about pesticide related legislation



PRPB risk management: Outcomes



Structural modifications

Splitting of registrations between professional and non-professional products for pesticides

professional products



Home and garden products

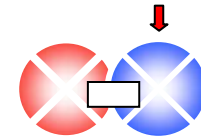


Structural modifications

Development of a Pesticide Application Licence for all professional users

- Basic and continuous educational (training) programmes
- about 80.000 people are concerned in Belgium
- No purchase of PPP for professional use without the certified Licence





PRPB - Structural modifications

Authorisations for placing on the market of products

- Splitting of registrations between professional and non-professional products for pesticides (and biocides).
- Support for registration of pesticide for use in Organic Farming.

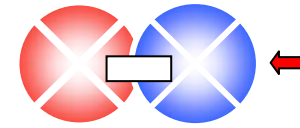
Pesticide/biocide users certification

- Alternative to MeBr use: training for users.
- Development of a Pesticide Application Licence for all professional users.

Alternatives MeBr

- gas recuperation processes; use of *Sulfuryl fluoride*





PRPB - Problem survey (1/2)

Monitoring of pesticide and biocide exposure

- Sales and market structure for type 18 biocides (rodenticides, insecticides, ... for domestic use)
- Consumer exposure in Belgium.
- Development of a pesticide use monitoring system in agriculture.

Conceptual development

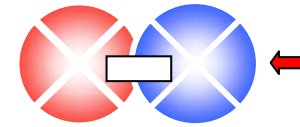
- Definition of the dependency concept in close collaboration with stakeholders

Description of the hazard

- Inventory of pesticide and biocide impact on health and environment



PRPB - Problem survey (2/2)

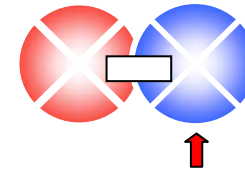


Assessment of the risk

- Toxicovigilance: monitoring of poisoning of humans and pets with pesticides and biocides.
- Development of the multi-compartmental risk indicator PRIBEL (Pesticide Risks Indicator for BELgium)
- Calculation of the PRPB reference values for 2001 ± 1 with the PRIBEL indicator.
- Development of a bi-compartmental (human health and environment) risk indicator for biocides BIBEL
- Pesticide risks assessment for the years previous to the PRPB (i.e. 1991 and 1996)



PRPB - Behaviour changes



Publication of leaflets

- Drift reduction: for farmers.
- Risk management at home: prevention and alternatives to pesticide and biocide use in the kitchen, in the house and in the garden.

Communication plan

- Analysis of the major needs in communication for professional and non-professional users.
- Development of a communication strategy

Research

- Participation to sociological analysis of the dialogue between stakeholders and authorities in a crisis situation: example of the bees' over-mortality crisis.



Sustainable plant protection : Belgian measures

Support to less pesticides-dependant production systems

- Integrated Pest Management
- Agri-environmental measures
- Organic Farming

Information & awareness

Professional

Non professional

Consumers

Citizen

Wastes

Collection of empty packages and unused PPP

Processing of the collected material

Use reduction

- Public zones
- Water protection zones
- Natural areas

Control

- Application machinery
- Stocks
- Residues in food
- Residues in water

Certification

- Knowledge
- Production systems

Monitoring

- Sales & use
- Risks



Focus on indicators

I. Risk from alimentation

S. de Voghel & L. Pussemier ; CODA-CERVA

II. Human risk from non-professional use of pesticides

H. Van Pelt & M. Mostin ; AntiGifCentrum

III. Environmental risks due to pesticide use at a national scale: analysis of various approaches with indicators calculation on the Belgian pesticide sales database

Vincent Van Bol, Philippe Ruelle, Herman Fontier



Studies published on www.prpb.be



I. Risk from alimentation : data sources

Multi-residue monitoring in vegetables and fresh fruits. Data from 2005 issued of the official control (FASFC) and private auto-control system from one retailer.

The Belgian food consumption database. Data from 2004 issued of a study made by the Institute for Public Health.



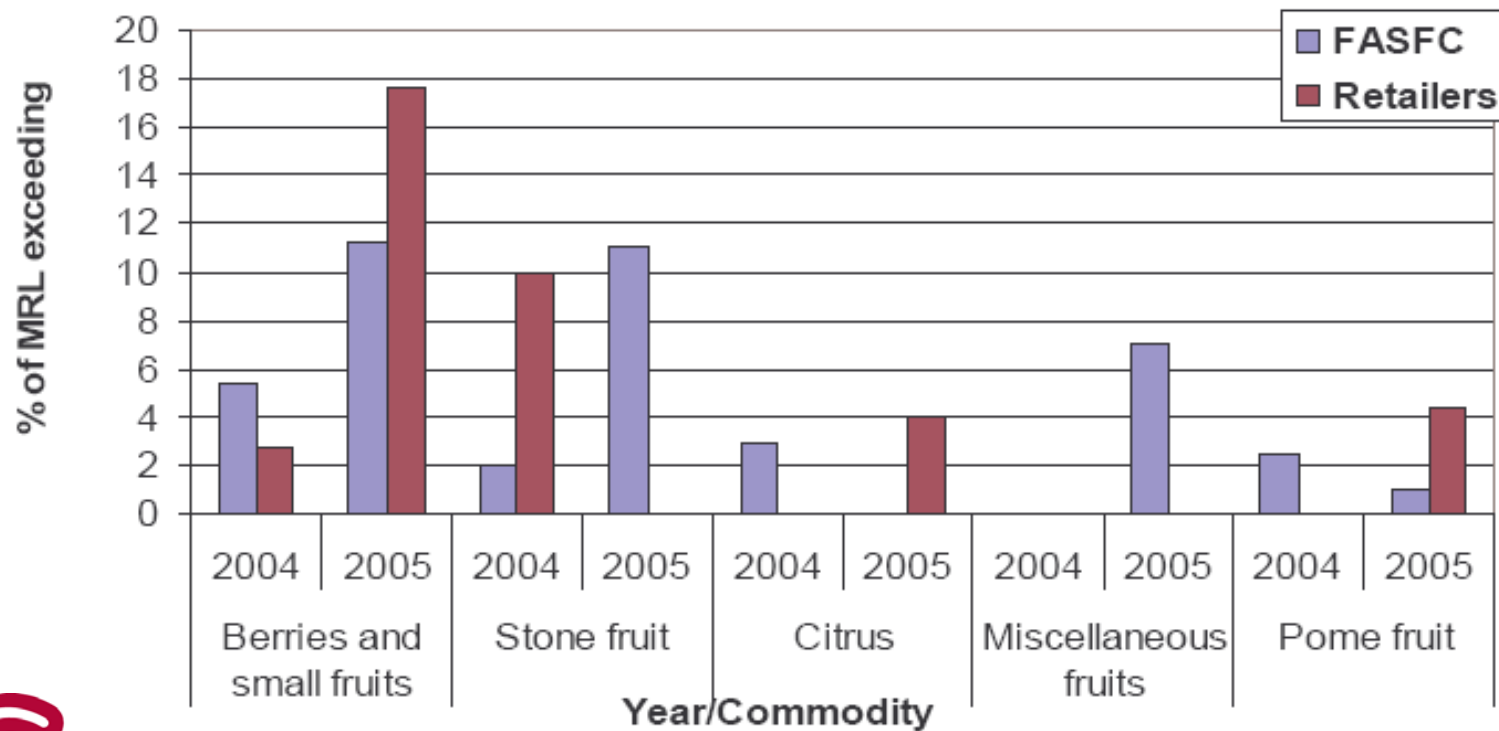
FASFC : Federal Agency for the Safety of the Food Chain

www.afsca.be

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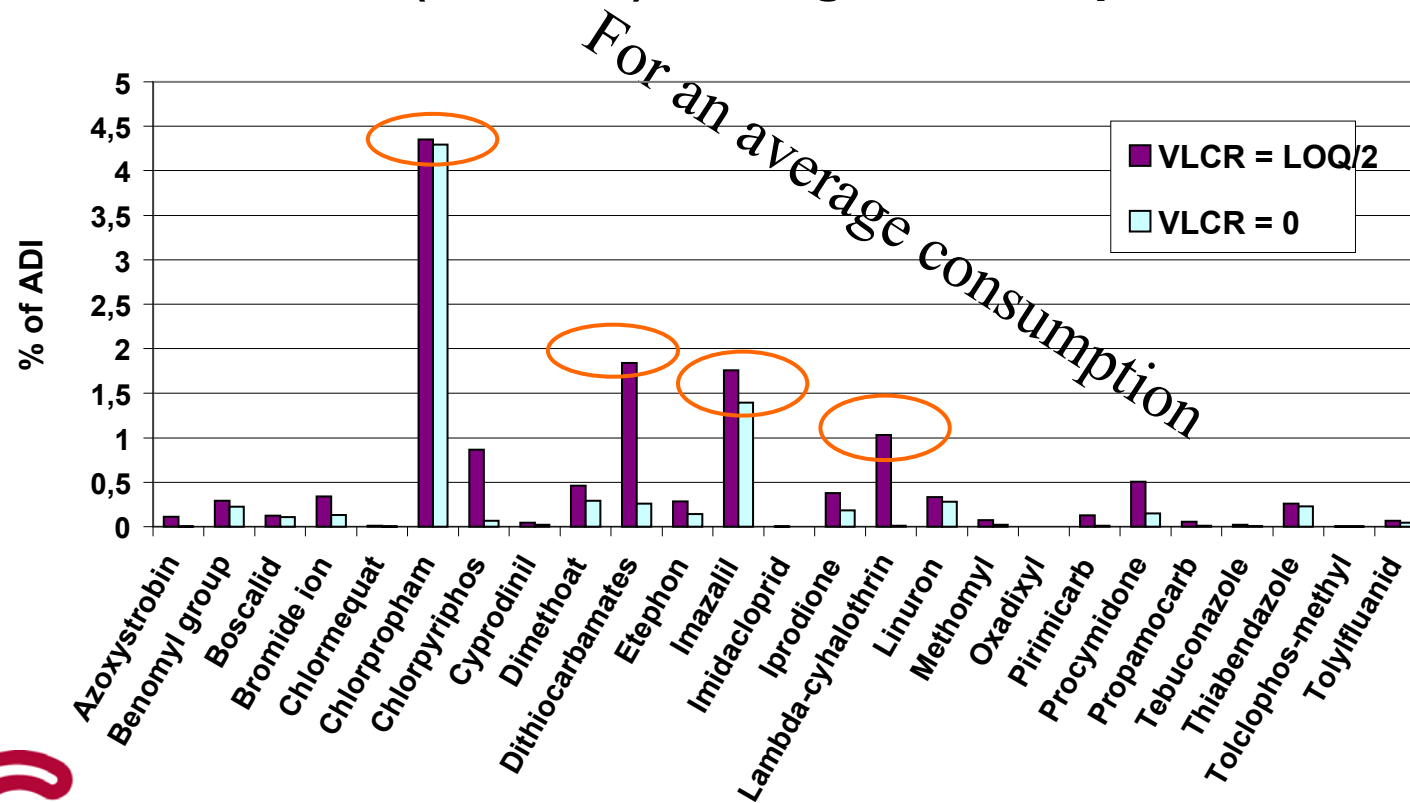
Usually, monitoring results are compared to the MRL values

% of MRL exceeding by commodity (fruits)



The consumer risk is better assessed in comparison with the ADI

Intakes (%of ADI) Average consumption



Four residues with exposure $\geq 1\%$ ADI considering the average consumption and the mid LOQ scenario.

Other indicator = other perspective

Residue	% of samples with residues at or above reporting level
Bromide ion	17,6
Dithiocarbamates	16,3
Ethephon	14,3
Propamocarb	12,9
Iprodione	12,0
Benomyl group	9,4
Imazalil	8,6
Tolyfluanide	7,0
Pirimicarb	6,7
Chlorpropham	6,0
Thiabendazole	5,9
Procymidone	4,9
Cyprodinil	4,7
Methomyl	4,7
Boscalid	3,9
Imidacloprid	3,7
Tolclofos-methyl	3,5
Dimethoate	3,3
Chlormequat	3,2
Tebuconazole	3,1
Oxadixyl	2,4
Chlorpyriphos	2,3
Lambda-cyhalothrin	2,2
Azoxystrobin	2,1
Linuron	2,1

Residue	Intake* (% of ADI)
Chlorpropham	4,3
Imazalil	1,4
Dimethoat	0,3
Linuron	0,3
Dithiocarbamates	0,3
Thiabendazole	0,2
Benomyl group	0,2
Iprodione	0,2
Procymidone	0,1
Etephon	0,1
Bromide ion	0,1
Boscalid	0,1
Chlorpyriphos	0,1
Tolyfluanid	0,0
Methomyl	0,0
Cyprodinil	0,0
Propamocarb	0,0
Pirimicarb	0,0
Lambda-cyhalothrin	0,0
Tebuconazole	0,0
Azoxystrobin	0,0
Tolclophos-methyl	0,0
Chlormequat	0,0
Imidacloprid	0,0
Oxadixyl	0,0

* Intake is given according to an average consumption and a lower bound scenario



II. Health risk from pesticide use in the gardens

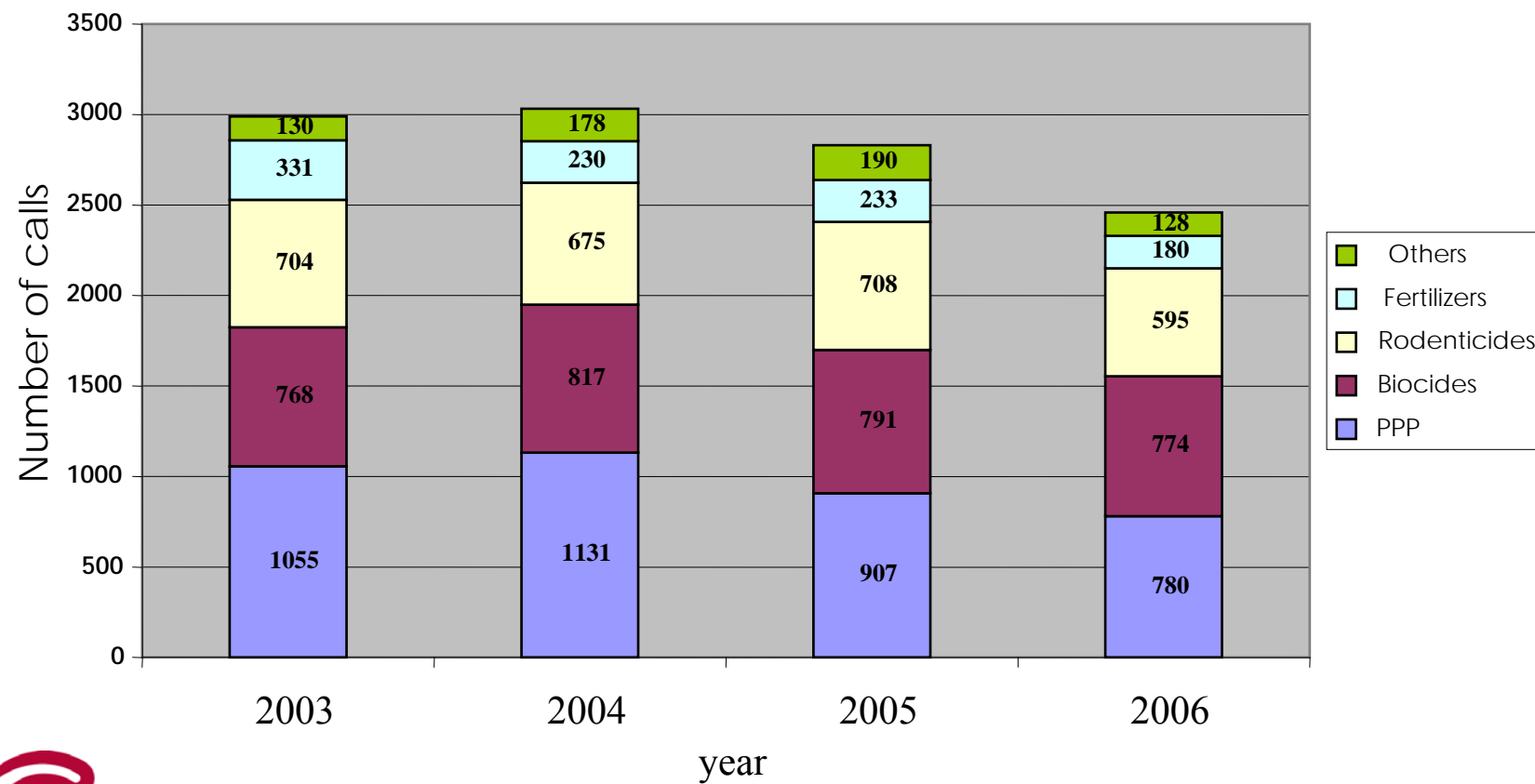
Method : the study was performed by the Belgian national call centre for poisoning : Centre Antipoison / Antigifcentrum.

Statistics of poisoning were developed for the period 2003 - 2006.

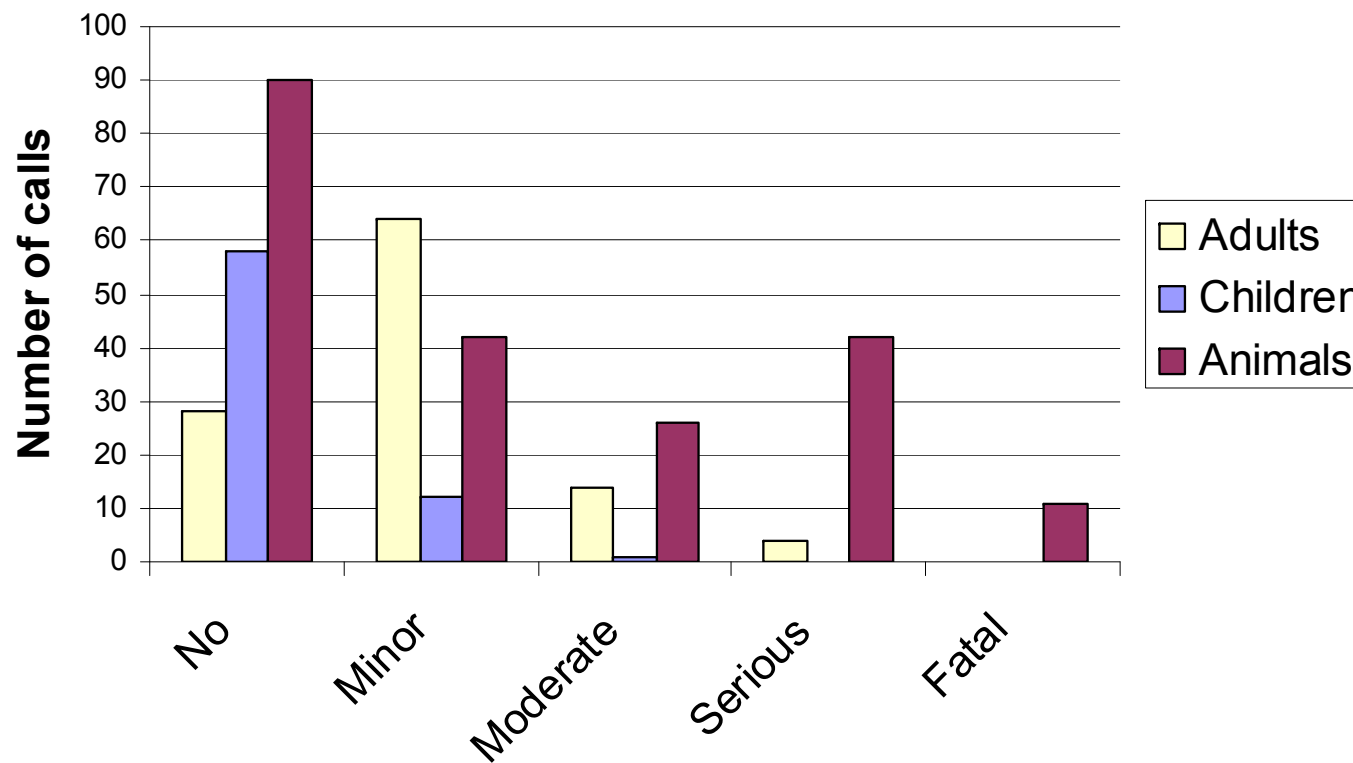
Follow-up of the calls was realised during 2006.



Calls for agricultural products and house products



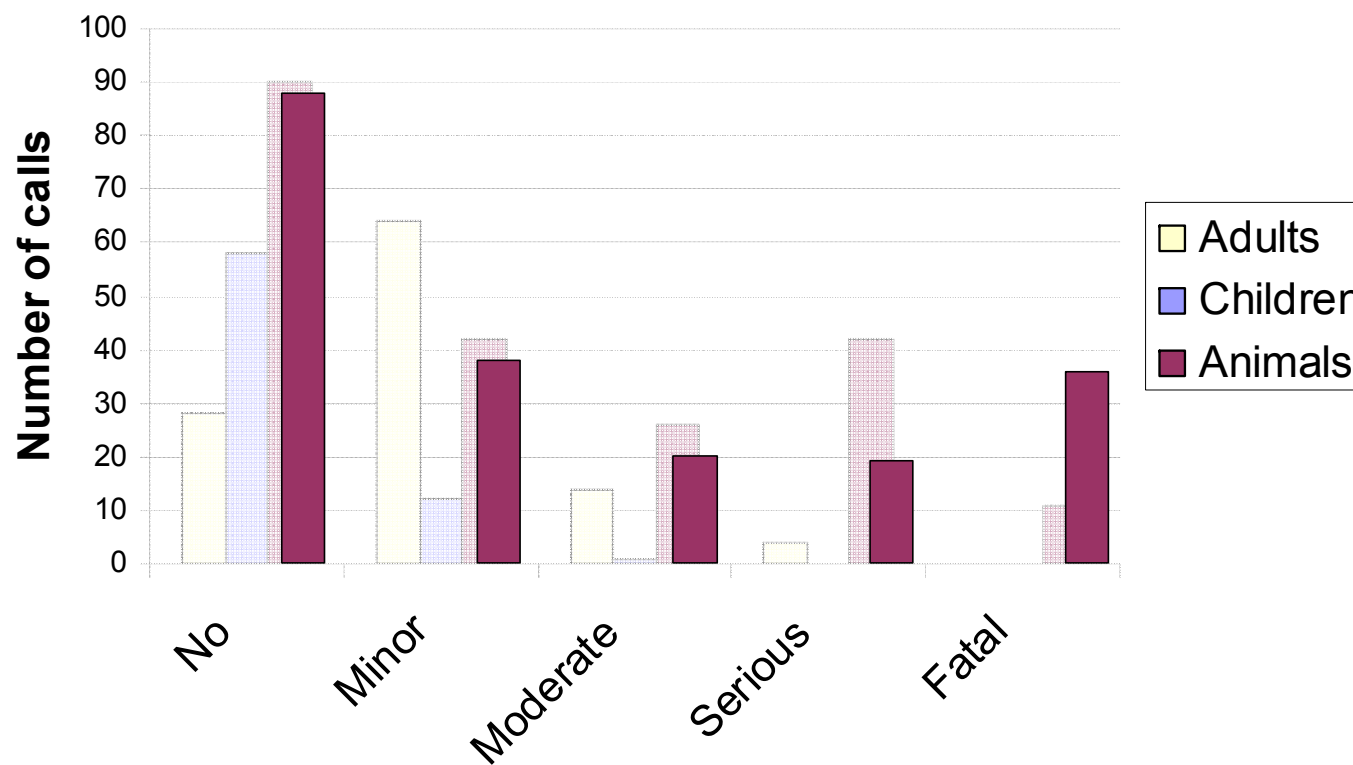
Symptoms and victims



Symptoms after the first recall



Symptoms and victims



Symptoms after the 2nd recall



III. Environmental risks due to pesticide use at a national scale: analysis of various approaches with indicators calculation on the Belgian pesticide sales database



Quantity & frequency indicators

General parameters	Units	Results for the 1991-2005 period			
		Min	Average	Max	
Total quantity sold	<i>t</i>	8.588	9.400	10.607	
Agricultural usage	%	66%	71%	77%	
UAA	<i>10³ ha</i>	1 345	1 379	1 394	
Dose	<i>kg/ha</i>	4.3	4.8	5.5	
Application frequency					
	in Belgium	<i>10³ ha-dose</i>	5 731	6 552	7 472
	per hectare	<i>Application/ha</i>	4.2	4.7	5.4
Representativeness of the measure	%		96%	97%	98%



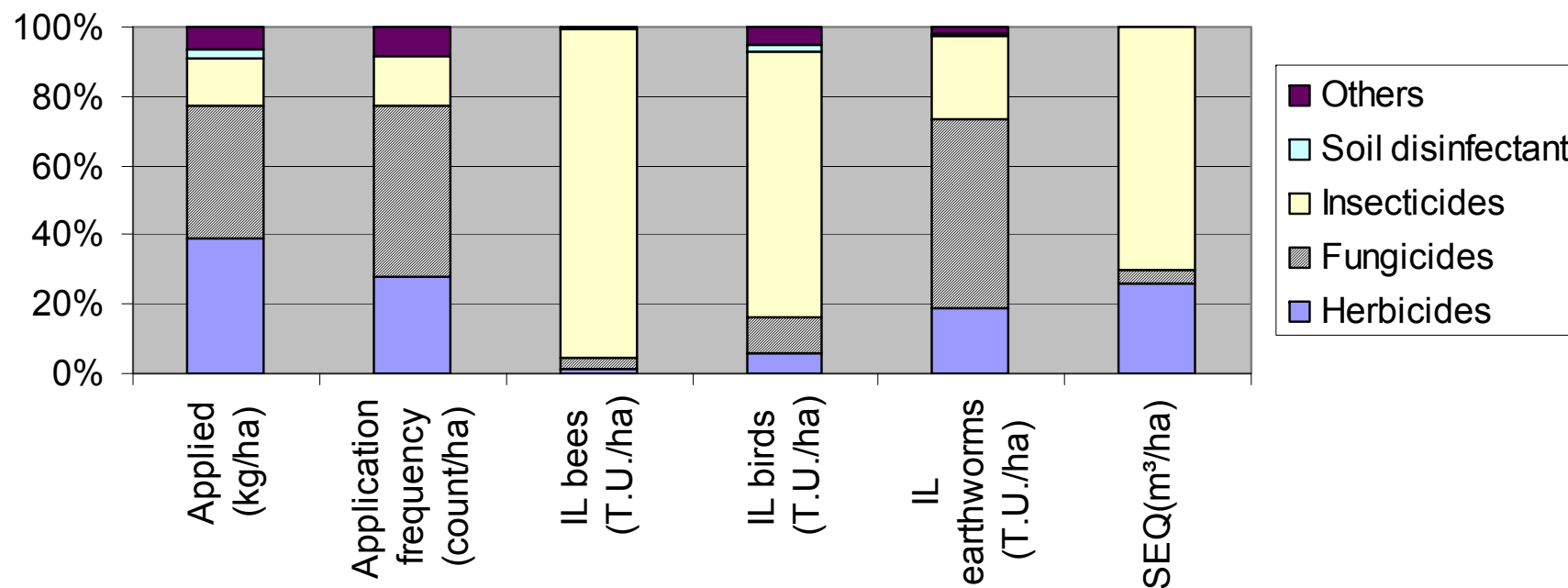
Risk indicators - global

General parameters	Units	Results for the 1991-2005 period			
		Min	Average	Max	
Index of load for bees		2 264	3 164	4 322	
Representativeness of the measure	%	91%	94%	97%	
Index of load for birds		0.027	0.043	0.072	
Representativeness of the measure	%	91%	94%	97%	
Index of load for earthworms		0.025	0.038	0.051	
Representativeness of the measure	%	91%	94%	97%	
Spread Equivalent Global (SEQ Global)					
	in Belgium	$10^3 m^3$	25.018	55.427	79.504
	per hectare	m^3/ha	17,9	40,3	57,8
Representativeness of the measure	%		91%	94%	97%



6 perspectives on the question

Relative importance of pesticide categories in indicators

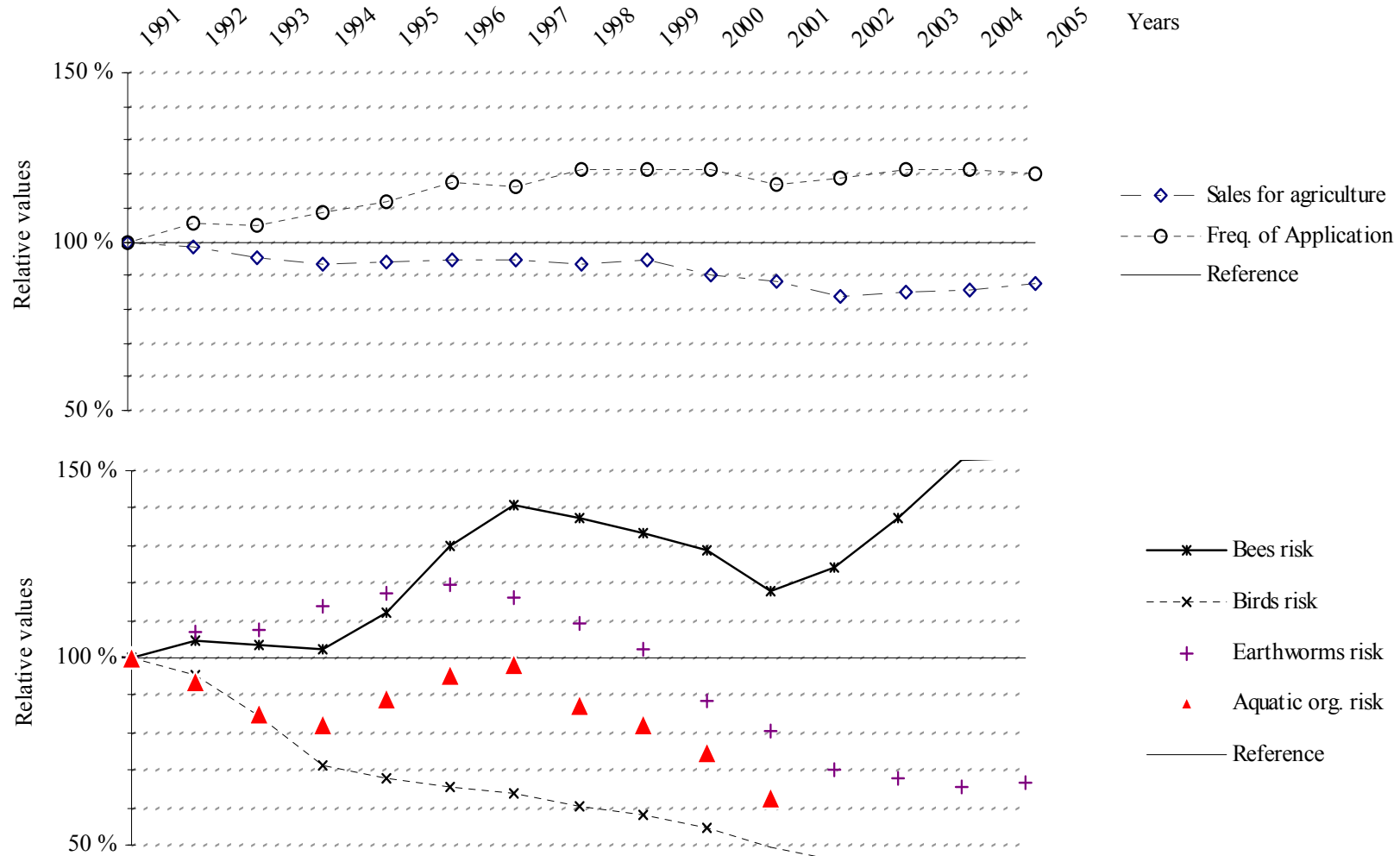


Trend lines of indicators

Indicators evolutions

All PPP (71% of a.s. sold)

(Reference year: 1991)



Major contributors to indicators for all PPP

Sales for agriculture		Frequency of Application		Bees risk	
15%	Mancozeb – Fu	14%	Hymexazol - Fu (+)	40%	Imidacloprid - In (+)
				9%	Cyfluthrin - In
				8%	Parathion - In
				7%	Chloorpyrifos - In (+)
Birds risk		Earthworms risk		Aquatic org. risk	
19%	Aldicarb - Inacne (+)	19%	Carbendazim - Fu (+)	32%	Lindaan - In (+)
12%	Parathion - In (+)	17%	Fenpropidin - Fu	16%	Paraquat - He (+)
11%	Carbofuran - In	7%	Aldicarb - Inacne	12%	Cypermethrin - In

(+): contributions that are significantly ($P < 0.01$) and positively correlated with the general trend of the indicator



Non ambiguous results

Frequency of Application in Belgium is about 4.7 applications per ha and increasing in time ;

Total sold quantity in Belgium is about 10.000 tons a.s. per year and decreasing in time ;

More applications at smaller doses

Only few pesticides are influencing the trends



Ambiguous results

Risk for aquatic organisms, birds and earthworms is decreasing;

Risk for bees is increasing.

Caution : Risk indicators are based on a first tier approach (worst case) and their results are sometimes far from the reality.

Usefulness of such indicators ???



Questions

Mitigation measures applied to reduce the risk down to an acceptable level: this is not shown with this first tier approach.

Then : What do these indicators show?

Risk of misuses of pesticides (worst case scenario)

A selection of a.s. which need special attention and, when relevant, a monitoring for their presence and/or effects.



Assumption : risk of pesticides is composed of three parts

Risk when correctly applied

Acceptable risk

Risk when incorrectly applied

Misuses

Unknown risk

Currently : really unknown; risk not yet manageable (interactions, etc.)



IMPACT of pesticides = Risk x Frequency

(Risk when correctly applied x Frequency of correct applications)

(Risk when incorrectly applied x Frequency of incorrect applications)

(Unknown risk x Frequency of all applications)

Total IMPACT



Parts of the impact we can measure

(Risk when correctly applied x Frequency of correct applications)

(Risk when incorrectly applied x Frequency of incorrect applications)

Index of Load, SEQ

(Unknown risk x Frequency of all applications)

FA index

Total IMPACT



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MEASURABLE

NOT-MEASURABLE

Parts of the impact we can manage

Placing of PPP on the market

(Risk when correctly applied x Frequency of correct applications)

Norms of products; Threshold values; Monitoring

Training ; Inspections; Controls

(Risk when incorrectly applied x Frequency of incorrect applications)

Research ; Vigilance ; Pro-activity

Reduction of use

(Unknown risk x Frequency of all applications)

Total IMPACT



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MANAGEABLE

NOT-MANAGEABLE

The risk reduction management needs to be driven by **several types of indicators**

Risk indicators : such as exposure to pesticides with alimentation

Hazard indicators : such as the number of poisoning incidents

Others types of indicators like simple use indicators, frequency of application (more dedicated to crop systems than agricultural systems)

