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# Why Pesticide Stewardship Includes Pesticide use Reduction: A European View

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# Drifting into dependency

- Pesticides are very useful chemicals
- But too much use has led to dependency, and dependency can become an addiction
- Leading to more and more use of pesticides and...
- If not enough regard for the long-term consequences  
...

# Landing could be hard



# Topics to be covered

- Some of the problems associated with pesticides use
- Some limits with the approaches taken to date to address pesticide problems
- The case for pesticide use reduction & some of the success stories to date
- Current legislative developments in Europe

# Some problems associated with pesticide use



# In spite of the regulatory controls in place

- And in spite of the advent of targeted, low-dose pesticides...
- overall amounts of pesticides applied in Europe are steadily increasing.

# Known environmental impacts

- Impacts on ground and surface water quality
- Impacts on soil quality
- Impacts on aquatic biota
- Impacts on biodiversity of terrestrial biota
- Impacts on the ozone layer & climate



# Evidence of adverse effects on human health also accumulating

- September 2008 desk study for the European Parliament on
  - “The benefits of strict cut-off criteria on human health in relation to the proposal for a Regulation concerning plant protection products”
- Found epidemiological evidence linking pesticide exposures to
  - various types of cancer including childhood brain tumors,
  - reproductive problems including falling sperm counts,
  - developmental neurotoxic effects including reduced IQs linked to prenatal exposures,
  - neurological effects such as Parkinsons & Alzheimers
  - immunotoxic effects such as hypersensitivity reactions ...

# Not only users...

- And it is not just the professional users of pesticides who are affected – but
  - the neighbours who live next to regularly sprayed fields,
  - the wives and children of farmers,
  - other bystanders, even those residing in areas formerly considered pristine, such as the native peoples of the Arctic.

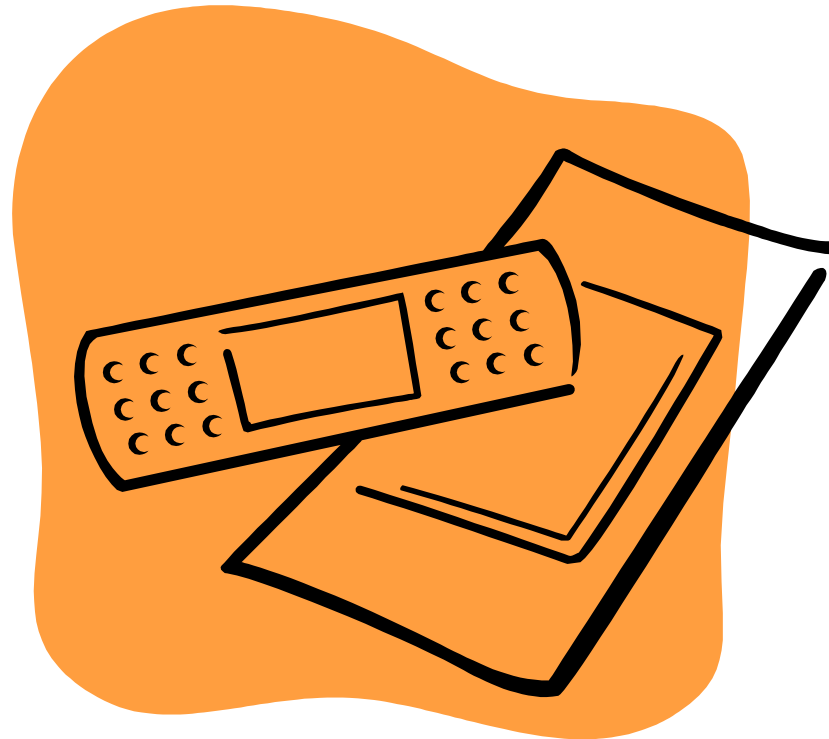
# Not just agricultural chemicals

- Too many chemicals released into the environment
  - consumer products, pharmaceuticals, cleaning agents
- Overall chemical burden of the planet increasing to the point where the environment can no longer cope
- If we are to continue to enjoy the benefits of chemicals, we need to reduce the overall chemical burden

# Need to ensure continued usefulness of pesticides

- Overuse speeds up development of pest resistance & in the long term diminishes their effectiveness.
- Farmers have to use more & more chemicals, & the addiction deepens.
- Addressing those concerns will require taking pesticide stewardship the next step → pesticide use reduction

# Limits to current approaches for addressing pesticide problems



# Difficulties in implementing the international controls

- 1981 – “Circle of Poison” published
- 1982 – founding of Pesticide Action Network (PAN) as an international network of NGOs
  - Early effort: to get international recognition of the principle of prior informed consent (PIC)
- 1985 – 1<sup>st</sup> FAO Code of Conduct did not include principle of PIC
- 1986-87 – PAN gathered documentation in 30 countries

# Difficulties in implementing the international controls (2)

- 1987 – FAO Conference adopts principle of PIC
- 1998 – Rotterdam Convention adopted
- 2004 – Rotterdam Convention comes into force
- ...
- 2008 – 4<sup>th</sup> Conference of the Parties
  - Still no compliance mechanism
  - Parties blocking addition of any chemicals still having a global market

# Difficulties in implementing the international controls (3)

## The case of endosulfan

- Known POP; phased out in the EU
- Severely restricted in Thailand because it was being used to kill golden apple snails in paddy fields, despite label warnings against such uses.
- One manufacturer still producing in India
- India blocking consideration of endosulfan by contending that Thailand's notification of a regulatory action is ineligible
  - “intentional misuse” debate



# “Intentional misuse” debate

- Annex II sets criteria for including a chemical in the PIC scheme; Parties must “take into account that *intentional misuse* is not in itself an adequate reason”.
- India contends that a use contrary to label instructions is ‘intentional misuse’.
- But uses of a pesticide contrary to label instructions – while a non-authorized (“off-label“) use -- might be common, particularly in countries with high rates of illiteracy.

# “Intentional misuse” debate (2)

- India is being supported by some industry members who are arguing that any restriction aimed at preventing an off-label use should be considered ineligible for the purposes of PIC eligibility.
- The result: a chilling of the PIC regime & a frustration of the Rotterdam Convention’s purpose of informing other countries of problems associated with particular chemicals

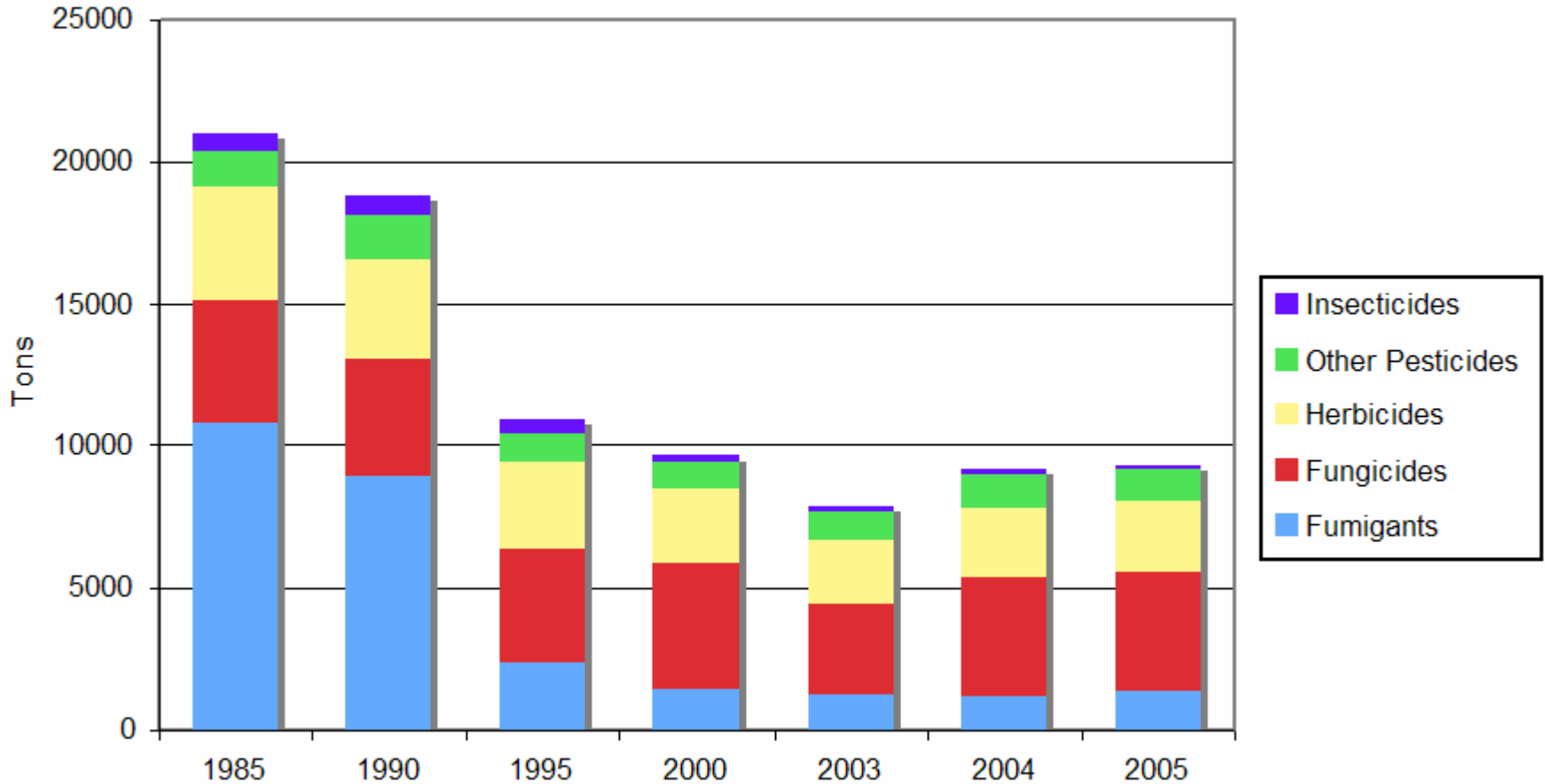
# The case for pesticide use reduction & success stories to date

- 20 years of evidence that it is economically feasible
- Netherlands
- Denmark
- United Kingdom

# The Netherlands

- Largest exporter of agricultural products in Europe; second largest in the world
- High intensity agriculture - ornamentals, meat, dairy products, tobacco, vegetables (glasshouse)
- Protection of water resources major concern
- 2003 – Agreement on Crop Protection
  - adopted by Dutch Government;
  - signed by major stakeholders from farming sector, pesticide industry & water industry

# Pesticide Sales 1985-2005 (tons of active ingredients)



# The Netherlands (3)

## Goals of the Agreement on Crop Protection

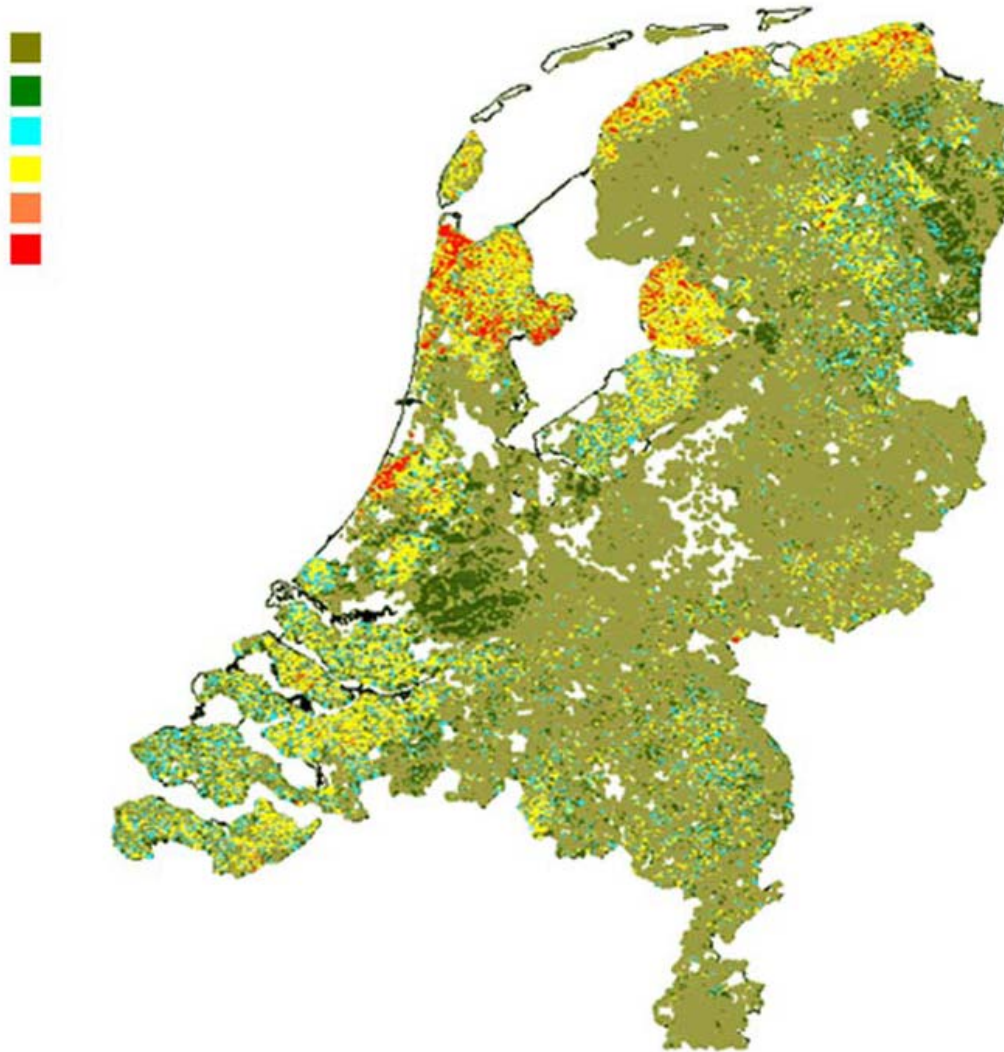
- Reduce overall environmental impact of pesticides by 75% by 2005 (compared to 1998) & by 95% by 2010
- Reduce impact of pesticides on surface water by 50% by 2005 (compared to 1998) & by 95% by 2010
- Reduce % of food samples exceeding maximum residue levels (MRLs) by 50% by 2010 (compared to 2003)

# The Netherlands (4)

Measures for achieving these goals:

- Promotion campaign targeting individual farmers
- Development of set of “**Best Practices**” per crop
- Development of **Environmental Impact Cards** (ranking system of pesticides by environmental behaviour) as guidance for farmers
- **National Environmental Indicator** system to evaluate results
  - being developed by CLM, Alterra & RIVM

# Annual drift of chlorpyrifos to surface water expressed in Environmental Indicator Points





# The Netherlands (5)

- Market incentive supplied by Dutch supermarket chain Laurus
- Higher farm gate price paid to farmers certified as applying Best Practices
  - 2005: apples, pears, strawberry, parsley, cabbage, iceberg lettuce
  - 2007: expanded to glasshouse production, including tomatoes & sweet peppers

# Denmark

- Specialised in livestock & arable production (mostly wheat & barley, along with grass & maize for silage)
- First Pesticide Action Plan introduced in 1986
- Third Pesticide Action Plan now underway
- Main reasons:
  - (1) to protect consumers & agricultural workers
  - (2) to protect the environment (particularly groundwater) against direct & indirect effects of pesticides

# Denmark (2)

- Targets for 1986 – 1997: 25% reduction total pesticide consumption by 1992; 50% by 1997
- Targets for 1997 – 2003: reduce **treatment frequency** from 3.1 (1990-93) to **2.0** by 2003
- Targets for 2003 – 2009: reduce treatment frequency to below **1.7** by 2009 (fruits & vegetable production included for first time)

# Denmark (3)

## Components of the National Action Plans:

- Advisory services for farmers
- More rigorous pesticide approval scheme
- Pesticide taxation (today 34% of wholesale price for herbicides & fungicides; 54% for insecticides)
- Mandatory farm-level record keeping (spraying logbooks)
- Pesticide free buffer zones along watercourses & wetlands

# Denmark (4)

## Results:

- More use of reduced doses (in 1997 average dose of fungicides was 35% of label recommendation)
- 25,000 hectares of pesticide-free zones established
- Improvements in groundwater quality
  - % of wells with concentrations exceeding limit value (0.1 mg/l) declined from 10% to 5% (1998 to 2003)
- Using treatment frequency index, overall reduction in pesticide use estimated at 0.75, with national cost savings of 60 MEUR/year.

# Other countries with pesticide use reduction policies & programmes

- Sweden (since mid 1980s)
- Finland (“ “)
- Germany (since 2005)
- France (since 2008)

# United Kingdom

## UK Co-operative Group

- Food retail sector with 4.4 BEUR in sales in 2005
- Owns Farmcare – largest British farmer (‘Grown on Co-op farms’ label)
- 1999 – developed Code of Practice & guidelines on pesticide use
- Three major instruments:
  1. List of prohibited & restricted pesticides
  2. Advisory service on pesticide use & alternatives
  3. Public outreach

# United Kingdom (2)

## Co-op Group's List of Prohibited & Restricted Pesticides

- Takes into account
  - authorisation status in the UK & EU
  - toxicity & environmental fate
  - listings in international agreements
- Applies to **all** suppliers worldwide
- Written permission needed to apply a restricted pesticide



# United Kingdom (3)

- Co-op Group also supports research into Integrated Farm Management practices
- Conclusions after 10 years of research:
  - IFM methods comparable to conventional in profitability
  - Crop protection costs 1/3 lower than for conventional practice
  - Volume of pesticide use almost halved
- Co-op Product Advisory Sheets developed for growers

# Other countries where voluntary schemes are operating

- Belgium
  - FRUITNET label for apples & pears produced according to guidelines for integrated fruit production; covers 65% of total fruit area in Wallonie & sold at Delhaize supermarkets
- Italy
  - Legambiente certification scheme (LAIQ) for pesticide-residue free fruits & vegetables
- Switzerland
  - Crops grown according to Integrated Production standards are marketed by IP SUISSE as premium Swiss products

# Conclusion: Soft Landing

- Pesticide use reduction is economically feasible
- Measures needed include:
  - Clear policies and objectives
  - Concrete support for pesticide use reduction, including:
    - Crop-specific guidance
    - Advisory support for farmers independent from industry
    - Reliable systems for control & for measuring progress
    - Incentives – e.g., schemes providing access to higher-priced markets

# Legislative trends in Europe

Two new legislative acts about to be adopted at EU level:

- Regulation on the placing of plant protection products on the market (replacing Directive 91/414)
- Directive establishing a framework for Community action to achieve the sustainable use of pesticides (new)

# Regulation on the placing of plant protection products (PPP) on the market

- Proposed in 2006; will be adopted in next few weeks
- Will replace Directive 91/414, which had set in place several important measures aimed at harmonising the internal market for PPPs:
  - Establishment of a “positive list” of pesticidal active substances (Annex I)
  - The principle of mutual recognition

## Directive 91/414's “positive list”

- In order to get their active substances (AS) on Annex I, manufacturers & importers had to submit dossiers of information showing that the AS met the so-called “minimum criteria”
  - Included criteria for efficacy, assessment of risks to human health & the environment
- Process only now (18 years later) nearing completion
- Hundreds of AS now out of the EU market because they could not meet the criteria or the market too small to support the necessary testing

# Directive 91/414's “mutual recognition principle”

- More difficult to implement
- Resistance from some Member States that had already eliminated PPPs they considered too risky
  - Difficult burden of proof to show that their particular geophysical conditions warranted an exception to mutual recognition

# New Regulation on PPPs

- Many features similar to Directive 91/414
- Innovations:
  - Strict “cut-off” criteria based on hazards to human health
    - No derogations for AS classified as CMR 1 & 2
    - AS must not have capacity to cause endocrine disruption, neurotoxic, or immunotoxic effects
  - Effects on honey bees taken into account
  - Certain AS considered candidates for substitution
  - Principle of mutual recognition, but applied across three geographical zones



# Directive on sustainable use of pesticides

- Objective of environmental protection, including “to reduce dependency on the use of pesticides”
- Member States required to develop National Action Plans setting quantitative targets, measures & timetables to reduce risks & impacts from pesticide use...

# Directive on sustainable use of pesticides

- National Action Plans must cover:
  - Measures to ensure access to appropriate training for all professional users, distributors & advisors
  - Certification systems verifying sufficient knowledge, e.g., distributors selling pesticides to professional users
  - Information & awareness raising to general public
  - Inspection of equipment in use
  - Prohibition of aerial spraying (but certain derogations)
  - Measures to protect water, incl. drinking water
  - Handling & storage; disposal of packaging & remnants
  - Promotion of Integrated Pest Management

# Remaining challenges

## PPP Regulation:

- Development of criteria for classifying which AS may have endocrine-disrupting, neurotoxic or immunotoxic characteristics
- The candidates for substitution

## Sustainable Use Directive:

- Development & implementation of the National Action Plans by Member States

