Human health consequences of pesticides & the EU risk assessment

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Pesticides – a health concern

- Designed to be **toxic to living organisms** – they pass through biological membranes
- May **interact with hormones**, their synthesis and metabolism
- Unlike natural hormones they may **persist in the body**
- Acutely eradicate pests → most regulatory tests are acute
- Regulatory testing → **major gaps in long term effects** at low doses for endocrine disruptors, neurotoxic and immunotoxic compounds
Legal requirements - pesticides

Plant Protection Product Regulation (PPPR) 1107/2009:

- High level of protection for ALL humans, animals, environment
- Protect the vulnerable pregnant women, children, babies
- Use ALL scientific literature
- Consider active substances, products, food residues
- Consider mixture effects (cocktails)
- Apply the precautionary principle

Mutagens, Carcinogens, Toxic to Reproduction, Endocrine Disruptors, PBTs

Hazards
EU policy on endocrine disruptors

• Regulation 1107/2009 – scientific criteria for endocrine disruptors
  – Deadline: December 2013 (but presented in 2016)
  – Process delayed by market interests
  – Criteria will apply end of 2018

• Interim criteria in place since 2009
  1. Carcinogen Cat 2 + Toxic to reproduction Cat 2
     OR
  2. Toxic to reproduction Cat 2 + toxic to endocrine organs
EU policy on endocrine disruptors

Since 2009 zero pesticides have been banned due to the interim criteria or due to their endocrine disrupting properties
Thifensulfuron-methyl - herbicide (renewal 2016-2031)

• Approved by Rapporteur Member State (UK)
• EFSA conclusion: interim criterion 2 is met (toxic to reproduction and mammary tumours)
• Herbicide approved by Member States
• Commission requested confirmatory data on:
  – Genotoxicity of metabolites
  – Mechanistic data on ED
  – Risk to aquatic organisms
  – Contamination of ground water
2,4-D - herbicide (renewal 2016-2030)

- Approved by Rapporteur Member State (Greece)
- Endocrine disruptor:
  - Reported effects on testis, prostate, kidney, thyroid (also thyroid levels), adrenal glands.
  - Commission’s 2016 screening identified it as EDC
- EFSA identified data gaps for complete ED evaluation
- Herbicide approved by Member States
- Commission requested confirmatory data on:
  - Existing information on extended 1 generation study
  - Amphibian metamorphosis test
Example 3 – EDC

**Lambda-cyhalothrin** - insecticide (renewal 2016-2023)

- Approved by Rapporteur Member State (Sweden)
- Endocrine disruptor with developmental toxicity:
  - Brain morphological changes
  - Sperm effects
- EFSA identified data gaps for ED evaluation and toxicity of metabolites
- Insecticide approved by Member States
- Commission requested confirmatory data on:
  - A systematic review for the sperm effects
  - Toxicity of metabolites
- Lower doses & mitigation measures for Member States
Chlorpyrifos - insecticide (*under evaluation*)

- Endocrine disruptor:
  - Thyroid effects and anti-androgenic
  - Developmental neurotoxicity (brain dysmorphology) in infants and children
- Rapporteur:
  - Neuroendocrine toxicity not assessed
  - Neurotoxicity study requested
- Nevertheless, approved by Rapporteur Member State (Spain)
- EFSA conclusion in progress
Sustainable use of pesticides Directive

- Pesticides as a last resort (IPM)
- crop rotation
- resistant varieties
- bio-pesticides
- Clear reduction targets
- Monitoring

Not implemented by Member States
Solution - Promote alternatives

Conclusions

• Pesticides are approved even when hazard criteria are met
• The “dose makes the poison” does not apply in long term exposures → new tests/approach is urgent
• Independent scientific literature is still given little weight → regulators undermine pesticide effects
• Market and profit block the high level of protection for humans and the environment
• Policy should be strict and clearly promote the development of alternative methods and their uptake by farmers
• A different system for the production of our food is urgent
Thank you!

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