



**Pesticide
Action
Network**
Europe

PAN-Europe's proposal on the Impact Assessment (IA) regarding the criteria for endocrine disruptive pesticides.

There is a scientific consensus now¹ that endocrine disrupting chemicals cause damage to health and the environment. A large group of active endocrinologists put it this way: *We are starting to understand that a large number of non-communicable diseases have their origin during development and that environmental factors interact with our genetic background to increase susceptibility to a variety of diseases and disorders. It is also clear that one of the important environmental risk factors for endocrine disease is exposure to EDCs during development. It is also clear from human studies that we are exposed to perhaps hundreds of environmental chemicals at any one time. It is now virtually impossible to examine an unexposed population around the globe. Trends indicate an increasing burden of certain endocrine diseases across the globe in which EDCs are likely playing an important role, and future generations may also be affected.*

A recent EEA-JRC report² confirms the views of WHO-UNEP. While the exact contribution of endocrine disrupting chemicals to health and the environment is difficult to assess, EEA states a precautionary principle approach is needed to prevent big harm to society.

Therefore, if an impact assessment on the criteria for endocrine disrupting pesticides is undertaken, all impacts should be considered, not just or not mainly the impacts on commercial parties. We feel Commission should take its natural impartial role and make sure all impacts of the use of pesticides are calculated, including the impacts on those interested parties whose voice is not heard very well in Brussels arena. Additionally, the calculation should have the right baseline. So we feel the IA should be governed by two central principles:

1. The total economic impact should be calculated, including all hidden or external costs.

In the impact assessment a calculation should be made of all external costs of the use of pesticides, especially of those -if possible- which are expected to be banned for having endocrine disrupting properties. The costs of health damage to people by residues of pesticides in food, including the daily mix of pesticides consumed, the costs of air pollution of pesticides for residents, the costs of the contamination of ground- and drinking water by pesticides, the costs of disappearing biodiversity, the decline of birds, bees, mammals, the extinction of natural plants in agricultural areas, the damage to soil biodiversity by narrow crop rotations and the depletion of soil organic matter by industrial-type agriculture.

¹ Åke Bergman, Jerrold J. Heindel, Susan Jobling, Karen A. Kidd, R. Thomas Zoeller, State of the Science of Endocrine Disrupting Chemicals 2012, WHO-UNEP.

² Environment and human health, Joint EEA-JRC report, EEA Report No 5/2013

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The calculation will not be easy but it is crucial to include all these elements to get a real picture. If only the costs of the companies (pesticide industry, farmers) would be calculated a totally flawed picture would result.

Pretty, 2000³ was one of the first who tried to calculate the external costs of current industrial agriculture and estimated that society in the US pays 208 pound per hectare as a minimum. The potentially huge costs of pesticides contributing to the fast rising non-communicable diseases (cancers, metabolic diseases) were still not included in his study. In a subsequent study from 2005⁴ he calculates around 150 pound costs for the UK consumer per year of external costs. While this exercise needs to be done for Europe still, it is clear the external costs are considerable and cannot be disregarded.

A 1992-study of Pimentel⁵ is one of the very few that considered health costs of the use of pesticides, acute poisoning, treatment in hospitals and lost work days. Yearly health costs were estimated to be 787 million dollar per year for the US. Additionally he assumed 1% of all cancers to be pesticide-related and calculated cost another 707 million dollar per year. While some feel these calculations are speculative, alternative approaches are difficult to find. Other estimates are that 6% of all cancers are caused by environmental factors⁶ (not smoking).

Milieu Ltd.⁷ made an assessment for European Parliament on the benefits of strict cut-off criteria and reviewed all available literature on health effects. Milieu also discussed the studies of Pretty/Pimental and mentioned a previous impact assessment by Commission concluding that implementation of REACH (chemicals regulation) would save 50 billion of health costs over 30 years. Overall Milieu concluded that *there is now an extensive body of scientific work that has found statistically sound evidence of strong associations between exposures to pesticides as a group and to specific substances and health effects. What are missing are robust economic analyses of the true costs of chronic exposures to chemicals in general and pesticides in particular.*

It is clear that external costs of the use of pesticides, especially those regarding long-term chronic diseases cannot be disregarded in any calculation. For endocrine disrupting pesticides a link with hormone-related diseases such as prostate, breast and thyroid cancer and disabilities is obvious. If robust data are not present in literature, a best estimation should be made and possible scenario's calculated. We could imagine that a scenario is used where 1% of all cancers and fertility problems are contributed to pesticides and another scenario contributing 5% of all cancers/fertility to pesticides. Alternatively, scenario's using an estimate of 5% or 20% of all hormone-related diseases (specific cancers, reproduction) could be used for a calculation.

³ J.N. Pretty, C. Brett, D. Gee, R.E. Hine, C.F. Mason, J.I.L. Morison, H. Raven, M.D. Rayment, G. van der Bijl, An assessment of the total external costs of UK agriculture, *Agricultural Systems* 65 (2000) 113±136

⁴ J.N. Pretty, A.S. Ball, T. Lang, J.I.L. Morison, Farm costs and food miles: An assessment of the full cost of the UK weekly food basket, *Food Policy* 30 (2005) 1–19

⁵ Pimentel, D., Acquay H., Biltonen, M., Rice, P., Silva, M., Nelson, J., Lipner, V., Giordane, S., Horowitz, A., D'Amore, M. 'Environmental and Economic Costs of Pesticide Use', *Bioscience*, 1992, No 42:10, pp. 750-760.

⁶ <http://www.psr.org/environment-and-health/confronting-toxics/cancer-and-toxic-chemicals.html>

⁷ Milieu Ltd, The benefits of strict cut-off criteria on human health in relation to the proposal for a Regulation concerning plant protection products, report for European Parliament, 2008

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We propose for the impact assessment on endocrines that the external costs of the potential endocrine disrupting pesticides used in current industrial agriculture are calculated on -at least- these topics:

- damage to health, employees, bystanders, food especially the daily mix of pesticides, air pollution for residents, the cumulative effects with other chemicals and the prolonged -lifelong/chronic- exposure.
- loss of eco-services (soil biodiversity due to monocultures; beneficial organisms, nesting for birds and other organisms, feed for bees, birds, etc.)
- damage to environment & biodiversity (decrease birds, bees, mammals, water organisms, plants, disrupting of ecosystems, etc.)
- greenhouse gas pollution (high use of nitrogen promotes the loss of organic matter)
- loss of soil fertility & organic matter by industrial farming methods

All current external costs should be calculated and compared to the potential costs of companies (industry, farmers) due to a ban of endocrines with accompanying gains for society. The company costs however should be calculated in the right way (see below).

2. The right baseline should be chosen for calculating the economic impact of the parties in the food chain.

From January 2014 on EU farmers have to do their crop protection according to the principles of Integrated Pest management (IPM) as defined by Directive 2009/128⁸ in Annex III⁹. This means any economic impact calculation for the future implementation of

⁸ DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 October 2009, establishing a framework for Community action to achieve the sustainable use of pesticides

⁹ General principles of integrated pest management

1. The prevention and/or suppression of harmful organisms should be achieved or supported among other options especially by:

- crop rotation,
- use of adequate cultivation techniques (e.g. stale seedbed technique, sowing dates and densities, under-sowing, conservation tillage, pruning and direct sowing),
- use, where appropriate, of resistant/tolerant cultivars and standard/certified seed and planting material,
- use of balanced fertilisation, liming and irrigation/drainage practices,
- preventing the spreading of harmful organisms by hygiene measures (e.g. by regular cleansing of machinery and equipment),
- protection and enhancement of important beneficial organisms, e.g. by adequate plant protection measures or the utilisation of ecological infrastructures inside and outside production sites.

2. Harmful organisms must be monitored by adequate methods and tools, where available. Such adequate tools should include observations in the field as well as scientifically sound warning, forecasting and early diagnosis systems, where feasible, as well as the use of advice from professionally qualified advisors.

3. Based on the results of the monitoring the professional user has to decide whether and when to apply plant protection measures. Robust and scientifically sound threshold values are essential components for decision making. For harmful organisms threshold levels defined for the region, specific areas, crops and particular climatic conditions must be taken into account before treatments, where feasible.

4. Sustainable biological, physical and other non-chemical methods must be preferred to chemical methods if they provide satisfactory pest control.

5. The pesticides applied shall be as specific as possible for the target and shall have the least side effects on human health, non-target organisms and the environment.

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criteria for endocrine disruption should take these IPM principles as the baseline. This is the legal baseline in Europe and it would be unjustified to use current dominant industrial-type agriculture with a crop-protection regime almost entirely based on the use of synthetic pesticides as the baseline. Synthetics are only allowed as a 'last resort' in IPM and not as the basis. We've seen already position papers of pesticide companies (BASF¹⁰, ECPA¹¹) and of UK¹² making this kind of calculations with the wrong baseline as if Directive 2009/128 doesn't exist.

UK¹³ and pesticide industry have been greatly exaggerating the impact of pesticide policy in the past and estimated that 15% of all pesticides would be banned or restricted as a result of Regulation 1107-2009 (reality is that almost no pesticide is banned and the number of pesticides approved increased with 60%, from 250 to 400 currently) and 20-30% of yield loss expected in cereals. This apparently served their lobby agenda, and the current reports such as the one from UK Fera of June 2013 should be again considered in the same way. One of the flaws in their calculation is that the baseline used is wrong. The systems used in industry/UK calculations are not based on IPM but on intensive spraying regimes. This means these crop protection systems generally do not make use of crop rotation, do not use resistant crop varieties, do not use wide planting distances, do not use a balanced fertilisation, not use beneficial organisms or biological control. They use an extreme vulnerable system and by suggesting they need a synthetic equivalent to the pesticide expected to be banned by the endocrine criteria, they insist to maintain the vulnerable system and to disregard the Directive on IPM. We feel it is unjustified to disregard democratically accepted policy rules and to act in disagreement with legal requirements.

Let's illustrate our point of view on the need of the proper baseline with a few examples.

So for instance on the potential ban of mancozeb in Brassica, an impact assessment should start by collecting all IPM-methods and practices in Brassica to avoid the disease Downy Mildew, and -first of all- consider if mancozeb is necessary in the IPM-system at all. For

6. The professional user should keep the use of pesticides and other forms of intervention to levels that are necessary, e.g. by reduced doses, reduced application frequency or partial applications, considering that the level of risk in vegetation is acceptable and they do not increase the risk for development of resistance in populations of harmful organisms.

7. Where the risk of resistance against a plant protection measure is known and where the level of harmful organisms requires repeated application of pesticides to the crops, available anti-resistance strategies should be applied to maintain the effectiveness of the products. This may include the use of multiple pesticides with different modes of action.

8. Based on the records on the use of pesticides and on the monitoring of harmful organisms the professional user should check the success of the applied plant protection measures.

¹⁰http://www.agricentre.basf.co.uk/agroportal/uk/en/crops/agronomy_update_1/basf_news/future_without_triazoles/osr.html

¹¹ ECPA, POTENTIAL IMPACT OF CURRENT DRAFT PROPOSAL FOR ENDOCRINE DISRUPTION CRITERIA, March 2013

¹² UK Fera, Agronomic and economic impact assessment for possible human health and ecotoxicology criteria for endocrine disrupting substances, Report to Chemicals Regulation Directorate, June 2013

¹³ UK PSD, Assessment of the impact on crop protection in the UK of the 'cut-off criteria' and substitution provisions in the proposed Regulation of the European Parliament and of the Council concerning the placing of plant protection products in the market, May 2008

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the Downy Mildew problems in Brassica the use of resistant varieties first of all is a requirement. Next cultural control measures and biologicals need to be considered. This whole set of IPM-measures should be the baseline of any calculation. Using the vulnerable varieties in many current crops is not only unjustified but also the CAUSE of the problems. Using vulnerable varieties with a mix of pesticides increases the resistance of the fungi and is a dead-end street. This is the pesticide treadmill, requiring all the time new synthetics and making the problems worse. IPM-system for combating fungi are the only viable system for a sustainable future. In the IPM-system for Brassica/Downy mildew it needs to be considered then if the IPM-measures are sufficient to ensure a good yield, and if necessary (as a last resort) synthetics will be needed in a low frequency. As can be seen for Mancozeb/Brassica even several synthetics are available and this answers already the question on the impact (zero on yield).

In the Table below a few other examples are given and you might note that the use of resistant varieties are crucial in many cases. We urge you to do this exercise for every substance/crop combination and identify the IPM-baseline before starting an assessment of the impact. Many IPM-measures are available and do not cost more for the farmer (experiences published by Dutch retailer Albert Heijn). Additional IPM-measures, not in wide use yet, should be considered, also if the costs would be (slightly) higher

Pesticide	Plant disease	Claimed costs by industry in case of banning (*)	Synthetic alternatives	Non-chemical alternatives/IPM, resistant varieties, rotation, biological control, etc.
Azoles (epoxiconazole, cyproconazole, etc.)	Septoria tritici in cereals	4,6 billion for Europe, yield loss, from net exporter to net importer	SDHI pesticides: boscalid, isopyrazam, bixafen, fluxapyroxad	Bacterial seed treatment (e.g., Cerall from Bioagri); less vulnerable varieties towards Septoria (Bristol, Robigus, Fortissimo), avoid early planting
Difenoconazole, Flusilazole, Prothioconazole	Phoma stem canker in winter oil seed rape	Many millions, reduction yield 9,8%	Fludioxonil, metalaxyl, thiram	Resistant varieties (Escort, Twister), crop rotation, cultural control measures (burning stubble), bacterial seed treatment
Mancozeb	Downy mildew in Brassica/Grapevine/Lettuce	No yield reduction but other costs assumed by UK Fera	Mandipropamid (Brassica), Copper, Metalaxyl, Cymoxanil (Grapevine)	Resistant varieties (Brassica); Sulphur, Potassium bicarbonate, cropping density (Lettuce), field location (lettuce), many biologicals in development
Ioxynil	Onions and leeks (weeds)	20-40% yield reduction	Pendimethalin, Oxyfluorfen, Fluzifop-P-butyl, Clethodim	Use 'false' seed bed, soil solarization, mechanical weeding

(*) based on studies by BASF and UK Fera

We propose for the impact assessment in case examples are used and calculated,
1. for the crop of choice to write down the system of IPM-methods and practices for crop growing according to Directive 2009/128;

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2. indicate which IPM-methods and practices are available without any additional costs for the farmer and should be used in all cases;
3. indicate which IPM-methods and practices are available with extra costs and could contribute to the crop protection of the pest assessed, partly or fully;
4. indicate -in a given the IPM-system- if a(nother) synthetic pesticide is needed (as a last resort; no IPM-methods and practices available) and -if so- under what conditions or restrictions
5. calculate the extra costs (if any) of option 4.

The economy of IPM-based agriculture is difficult to assess in general. The 2002-Agra Ceas study¹⁴ concludes *that it is difficult to draw firm conclusions on profitability from the balance of the evidence, but the case study evidence at least suggests that it is possible to achieve similar levels of profitability using ICM Integrated crop Management, similar to IPM) techniques as a result of lower yields and hence revenue being balanced out by reductions in production costs.* A more recent study by Jacquet¹⁵ shows that in France the use of pesticide can be reduced by 30% without impact of farm revenues.

Implementing IPM on farm level might not have big impacts on farm level if it is done gradually and innovation is focussed on developing IPM more. If the food chain can be involved, the less polluted product of farmers could be better marketed and lead to a higher profit. Big gains are made for society by the reduced external costs, health and the environment. This could mean the entire operation of banning of endocrines has a positive economic impact for society as a whole.

14 Agra CEAS Consulting, INTEGRATED CROP MANAGEMENT SYSTEMS in the EU, Amended Final Report for European Commission DG Environment, 2002.

15 Florence Jacquet, Jean-Pierre Butault, Laurence Guichard, An economic analysis of the possibility of reducing pesticides in French field crops, Ecological Economics xxx (2011) xxx-xxx

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