Briefing

FRIENDS of the earth
for the planet for people

Endocrine Disrupting Pesticides - European Priority List

Introduction

The European Commission has published a draft list of chemical, including pesticides, which are believed to damage health by interfering with the way hormones work. Friends of the Earth believes that alternatives do exist and the use of such chemicals, known as endocrine (hormone) disrupting chemicals (EDCs), can no longer be justified. As a matter of urgency, approval for use of pesticides on this list must be suspended and in cases of highest risk, EDCs must be banned.

Background

There is a growing body of evidence that endocrine disrupting chemicals (EDCs) could have significant effects on human health and the environment. Prompted by these concerns, the European Commission (EC) is developing a Community Strategy for Endocrine Disruption[1].

Effects of exposure to EDCs on wildlife such as the feminisation of male fish are well documented[2]. There is also now increasing concern that several human health problems may be linked to EDCs including declining sperm counts and increasing rates of testicular and breast cancers in recent decades[3].

EDCs act in several ways, for example, some block natural hormones from working while others mimic natural hormones. Exposure is particularly important for unborn babies and infants, because effects on the endocrine system at this early stage can impact on health and reproductive systems in later life. The Royal Society recently recommended that exposure of pregnant women to EDCs should be minimised in order to protect unborn children[4].

Chemicals suspected of having endocrine disrupting effects are found in a variety of products from paint and plastics to pesticides. The main focus of this briefing is pesticides used in agriculture which may appear in our food as residues. Some of these pesticides are also

available as home and garden products. It is important to remember that this is only one source of exposure to EDCs and that the total exposure to a mixture of these chemicals may be of more concern in health terms than exposure to one individual chemical. At present there is little research into this 'cocktail effect'.

The Proposed EC List

To inform its Endocrine Disruption Strategy, the EC commissioned consultants to produce a draft priority list of chemicals, including pesticides[5]. The draft lists of high (Category 1) and medium (Category 2) priority pesticides are listed below. There is clear evidence that Category 1 pesticides are endocrine disrupters, and that Category 2 pesticides are potential endocrine disrupters.

From a list of 564 substances the consultants (BKH Consulting Engineers) used the following criteria to categorise the candidate substances:

- persistence in the environment
- volume of production
- scientific evidence of endocrine disruption
- human and wildlife exposure

The EC plans to use this list to identify:

- substances of high priority for further testing when methods become available
- substances which could be addressed under existing legislation
- gaps in knowledge
- specific cases of consumer use, e.g. vulnerable groups

The draft list was published in June 2000. The final list was expected by the end of 2000 but has been delayed due to lack of agreement on the list and lack of a clear programme of action at EU level to deal with the priority substances.

MEPs have criticised the strategy for its lack of precise proposals and timetables for action[6]. In a resolution passed in October 2000 MEPs said that the Commission should identify which substances require action based on the precautionary principle and that "Intervention - ban, phasing out and/or limiting the use - should be decided upon before mid-2001"

FOE's Position

FOE considers that the publication of the draft EC list of priority substances in June should have provoked a fast response within the European Union to ban all the pesticides listed as high priority, without waiting for further evaluation. All of the substances on the draft high priority list have evidence of endocrine disrupting effects and if the precautionary principle were properly applied these substances would be banned.

FOE believes that member states should also take action on substances on the medium priority list, especially where human exposure is likely, for example through food residues.

Furthermore, member states should look beyond the EC list at other lists of EDCs. For example lists have been produced by the German and UK Environment Agencies, and by the World Wide Fund for Nature (WWF) which has carried out extensive research into the effects of endocrine disrupting chemicals on the environment and human health. The report prepared by BKH for the EC considered all of these for its original list of 564 substances suspected of being endocrine disrupters, but at this stage it has only categorised 147 into priority lists.

Although the draft EC lists are the best available starting point for action, there are some concerns about the process of prioritisation. For example, the Scientific Committee for Toxicity, Ecotoxicity and the Environment in September 2000[7] stated that substances lacking data were not adequately addressed. Some of these substances, as a result, will have been given low priority.

Further research is needed to establish the best screening method for EDCs. However, there are some existing methods which should be used more widely to alert regulators to possible endocrine disrupting effects. These include computer modelling techniques and 'in vitro' tests using cells. Pesticides which show potential endocrine disrupting effects using these methods should be suspended. The onus should then be on the company marketing the product to then prove that it is safe before

it can be placed on the market.

Action by UK Government

So far there has been little recognition by the UK Government or its advisors of the need to take urgent action on endocrine disrupting pesticides. FOE believes that the UK Government should follow the precautionary principle and ban pesticides which are shown to have endocrine disrupting properties (specific recommendations to Government are listed at the end of this briefing).

Action by retailers and food companies

Retailers and food companies need full traceability systems in place to ensure that none of the farmers and growers that supply them, from the UK or elsewhere, use any of the banned substances. FOE is urging retailers to take action ahead of Government bans.

The EC Draft List

EC Draft List: Highest Priority Pesticides (Category 1)

Pesticides on this list with UK approval should be banned as a matter of urgency and retailers should ensure that their suppliers do not use these substances. Food imports containing residues of any of these pesticides should not be allowed to enter the food chain. Further details on some of these pesticides follows.

***High Priority Pesticides** approved for agricultural use in the UK:*

Pesticide	**Type**	**Approved UK use (examples)**
Amitrole	herbicide	fruit trees,
Atrazine	herbicide	maize, sweetcorn,
Fentin acetate+	fungicide	potatoes (with maneb)
Lindane*	insecticide	sugar beet, strawberries
Linuron	herbicide	potatoes, parsnips, barley, wheat
Maneb	fungicide	potatoes, wheat
Metam (metam-sodium)	sterilant	glasshouses, outdoor soils
Thiram	fungicide	lettuce, apples, raspberries,
Vinclozolin	fungicide	oilseed rape, peas, beans
Zineb	fungicide	lettuce, potatoes

*due to be banned in EU for agricultural use

+allowed in mixes only

examples of home and garden use in italics

Note that some of these pesticides will be approved for use on different crops in different countries.

Lindane is soon to be banned across the EU for agricultural use but will still be permitted in the UK for use in household products. Lindane has oestrogenic properties and has been linked with breast cancer. Residues have been regularly found in food sold in the UK including goats cheese in 1999[i] and in all samples of chocolate in 1998[8]. Residues were also found in cod liver oil in 1999 presumably due to contamination of marine food chains.

Vinclozolin is a proven endocrine disruptive chemical, which causes anti-androgenic ('anti-maleness') effects. Delayed puberty and reduced sperm numbers have been found in rats exposed to vinclozolin. Residues are found in food sold in the UK including Dutch blackberries, British strawberries and Spanish celery in 1999.

Maneb, thiram and **zineb** are not individually tested

[i] All data on pesticide residues is from the Annual Reports of the Working Party on Pesticide Residues 1998 and 1999, published by MAFF in 1999 and 2000

for in food in the UK. However, they are in the dithiocarbamate group of pesticides which are tested for as a group. Dithiocarbamates were found in 1999 in British and Dutch blackberries, Dutch blackcurrants, Spanish celery, British and Spanish lettuce, passion fruit from Kenya, and Zimbabwe, and strawberries and melons from France, Israel, Spain. Cooking with vegetables containing maneb changes it into a cancer-producing substance called ethylene thiouriea[9].

High Priority pesticides *not approved for agricultural use in the UK*

Pesticide	**Type**	**Examples of use**
Acetochlor	herbicide	soybeans
Alachlor	herbicide	soybeans, peanuts
Chlordane	insecticide	termite control, some use on vegetables
Chlordecone	fungicide, insecticide	bananas, apples
DDT	insecticide	malaria control, e.g. Africa, India
HCB	fungicide	seed treatment
Mirex	insecticide	ant control (very limited use in farming)
Nitrofen	herbicide	vegetables, cereals
Toxaphene	insecticide, acaricide	cereals, soybeans, livestock, e.g. Africa

Several of these pesticides are banned in the EU, including **DDT and chlordane**. However, some of these substances are still entering the food chain in the UK due to environmental contamination or use in countries outside the EU. For example, in 1999, DDT was found in feta cheese from Greece, sea fish, and cod liver oil. Residues were also found in rabbit from China, and Chinese canned pork products.

EC Draft List: Medium Priority Pesticides (Category 2)

The pesticides on this list which occur as residues in food or water, or are used in household and garden products should be suspended from sale pending further evaluation. The onus should be on the company marketing the product to show that it is safe.

Medium Priority Pesticides *approved for agricultural use in the UK*

Pesticide	**Type**	**Approved use in UK (example)**
Carbendazim	fungicide	lettuce, apples, pears
2,4-D	herbicide	grassland, orchards, cereals, *lawn weedkiller*
Diazinon	insecticide	mushrooms
Dicofol	acaricide	apples, hops, strawberries
Dimethoate	insecticide/ acaricide	sugar beet, carrots, apples, pears
Diuron	herbicide	orchards
Endosulfan	insecticide/ acaricide	blackcurrants, strawberries
Iprodione	fungicide	potatoes, brassicas, lettuce, tomatoes
Malathion	insecticide/ acaricide	apples, cherries, lettuce
Prochloraz	fungicide	mushrooms, oilseed rape

Carbendazim is a fungicide widely used on fruit and vegetables. It is a suspected endocrine disrupter which effects production of sperm and damages testicular development in adult rats and also damages development of mammals in the womb including offspring with no eyes. In 1999, residues were found in British

blackberries, and celery from Israel and Spain.

Diazinon is an organophosphate pesticide. It is used in sheep dips and flea collars. In 1999, residues were found in British lamb, Spanish oranges, and melons from Israel.

Endosulfan is an organochlorine pesticide related to lindane. It is approved for use in UK on blackcurrants, blackberries, and strawberries. Residues were found in melons from Costa Rica, Israel, and Spain and in sweet peppers in 1999.

Iprodione is a fungicide approved in the UK on a wide range of vegetables and some fruit including strawberries. In 1999 residues were found in Dutch blackberries, British and French carrots, British, Dutch and Spanish lettuce, and British, Belgian, Dutch and American strawberries. One lettuce sample contained illegal levels.

***Medium Priority (Category 2) pesticides** not approved for use in UK*

Pesticide	**Type**	**Example of use**
Aldrin	insecticide	Banned
Dieldrin	insecticide	Banned
Endrin	insecticide	Banned
Parathion	insecticide	fruit & vegetables
Propanil	herbicide	wheat, rice, citrus fruit

According to UK food industry data, **aldrin and dieldrin** were found in several fruit and vegetables sold in the UK. Both these pesticides are banned world-wide but because of their persistence are still present in the environment.

Endocrine Disrupting Chemicals missing from the EC priority list

There are other lists of suspected EDCs, such as those drawn up by OSPAR (Oslo and Paris Commission), the UK Environment Agency, the German Federal Environment Agency and WWF. These lists provide strong evidence of endocrine disruption for pesticides which have not been included on the EC draft list. These pesticides must also be prioritised for action, particularly where human exposure is likely.

Evidence exists of endocrine disruption for these pesticides, excluded from the EC Draft list

Pesticide	**Type**	**Example of Use**
Amitraz	insecticide, acaricide	apples, pears
Benomyl+	fungicide	courgettes, rhubarb
Carbofuran	insecticide, nematicide	carrots, parsnips, cauliflowers
Chlorpyrifos	insecticide,acaricide	apples, strawberries
Deltamethrin	insecticide	aubergines, lettuce, peas
Epoxyconazole	fungicide	cereals
Metiram*****	fungicide	potatoes (US)
Oxydemeton-methyl*****	fungicide	melon, squash (US)
Prochloraz	fungicide	mushrooms, winter wheat
Trichlorfon	insecticide	brussels sprouts
Tridemorph	fungicide	barley, winter wheat

+ metabolised into carbendazim

* not approved for use in the UK

Chlorpyrifos is an organophosphorus pesticide approved in the UK for use on a wide range of fruits, several vegetables, and cereals, as well as amenity, forestry and ornamental uses. Chlorpyrifos has been severely restricted in the US (June 2000) for use on fruits commonly eaten by children (e.g. apples), due to concerns about its effect on the nervous system. It has also been listed as a potential endocrine disrupting chemical by the German Federal Environment Agency due to links to male and female genital deformaties. Residues have been found in apples from the UK, Brazil, Chile, France, New Zealand, South Africa and USA, oranges from Israel, Morocco, Spain and British currants in 1999. FOE considers that, based on existing evidence, chlorpyrifos should be banned.

Deltamethrin is a synthetic pyrethroid insecticide and has been listed as a potential endocrine disrupter by the German Federal Environment Agency which reports that it can affect sperm and the placenta. Residues were found in wheat grain in 1999**.**

Conclusion

EDCs pose a very significant threat to health and often persist in the environment for long periods of time. Their unnecessary and continued use stores up considerable problems for the future development of wildlife and humans alike. The EC's draft list is a good starting point for action but is not comprehensive and fails to include several chemicals which have otherwise been identified as threats to health.

Recommendations to UK Government:

- Ban all pesticides which appear on the EC draft high priority list (Category 1 substances);
- suspend approval for those pesticides on the medium priority list (Category 2 substances) which appear as residues in food in the UK, and in drinking water and surface water samples, or when they are used in garden or household products;
- ensure that pesticides on the high and medium priority lists which are not approved for use in the UK do not appear in imported food as residues;
- review other lists of EDCs including those produced by OSPAR (Oslo and Paris Commission), the UK and German Environment Agencies and WWF, to prioritise action on pesticides which do not appear on the draft EC list;
- lobby for action at European level for an urgent Europe wide ban of all pesticides on the EC draft high priority list;
- increase research funding into non chemical control of pests from a tax on pesticides;
- lobby for action at European level to take swift action and to address flaws in the assessment system.

Recommendations to retailers and food companies

- Ensure that suppliers, at home and abroad, do not use pesticides which are confirmed hormone disrupters;
- retailers to ensure that the food they sell does not contain any banned pesticides.

Notes

1. Commission of the European Communities, 1999, *Community Strategy for Endocrine Disrupters, a range of substances suspected of interfering with the hormone systems of humans and wildlife.* COM (1999) 706 final
2. Environment Agency, 1998, *Endocrine-disrupting substances in the Environment: what should be done?* Consultation paper
3. Scientific Committee on Toxicity, Ecotoxicity and the Environment, 1999, *Opinion on Human and Wildlife Health Effects of Endocrine Disrupting Chemicals, with Emphasis on Wildlife and Ecotoxicology Test Methods*
4. The Royal Society, 2000, *Endocrine Disrupting Chemicals*
5. European Commission DG Env, 2000, *Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption* - final report, BKH Engineers, Delft, the Netherlands.
6. ENDS Daily *MEPs call for rapid action on hormone chemicals*, Friday 27 October 2000
7. CSTEE, *Opinion on BKH Consulting Engineers*

Report "Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption", Opinion adopted 5 September, Brussels.

8. MAFF, annual report of the working party on pesticide residues.
9. European Commission, 2000, *Summary profiles of chemicals with information on use, production, emission, monitoring and legal status - Annex 14 to final report by BKH Engineers*

Friends of the Earth
26-28 Underwood Street
LONDON
N1 7JQ
Tel: 020 7490 1555
E-mail: **info@foe.co.uk**
Website: **www.foe.co.uk**

Feburary 2001
Author: Food and Biotechnology Unit
Last Modified: 1 March 2001

Printed on paper 100 per cent recycled from post-consumer waste