

Women in Europe for a Common Future



Protecting Future Generations

**Toxic Chemicals - Effects
on Human Reproductive Health
and Child Development**

Report on the WECF workshop, The Hague
16 March 2000

In preparation of the 4th round
of international negotiations for the elimination
of POPs and the Beijing+5 review
of the UN world women's conference.



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*Plastic toys can contain phthalates, a hormone disrupting chemical.
Children, when chewing on such toys, can ingest these phthalates.
Photo courtesy of W. Alton Jones Foundation and Greenpeace*

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Summary

Protecting Future Generations from POPS

Persistent Organic Pollutants (POPs)

On the eve of the fourth negotiating session of Governments on the elimination of Persistent Organic Pollutants (POPs) that took place in Bonn from 20 to 25 March 2000, WECF organised a workshop which aimed to inform participants from different West and East European countries about recent scientific evidence of the hazards of such man made chemicals. These POPs substances have the quality to accumulate in our bodies and to affect men and women and their children in the most vulnerable functions. The workshop focused therefore in particular on the effects on reproductive health of women and men and the pre- and post natal risks for the developing child.

Scientists from the United States and the Netherlands reported in the workshop about their findings and NGO representatives from the EU and NIS explained how they are raising awareness about this issue. A total of 100 people took part in the workshop, of which 35 women from Eastern European countries and the NIS. In this report WECF publishes their presentations. The results of the workshop were used in lobbying at the UN-INC4 in Bonn in March 2000, and the UN Beijing+5 conference in New York in June 2000. They will also be used in stimulating further public and political discussions on the need for elimination of POPs in the Netherlands and other European countries.

Re-evaluate health policies: INC and Beijing+5

The new evidence presented at the workshop on the effects of POPs on reproductive health and the developing child is a reason to re-evaluate the health and environment policies that should protect us from such hazards. The results of the workshop have been used to give input to the 4th round of Negotiations on POPs which took place in Bonn (see annexes). WECF and its partners are trying to build support at national and international level for the further elimination of such toxic chemicals. Furthermore, WECF has used the

results for input in the UN-Beijing plus 5 Conference which took place in June 2000 and where in the preparation rounds the issue of health and environment and protecting women and children from toxic pollution had been more and more abandoned. This is unfortunate as the right to be born and have children in a healthy environment should be seen as a basic human right.

POPs effect the reproductive functions and intelligence

In the key-note presentation Dr. Myers presented the latest scientific data on how bio-accumulative chemicals change the hormonal system in animals and humans and how this leads to reproductive disorders and diseases. Furthermore, research is showing that POPs are also effecting the intelligence and behaviour of developing children.

In-utero contamination strongest effects

Prof. Boersma of the Medical University of Groningen presented a 6 year study carried out in the Netherlands which indentified the effects of PCB and dioxin on developing children looking at differences between breastfed and formula-fed children. The results show that it is the contamination in the womb which is responsible for the most important health effects and that breastfeeding, despite high levels of toxins in breastmilk, has overall a positive effect. It is not yet clear at which level of contamination there is a turning point after which breastfeeding becomes to dangerous. Unfortunately, research shows that PCBs and Dioxins are diminishing the volume and fat content of breastmilk. Fat is the an important energy source for the developing child.

Unacceptable contamination of breastmilk

The presentations of scientific results at the workshop lead the participants to conclude that it is unacceptable that breastmilk is so highly contaminated with POPs in most countries of the world. On the other



Children's development is affected by Persistent Organic Pollutants

hand, research shows that breastmilk has such important advantages for the development of children that one can not do without. There are no equivalents to breastmilk. The participants recommended that women should stand up and tell their governments that it is unacceptable that breastmilk is being so badly contaminated and that urgent measures are needed to eliminate POPs from the environment.

Lessons for countries in transition

In many of the countries in Europe and North America people have the feeling that at the national level environmental problems are under control. The general public believes that we finally have good environmental policies that protect us and our health. However, in the case of the Netherlands, POPs research as that presented by Prof. Boersma shows that our pollution problems are affecting our health worse than we thought. For the 35 participants from E-Europe it is certainly interesting to see that even the stricter policies as exist in a country like the Netherlands are still not sufficient to protect our health. Especially for developing coun-

tries and countries in transition which do not have the money to implement the highly expensive end-of-pipe technologies, it is important to focus on the precautionary principle by for example introducing materials policies which exclude chlorinated products from production and waste streams.

Detoxification in combination with elimination of POPs

Biochemist Dr. E Vogelaar briefly presented ways in which people who want to have children can try to reduce the level of contaminants in their body before conception and gestation. Certain vitamins and minerals will help to reduce the levels of PCB and dioxin which have build-up in our bodies. It is important that this knowledge is shared and that people in developing countries and countries in transition can benefit from this knowledge without prohibitive costs.

Of course the fact that one can possibly do something to diminish the levels of toxins in one's body does not mean that one no longer needs to lobby the government to ban POPs. Environmental NGO's like WECF have always aimed at stopping the pollution, not on trying to reduce the effects of pollution. Nevertheless, we need to be realistic. New generations are living in a polluted world and it will take years before the environment will be clean of dioxins, PCBs and other bioaccumulative chemicals even if we would have a world-wide production ban implemented tomorrow. Therefore it is important that more research is done and that information is shared on what we can do for the time being to reduce the effects of these toxins as much as possible for the sake our health and that of the next generation.

Examples of NGOs active in eliminating POPs

Olga Speranskaya of the NGO Eco-Accord, based in Moscow, presented a clear example how citizens can take the initiative in raising awareness about the dangers of POPs. Eco-accord has done so very effectively by producing a short television clip, a PSA, which continues to appear regularly on Russian national television. Furthermore, Olga Speranskaya explained how important it was for Eco-accord to become a member of IPEN, the International POPs Elimination Network, a worldwide network of NGOs. Olga Speranskaya explained how this has helped in lobbying the Russian government and Moscow city administration on the

need to eliminate POPs and to be careful about building new waste incineration plants or to use cement kilns for waste incineration.

Marge Jacobs of the Dutch NGO "Leefmileu" contributed with some lessons learned during the 10 years of successful activism in which her NGO fought to reduce dioxin and other POPs emissions from a number of industrial plants in the town where she lives.

1 | Growing concern - Introduction

Women in Europe for a Common Future – WECF – founded in 1992, is a network of women in Eastern and Western European women working on issue on sustainable development and environment. Since a few years, WECF has focused more and more on health and environment as it's main mandate. There is growing concern of women in Eastern and Western Europe about the effects of chemical toxins on human health. Many of WECF's practical activities are in that field. We are worried about the risk and damage to health from environmental pollution, especially to the most vulnerable phase in human life; pre- and post-natal health and human reproductive health.

At the WECF workshop "Protecting Future Generations" we focus especially on the effects from Persistent Organic Pollutants – POPs. For a long time we thought that these POPs were safe at low levels and did not harm human health. However, new research has shown that these POPs are building-up in our bodies and are starting to do real harm to the fetus of which the effects will show in the later development of the child.

That is why women demand that much more priority should be given to the elimination of bio-accumulative toxins like POPs in policy making to protect our children, to protect our future generations. The workshop "Protecting Future Generations" is

meant to be a preparation to the next international negotiations on the elimination of POPs which will start few days after the workshop. Many of the participants of the "Protecting Future Generations" workshop will take part in these international negotiations. The workshop will help when we speak to the delegates from our countries. We want to bring forward this issue of damage by POPs to future generations so that our delegates will start to understand that these substances are a great threat to human reproductive health and development of the child.

Introduction by
Marie Kranendonk-Schwartz
President, WECF,
The Netherlands



2 | Protecting Future Generations: Recent Science on the Health Effects of POPs as Signal Disruptors

Novel chemicals in our bodies of which the effect is unknown

8 What Marie Kranendonk described as your growing mandate, to look at health and environment, is one of the key issues of this millennium. We will see over next years, the emergence of a global movement focused on environmental and health issues. This movement will be led by women, and I thank you for taking that lead.

If I would take blood from anybody in this room and take it to a laboratory and ask to perform a state of the art analysis to see what's in our blood, it will turn out that all of us are carrying chemicals, novel chemicals, in our bodies. These novel chemicals were not part of human bodies just a few generations ago. This intrusion is unprecedented in human history. We know some chemicals are benign, we know some are dangerous, but we have very little knowledge about most chemicals in our blood. We don't know how they effect our children, or their children. We are all part of a global experience which should better take place in a closed laboratory.

Our Stolen Future

Theo Colborn, Dianne Dumanoski and I wrote a book, bringing together first studies on chemicals effecting our health, to encourage governments to start taking protective measures. This book, "Our Stolen Future", looks at one piece of this question, namely at how certain chemicals interfere with natural chemical messages which the fetus receives. A fetus absorbs natural chemical messages like a sponge, telling it how to grow, how to develop the brain, sexual preference etc.

What scientific research has revealed, with increasing speed, certain synthetic chemical interfere with the natural chemical, hormones, growth factors, neuro-

transmitters, In our book we focus on these new chemicals which interfere with these natural signals that are directing fetal growth. We have hit on what I believe is a paradigm shift in toxicology; a new focus on the disruption of endocrine system, the hormone system.

Toxicologists are used to 'ordinary' potions, which cause illnesses such as cancers and mutations, when administered in high doses. These new chemicals are endocrine disrupters and cause damage not at high doses, but at low levels. Levels that toxicologists up till now would call normal 'background' levels, even though they are talking about novel chemicals of which there used to be no background level at all. They call it 'background' level just because we all now have these novel chemicals in our bodies. Endocrine disruptors are not ordinary poisons, normal poisons in high quantities, cause cancer, cause mutations, instead of causing damage at high level, cause problems at low level. These are levels toxicologists now think of as background, as normal, even though these chemicals are novel.

Recent research shows that these 'background' levels do have considerable health effects. Even at low levels endocrine disrupters can misdirect fetal development.

We can compare these in the following way. Ordinary toxins are the old way. If you want to make sure a ship does not reach a port, the old way would be to bomb the ship. The new way, is to slip a terrorist on board disguised as the pilot, who will gradually and unnoticed change the course of the ship so that it ends up on a reef next to a port, and sinks. This is a metaphor of how endocrine disrupters work. They act not like killers, but disguise like false messengers.

The book *Our Stolen Future* develops this case. We begin by looking at studies of wild life effected with medium-high levels of endocrine disrupters. We also look at laboratory experiments with lab animals. In these controlled experiments, low level exposure in animals causes dramatic changes in fetal development. These experiments are relevant to ask questions about the effect on humans. Then we look at a few well studied cases in human development which show that the results we had already found in wild life, also count for humans.

What signals should we be looking for, if hormone disruption is taking place and effect peoples life? What other patterns should we be examining to show that endocrine disruption is a real problem for humans? The examples of wild life initially provoked our interest. It gave us the first hint that endocrine disruption is a significant problem.

Hormone disruption in animals because of pesticides

One of the wild-life studies we describe is the study of male western gulls (sea birds) that were partially feminized. The male gulls developed ovaries. Female gulls started establishing pairs with other females in the bird colonies where they were supposed to be breeding. This is not a normal pattern. This female-female pairing started appearing when in their breeding area, off-shore from LA, a lot of DDT was being dumped. These gulls were eating fish contaminated with DDT. Then the DDT was cleaned-up, and now, 20 years later, the female-female pairing has entirely disappeared. It came when their food became contaminated with DDT, and it went again when the DDT was cleaned up.

There is the study of the US alligators living in contaminated lakes in Florida. The lakes are contaminated with several POPs, different agricultural pesticides and herbicides such as kepone. These alligators started to develop reduced size penises. Over the last 2 years new research has showed that the same effects can now also be observed in regions with not such high concentrations of agricultural pesticides.

Another intriguing study involved a type of hawk,

kestrels, (a bird of prey). It showed that if these birds were exposed to dicrofoil, a common agricultural pesticide that mimics estrogens, the male offspring are behavioral subordinate for life and can not reproduce.

There are now a number of animal studies which all show new evidence of the effect of endocrine disrupting chemicals. Mice exposed to dioxin or phtalates (plasticisers often used in children's toys) have decreased sperm counts as adults. Monkeys exposed to dioxin, develop endometriosis.

Effects already occur at very low levels of exposure

Another stunning study was that of infant chimpanzees exposed to PCBs. PCBs are one of the focal points of the POPs treaty which will be negotiated in Bonn next week. These chimps developed a hyperactive disorder. In the US hyperactivity disorder is a frequent problem in schools. The laboratory who exposed the infant chimps to PCB made a typing error when sending the researcher, who was going to carry out research on several toxins on the chimps. The lab wrote that the chimps had been ex-posed with 10 times higher levels than they had really been exposed. The researcher later said that, has she known that they where exposed only so little, she would never even have done the research because she could not believe that an order of magnitude lower than thought would have any effects.

A further important break-through in the research of endocrine disrupting chemicals was also discovered by accident. This is the case of Dr. de Sotto and her breast cancer research. Her breast cancer cells suddenly from one day to the other started growing wildly. At first no-one could understand why until they found out that the manufacturer of the test-tubes had changed the composition of the test tubes and added neophenol. This is how neophenol was identified as one of the potent endocrine disrupters.

Hormone disruption in humans, birth defects follow pesticide patterns

Best known exposure of endocrine disruption on humans is the case of DES, a medicine which many women used in the 60ties to reduce the change of miscarriage. It is a very dramatic case. The most important message of that case is that the impact of fetal expo-

**Involuntarily, we are
all part of a
global experience**

alligators started to develop reduced size penises. Over the last 2 years new research has showed that the same effects

sure may not be manifest until decades after exposure takes place. Often only teenage or adult children from mothers who used DES suddenly developed severe pathologies, particularly in the reproductive organs.

Another study looking at the effect of endocrine disruptors on human investigated the pattern of birth defects in the largest agricultural state of the US. This research shows a dramatic increase of risk in birth defects according to the geographic pattern of pesticide use. It also showed that babies who were in the womb during spring-time pesticide spraying would be most likely to develop birth defects.

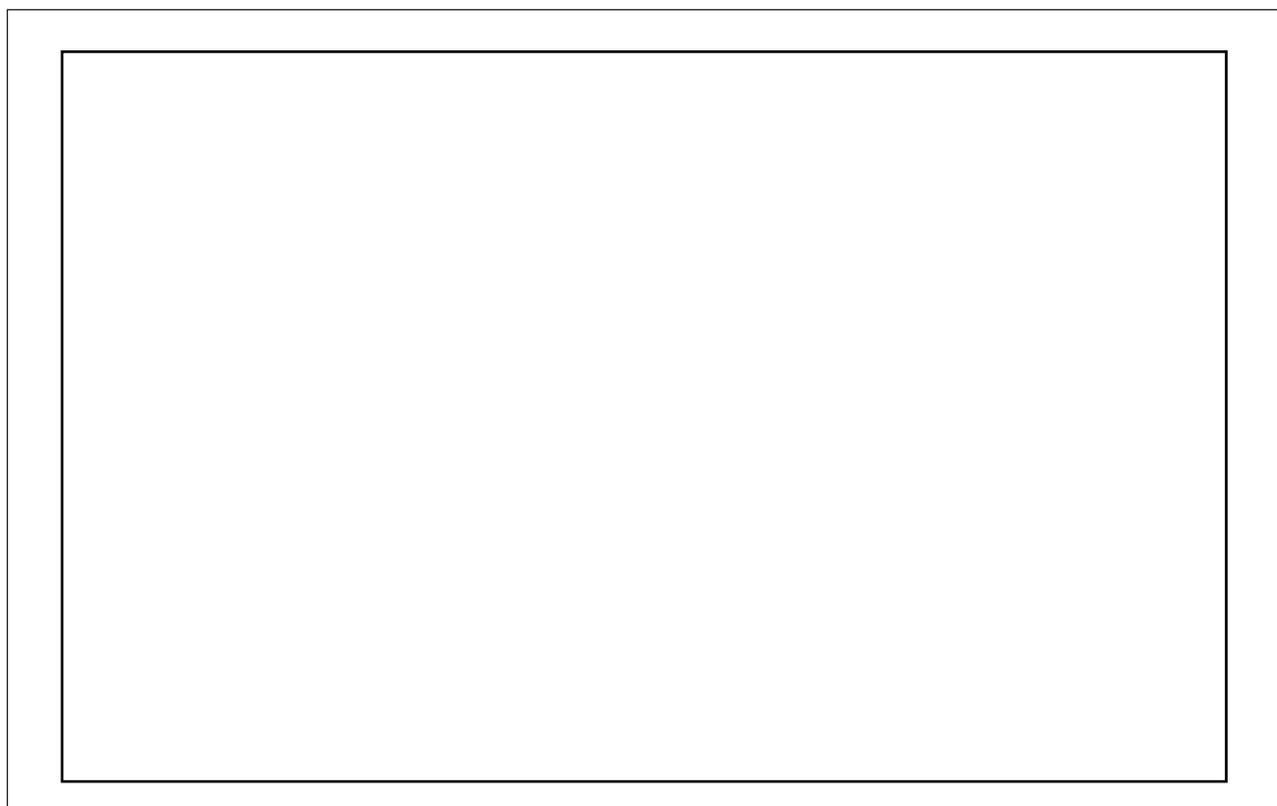
Most of you will be familiar with the Great Lakes study. Two different groups of scientists looked at fish consumption and the effect on the development of children. If the grandfather had been a sports fisherman who had brought lots of fish to the table as his daughter grew up fish polluted with PCBs – which his daughter accumulated in her body, a direct link could be established to developmental disorders in her chil-

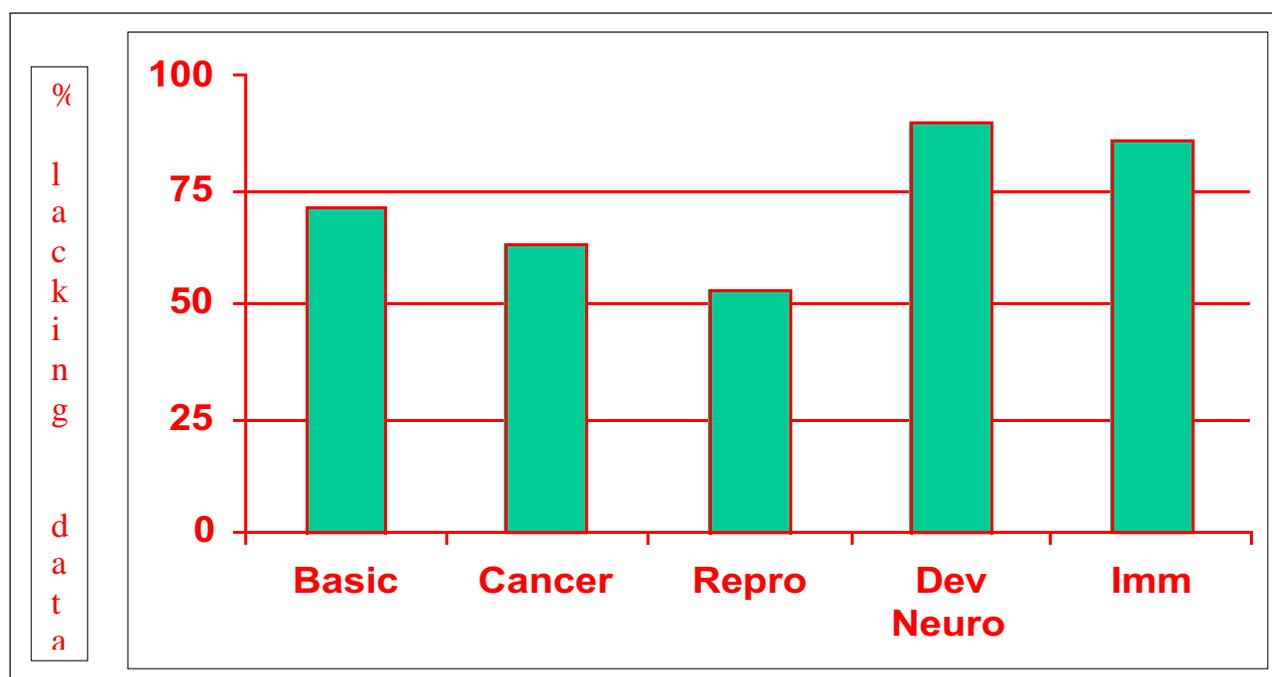
dren. Other disorders in children which could be linked to PCB polluted fish consumption of the mothers are reading disabilities, a general 2 years retardation in mental development, and a significant decline in IQ (intelligence rating). While the mothers with the most disabled children had higher levels of PCBs in their blood, it was not extremely high. They had levels which many young people in the US currently carry. These disabled children are the results not of extreme high levels of PCB pollution, but of what is now considered as normal background levels.

Decline in children's IQ linked to fish contaminated with PCBs

Since we published our book *Our Stolen Future*, a huge amount of studies have been done on the effect of endocrine disrupting chemicals.

What we are proud of, is that our book stimulated a number of governments to investigate further risks of endocrine disrupters. I could stand here for days to





Source: US EPA

describe all this research. What I would like to do is to identify series of major trends that have come out of this research and give some important examples.

Geographic of POPs contamination has become global

The biggest trend of endocrine disrupting chemical contamination, is its geography of global contamination. In the book we describe the possible path of migration of a PCB molecule. In essence, it shows how global transportation takes place. All volatile compounds migrate. Through condensation these PCB molecules come into the atmosphere and will move towards high latitudes and high altitudes and also the deepest oceans (Research published in "Nature", PCB was found in whales which feed only in deep oceans). A new development is that because of global warming, glaciers are melting faster and thus there is a re-mobilization of POPS. This is a new problem

Number of Chemicals involved expands dramatically

The list of chemicals involved is expanding dramatically. More tests show that more chemicals are unexpectedly endocrine disruptors. Bisphenol-A, which is found in most plastics and was invented in 1938 as an estrogen. It was intended for use in medical science where it

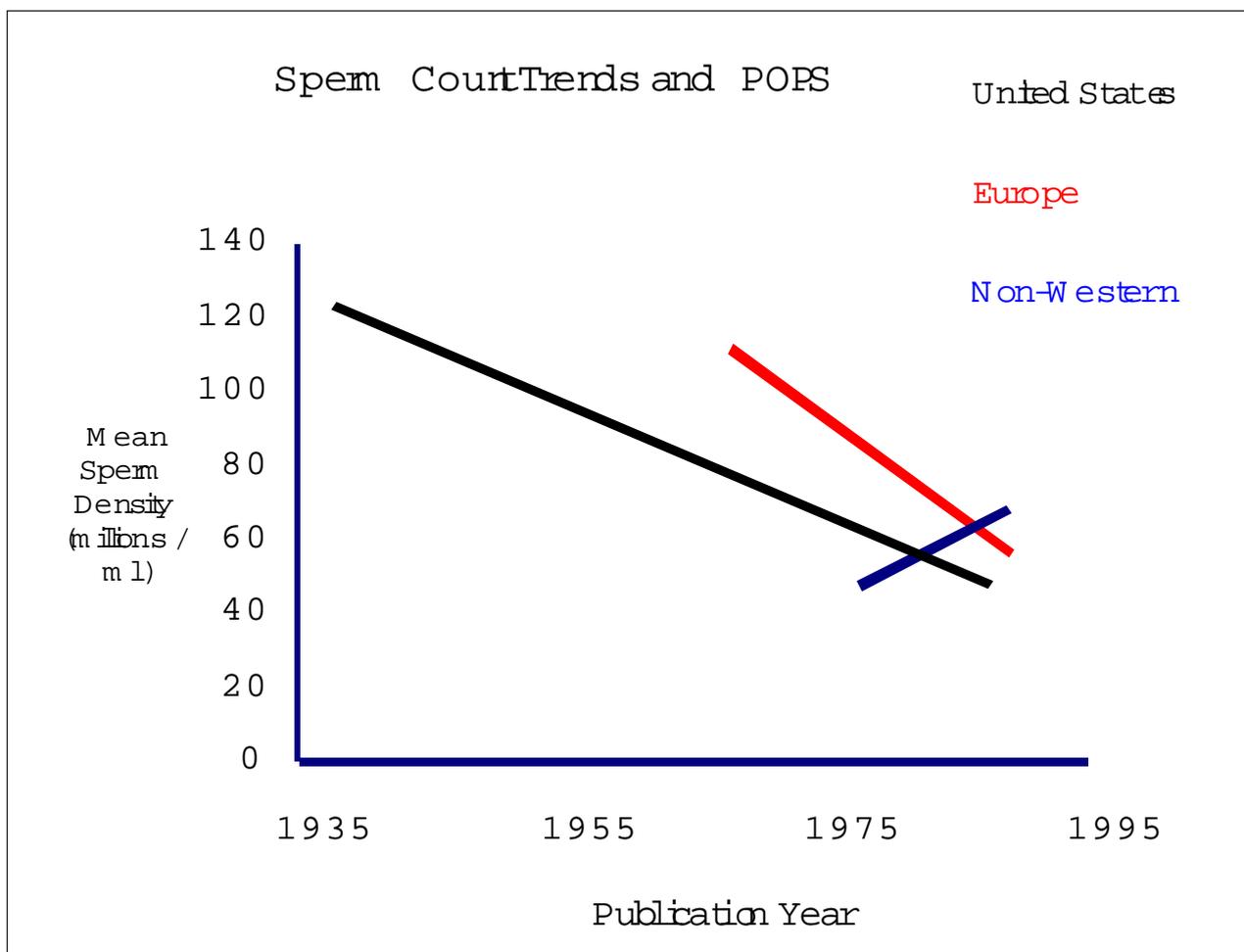
was replaced by newer alternatives and put on a shelf until a smart polymer-chemist discovered that by polymerizing it you could make it into a plastic.

Bisphenol F is other newly discovered endocrine disrupter. It was called Becolite, and was the first miracle plastic brought on market in 1909. It is now known to be an estrogen mimic. We have thus been living with these endocrine disruptors for almost a century now.

We are seeing some responses to these new discoveries. The EU banned phthalates in children's toys. Not because science is 100% certain that phthalates cause illnesses, but because there is a great evidence of risk and many other ways exist to make children's toys. They apply the precautionary principle.

Our ignorance remains vast

Despite increasing research and a growing amount of information on endocrine disruptors, our ignorance still remains vast. Graph 1 by the US EPA (Environmental Protection Agency) shows this ignorance. Of 3000 chemicals used in quantities of at least a million pounds per year, most have not been tested on basic health effects or on cancer. 91% of 3000 hi-volume



Swan et al. 1997

chemicals have not been tested for developmental-neurotoxicological effects and almost 75% have not been tested on their ability to create mutations and birth defects. This graph shows our astounding willingness to be global laboratory animals.

Message system effected broader than first thought

The impact of chemicals on our bodies message systems is much more complex than we first thought. We began by looking at estrogen mimicking chemicals and asked if some of these POPS are able of mimicking estrogens. Then our quest was broadened to include the question if POPS could also block estrogens. Now research has been broadened to look not just at the hormone estrogen but also at progesterone and thyroid hormones. Scientists have started to look at all chemical message systems in our bodies and are trying to find out which ones are capable of being disrupted.

We still have a long way to go before we have answers to these questions but we now know that our early focus was too narrow. We should look at behavior and intelligence and at the immune system.

My background is in ecology and biology. That is why I am fascinated by a study which came out a year ago looking at the relationship in plants that fix nitrogen and how they can be effected by the hormone disrupting impact of PCBs.

Nitrogen fixation is crucial to the way ecosystem works. We all need nitrogen fixation to live. In this plant which was studied, nitrogen fixation takes place because of a bacteria which communicates with the roots of the plant. This relationship is mediated by hormones. Hormones which are related to human estrogen. The amazing finding of the study is that there is a whole

lot of similarity between the plant's type of estrogen and human estrogen and that the plant's message system can be disrupted by PCBs. This is another illustration of how broadly we have to think about POPs interfering with crucial chemical signals that make life possible.

Low levels are giving worse effects

Another key issue is the level of contamination at which risks become important. A study of the university of Missouri, Columbia, looked at the effect on mice exposed in womb by bisphenol A at very low levels which could 10 years ago not have been measured. It showed that even at 2 parts per billion exposure in the womb, there is an increase in prostrate size and at 20 parts by billion, sperm count decreases. These results were criticized by industry. They said that they did the same test themselves and got other results and that therefore the research was wrong. It was not until now that an independent Japanese laboratory repeated this work and got same results as Dr. Lafarge of the university of Missouri.

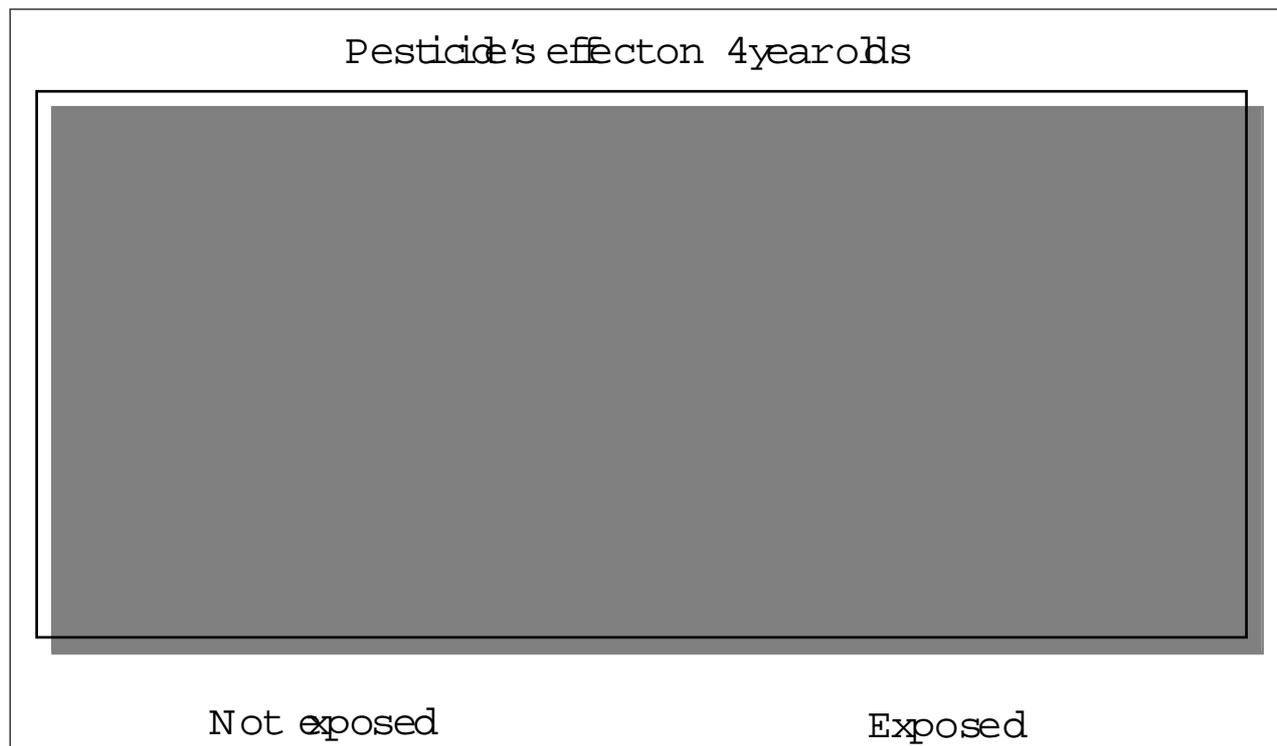
Another study showed that the effect of phthalates cause a reduction in masculinity of mice in the womb.

The study shows that intermediate levels of exposure are causing greater effects than high or low levels. At 200 nano-grams per gram one first finds a large increase in prostrate weight, then, at intermediate levels, one finds a decrease in prostrate weight compared to control groups. At low levels phthalates are not destroying the tissue but interfering with the messages of hormones. At high levels, there is tissue destruction and no longer message interference. It is at mediate levels that most damage is done. This violates one of the most used assumptions in toxicology. It has always been assumed that the dose makes the poison. All these tests are done at high levels until they see no effect. So effects at low level are never found because they are never looked for since we always assumed that the lower the dose the lower the impact. This is a very important discovery.

4 year old children in Mexico exposed to pesticides have retarded drawing abilities

Exposure in womb give life-long effects

Another research question is how womb exposure effects childhood and adult health. A Danish pediatrician, Dr. Skageback, showed how womb exposure set



the stage for adult testicular cancer. A great number of studies look at the reasons of the reduced sperm counts in industrialized countries related to POPs. Laboratory's are now trying to redefine how to look at breast-cancer and other cancers by looking at what happened in the womb. There are no fix results yet, but several studies are underway.

Mixtures are causing unexpected damage

Another study of Dr Porter of the University of Minnesota looked at what happens when you mix different chemicals. We have 100s of chemicals in our blood, but usually we test for the effect of each chemical individually. This study took nitrates, a common part of water pollution, and combined that with low levels of pesticides. Individually each of these pesticides combined with nitrates cause no effect. However, the mixture of the different pesticides and nitrates dramatically altered aggression and the immune system of the mice.

Effects now visible in children

In the US we are experiencing a puzzling decrease in age of puberty in women. One recent study, which was published in "Nature" last year, hints that there might be a link with endocrine disruption. In research, female mice contaminated with bisphenol-A had, showed that exposure can reduce the age of puberty in mice.

Another dramatic study by E. Guillette looked at the effect of exposure to children to pesticides. She studied children from a agricultural area in Mexico where the mothers and children were exposed without protection to pesticides and compared them to a control group in a non agricultural area. She took the children through a normal test and found dramatic differences of children living in a high-pesticide areas, compared to children living in a low pesticide areas. The graph shows the difference in drawing abilities of two 4 year olds, one exposed and one not exposed to pesticides.

Phase out persistent, bio-accumulative, substances
These recent research results show a need for policy changes that will protect the future generations from further endocrine disruption. The problem with today's policy is that it is based on testing chemical by chemical looking at the effect. We know this approach will

not work. It will take thousands of years to go through the infinite tests of each chemical and their interaction with all others. We have to step back from a chemical to chemical approach and take a series of new steps.

The best example of how we should proceed is probably the policy of the Swedish government. They have based their policy on a set of basic principles for 'sustainable chemical policy'. This policy acknowledges our ignorance. It acknowledges that we always get blindsided. That we always find side effects we never thought about. As we did not think about endocrine disruption.

Everything that is bio-accumulative should be taken out of commerce. As it bio-accumulates we can not call it back when we suddenly find out it is having some dangerous side effects. Therefore the basic principle is to take all bio-accumulative chemicals out of commerce. The Swedish government developed proposals how this can be achieved. They are beginning by taking the bio-accumulative chemicals out of products that are released into the market over a 7 year period. For products that are used in manufacturing processes they give a time frame of 15 years. Manufacturers can thus plan ahead. Politically this is a viable path. Governments should, identify a series of time-targets and than push ahead to reach these targets. Unlike the claims of industry, the Swedish government says they say we need no prove of harm, but instead they use the precautionary principle.

From a scientific point off view the Swedish government's approach is the only justifiable one. We have the following dilemma's:

- Nonmonotonic dose response curves are common
- Timing can be more important than amount
- Long delays between exposure and effect
- Mixtures with interactions
- Epidemiology is a blunt instrument at best.

What we know from laboratory and animal studies tells us that epidemiology may NEVER prove causation with scientific certainty.

Therefore, hormone disruption requires the precautionary principle. So when animal studies reveal plausible health risks for ED chemicals, reverse the burden of proof. We should phase out persistent, bio-accumula-

tive materials entirely. Not just out of products but also out of processes.



Presentation by
Dr. John Peterson Myers,
Director, W. Alton Jones Foundation and co-author of "Our Stolen Future"

About Dr. John Peterson Myers

Dr. Myers is Director of the W. Alton Jones Foundation, which is supporting efforts to protect the Global Environment. He is co-author of "Our Stolen Future" (1996), the first book to piece together the compelling evidence from wildlife studies, laboratory experiments and human data and to lay out the emerging scientific case regarding this until recent largely unrecognized threat.

3 | Effects of Perinatal Exposure of PCB's and Dioxins on Child Development and Lactation

The 'Dutch PCB/dioxin-breast milk study'

I would like to present the research results of a Dutch study on post- and pre-natal effects of PCB and Dioxin. The sources of these compounds are quite different. PCBs are manufactured, we find them in lots of products which we use. Dioxins come from combustion processes in which certain type of plastics are burned, particularly waste incineration. During which dioxin is generated as a by-product. When dioxins are generated during a burning process they will move in the air, come down on the land, for example in a pasture, where the cows will eat them with the grass. The cow meat and milk will then contain dioxins and thus enter the human body through the food chain. As human beings are at the end of the food chain they take in the highest amounts of POPs.

Let me first explain why it was decided to carry out such research. Contaminated cow milk was 10 years

ago a great issue, whether it could affect the health of the population. In addition it became clear that levels of dioxin in breast milk are very high, especially in Germany, Holland and Denmark. So there were even bigger concerns about breast milk being unsafe for babies. It is also well known that persistent organic pollutants can cross the placenta easily.

Studies done in US followed children in Michigan and North Carolina, looking at the effects of exposure from PCBs taken-in by eating fish.

The studies found negative effect on school performance at 11 years of age in the

Despite POPs contamination, breast-fed children did better

Michigan study, and in North-Carolina on pre-school performance, but not afterwards. These studies were done in mid-80ties. Laboratories were then still limited to 9 non-grams per liter. It was impossible to measure dioxin levels in human fluid tissue. It was for these rea-

sons that the Dutch government initiated a study to compare breastfed children with formula-fed children. We know that the content of PCB and dioxin in formula milk is lower because the animal fat is removed and replaced by vegetable oil. Apart from the Dutch study, the same study was done in Denmark and Germany but 3 years later. In Denmark one of the reasons for heavy exposure is that people eat blubber from wales which have high levels of PCBs and dioxins.

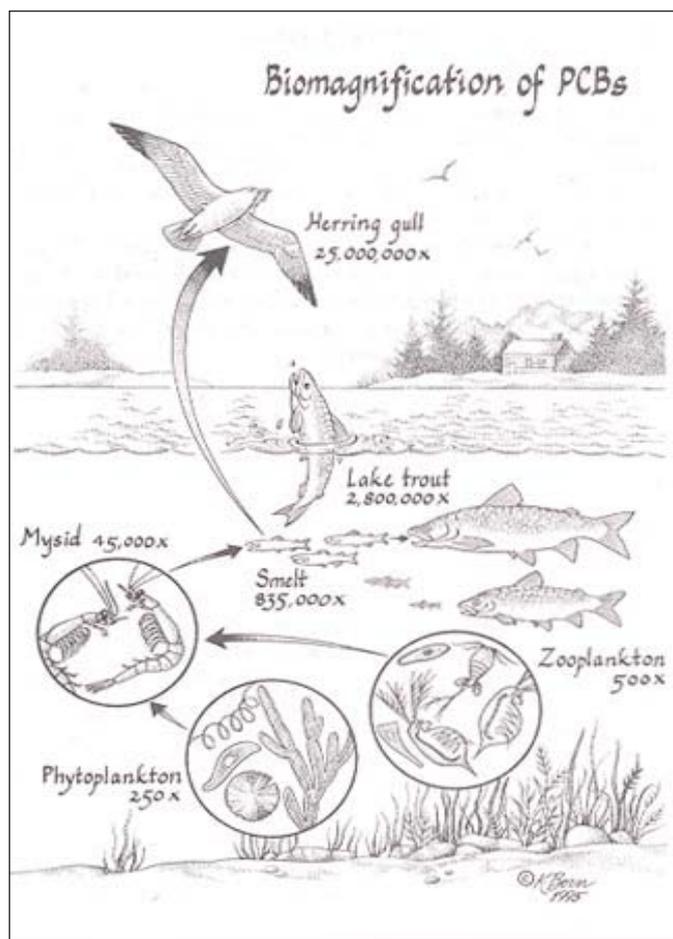
400 Child-Mother pairs

In the Dutch study, half of the research population lived in Rotterdam, an industrial area, and half in Groningen, a non-industrial area. The study looked at the effect of perinatal exposure of PCB and dioxin on cognitive and neurological (motor) development. The study should show if there is a difference in effect of breastfed versus bottle-fed children regarding long-term development.

The children were checked at 2 weeks, 18 months, 42 month and 6 years of age. The inclusion requirements were that the children were either 1st or 2nd born. They should have no abnormalities. It should be a pregnancy without complications. The study was limited to Caucasian children, because there is a difference in non-Caucasian and Caucasian in cognitive development. For the study the breastfeeding group gave complete breast feeding during a 6 weeks period.

We determined the levels of PCB and dioxin in cord blood plasma to define pre-natal exposure level, and in breastmilk to define post-natal exposure levels. We also determined the PCB and dioxin content in formula used for the bottle fed group. At 3,5 years, blood was taken from 70% of the population in order to detect PCB and dioxin levels.

We carried out several tests to measure the cognitive and neurological development at different stages, at birth, at 18 months and at 42 months of age. In these later tests, 70 to 100 items are tested during one session, which takes place at the home of the child. Furthermore we filled out a detailed questionnaire which covered many items in order to identify the characteristics of the group such as weight at birth, education of the parents, age of the mothers etc. For the Dutch



study we had a total of 400 mother-child pairs of which half were breast-fed and half formula fed.

Effects of pre-natal exposure

The level of exposure of the 400 children at pre-natal level was roughly the same for all. There is a post-natal difference between the formula and the breast fed group.

If you look at PCB levels of the breast fed group one sees that they are 3-4 times higher than formula fed group at 42 months of age (3,5 years). The breast milk group was heavily contaminated with dioxins (in TEC/kg fat) and PCBs. For the formula group we could not detect dioxins nor PCBs in the formula milk. Thus at 3,5 age the breast fed group had significantly higher levels of dioxin and PCBs in their blood than the formula fed group.

The effects of the pre-natal PCB exposure at 18, 42 and 72 months of age can be summarized as follows:

Cognitive

- At 18 months: no effect on cognitive development
- At 42 months: effects of pre-natal exposure on cognitive development
- At 72 months: no effects detected (preliminary)

Motor development

- At birth: Prenatal effect at birth (high plutonia)
- At 18 months: Slightly adverse effect
- At 42 and 72 months: No longer an effect noticeable.

There is a dose-related relationship between the sum of the PCB in maternal plasma and cognitive skills.

No negative effect of breastfeeding or older motherhood

However, the interesting result of the post-natal exposure showed that even though the breast-fed group received higher levels of both PCBs and dioxins they did better in the neurological tests, fluency of movement, than the formula fed group. It seems that the positive aspects of breastfeeding compensate for the higher intake of dioxins and PCBs.

Another interesting but difficult aspect is that, when looking at the effects of PCBs on 6 years' olds, the negative effects of POPs are reduced when the mother is older. We found an interaction factor for PCB exposure and maternal age. It is a complicated issue because on the one hand the older the mother, the higher the PCB levels, but also the higher the education level. In children born of younger mothers, this effect was no longer detectable. It seems that children born from older mothers have a better environment for their development. The average medium age of the mothers was 29. The definition of younger mothers were women younger than 25. The youngest mother in this study was 18.

Contamination with POPs already at 17 weeks of gestation

The effect of pre-natal exposure to PCBs and dioxins seem to have a more important effect than the post-natal exposure. We therefore wanted to look closely at the effect of contamination through the placenta. We took 9 fetuses which died in utero and did an abduccion. There were no signs of masuration of these fetuses. We took a sample of tissue from the brain and the

liver and analysed several PCBs (180, 153....). The gestational age of the fetuses post-mortum varied between 17 and 40 weeks. Their weight from less than 0.162 to 3.2 kilogram. We could detect levels of PCBs already early in gestation at 17 weeks in the fat, liver and brain. Other aspects which we found were that if you look at the sum of PCBs in fat these are within the range of values which you find in breast-milk. There is a very good transfer through the placenta of PCBs already from early gestation. This is a critical aspect: that already from early gestation you are able to detect endocrine disrupting materials in utero.

PCB exposure of children has negative effects on cognitive and motor development

One of the main conclusions of the Dutch study is therefore that pre-natal, not post-natal, PCB exposure is associated with negative effects on cognitive and motor development from birth up to the age of 6 years.

Another main conclusion is that breastfeeding, despite the higher levels of toxins transfer, is better for the child than when it is purely formula fed. In the breast-fed group we could not detect any adverse effect on the child up to 6 years of age. Breastfed even did better in fluency than the formula fed group.

Other findings were that background levels in the studied population are the highest encountered in W-Europe regarding PCB and dioxin in breastmilk. Also, breastfed children had 4 times higher levels of PCB and dioxin in blood at 3,5 age than formula-fed children.

Since we had opportunity to study breast and formula fed babies, we were also able to detect what is the influence of PCB body-burden on the lactation performance

Negative effect of POPs on breastmilk volume and fat content

We studied the effect of body-burden on breastmilk volume and fat content. The fat content was analyzed with help of total quantity of fatty acids in the fat sample. Why were we afraid of the effect of PCB on lactation? Because the estrogen mimicking studies on ani-

mals have shown that high levels of estrogens negatively affect lactation and therefore we wanted to research in how far this was also true for humans. The results were in effect similar. The higher the PCB levels, the lower the volume of breastmilk over a 24 hour period. If one looks at fat content, the higher the PCB levels, the less the content of fat in milk. This is an important issue in terms of public health. So the next conclusion is that exposure to PCB negatively relates to milk volume and fat content of human breast milk.

Are we afraid of what is going on?

Yes, especially what is going on in utero. Programming in utero is affected.

Are we content with the situation at present?

No, it is important that we continue the study up to adult life to detect other adverse effect which may occur later in life and that governments start policies to protect exposure in utero.

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Prof. Dr. E.J.Boersma

Professor Boersma is Pediatrician at the University of Groningen, Department of Obstetrics and Gynaecology, Nutrition and Development Unit. He is coordinator of the Dutch PCB-Dioxin Study in the University of Groningen. This study was completed in 1999.



4 | The role of vitamins and minerals in reducing the health effects from POPs

No life possible without essential nutrients

At our laboratory we test essential nutrients, which are the opposite of toxins. Without essential nutrients we become ill and die. Essential nutrients can also help to get rid of toxins in our bodies, they can help to detoxify.

When we have a lack of essential nutrients in our bodies, because the food we eat is poor, or because we are exposed to a lot of toxins which 'eat away' essential nutrients, our body reacts. First we get general complaints, like headaches or fatigue. When we have a

great deficiency of essential nutrients over a long period of time, than we start getting specific illnesses. Without essential nutrients life is not possible. That is why the authorities have created lists of daily recommended allowances.

Vitamins against toxins

These recommended allowances are supposed to avoid deficiencies. They aim at assuring what I call 'minimal health'. But often we need more than these minimal DRA's, for example when we are ill, under a lot of stress, travelling etc. Also, our food produced with

artificial fertilizer and pesticides contains less and less essential nutrients. Research has shown levels of vitamins and minerals in 'normal' food is much lower than

Levels of vitamins and minerals in food from conventional agriculture are lower than in organic products

in organically grown foods. It is possible to make up part of this lack of nutrients in non-organic food by taking supplements. However, we need to be careful with supplements such as vitamin pills, because some of the essential nutrients should not be taken in too large doses either as after a certain point they can become toxic too. This is the case for example with high doses of vitamin A and D. The levels one needs are very different from individual to individual. Some people need 10 times more than others. This also depends on the levels of contaminants in their bodies, because as I said, the body needs more vitamins and minerals to fight the contaminants.

There exist 20 elements, amino acids, which are strictly essential. Then we have also vitamins, essential fatty acids, and semi-essential acids which the body makes itself, but not everybody makes sufficient. These essential acids help to protect our bodies against toxic substances. Many vitamins have functions in detoxification, for example A, B, C and E. If you have a deficiency of these vitamins, your body is less able to detoxify. Minerals – trace elements – are also necessary for detoxification.

Selenium helps against cadmium contamination

A few years ago I studied toxic elements such as cadmium, lead...etc. Than more and more research showed that certain minerals can help to take toxic elements out of our bodies. For example, the mineral selenium will help against a cadmium contamination and zinc will help against lead contamination. These are not fast processes, one needs to supplement with zinc for a long period of time.

Selenium also helps to reduce the negative effects of mercury. Some people still use mercury in dental filling (it is of course best not to have any fillings at all). When amalgam (mercury) is added to dental tissue the cells around the filled tooth start to die. If we use selenium

in the mouth, the dental tissue becomes healthier again.

If you take a plane you are exposed to radiation, which like x-rays, is toxic. If you eat food which has been ionized or which contains pesticides or nitrates, that adds to the toxic load in your body. These toxins lead to a free-radical pathology. With vitamins, minerals and amino acids we can fight free-radicals.

Reducing exposure to toxins and increasing essential nutrients

To conclude, as we are exposed to a lot of environmental pollution it is important to try and detoxify our bodies. Detoxification can only be successful when we start by reducing the

intake of toxins, for example by changing our consumption habits but also by lobbying to reduce POPs emissions as WECF

does. The next step is to increase our intake of essential nutrients. These are processes of several months, even years. For example, for those of use who want to have children it is advisable to start such a detoxification process a minimum of 3 months but preferably 12 months before conception. This applies as much to men as to women.

For those who want children it is advisable to start taking vitamins and minerals 2 months before conception

About **Dr. E. Vogelaar**
Dr. Vogelaar is director of the European Laboratory of Nutrients, Bunnink, The Netherlands. The laboratory carries out blood analysis of essential nutrients and heavy metals with a medical prescription, and based on this provides recommendations on detoxification.

5 | NGOs raise awareness about the hazards of POPs and influence policymakers: Examples from Russia and IPEN

20

The presentation started by showing a Television PSA produced by Eco-accord.

The text of the television PSA is:

MEDICAL AND MUNICIPAL WASTE INCINERATION IS THE TOP SOURCE OF TOXIC DIOXIN IN THE ENVIRONMENT.

GETTING INTO THE HUMAN BODY AND ACCUMULATING EVEN IN BREAST MILK, DIOXIN THREATENS LIFE."

This social advertising is part of Eco-Accord's activities as a member of the International Pops Elimination Network (IPEN).

Last year with the help of WECF, we took part in the NGO preparatory workshop held by IPEN in Geneva. The meeting was organised as a preparation for the third Intergovernmental Negotiating Committee meeting (INC3) which aims to work out a legally binding treaty for the elimination of 12 Persistent Organic Pollutants (POPs). We were greatly impressed by the enthusiasm of IPEN people working hard to eliminate POPs.

The reason we joined IPEN is that we completely share its concerns over the influence on people's health and the environment. No one single country alone will be able to solve the POPs problem. It needs a global solution and a global effort.

Many NGOs are involved in trying to solve the POPs problem. Some of them join IPEN as it helps them in getting free access to information and connecting them to international policy activities. The Network now unites more than 100 NGOs from all over the world. The IPEN activities are not only sharing informa-

tion about problems of POPs and their solutions, but IPEN members also try to influence their governments and international agencies. IPEN tries to raise general public awareness in this field, through workshops, media campaigns, films, publication aimed at the reduction of Persistent Organic Pollutants.

At Eco-accord we did not just want to be passive members which do little else than join the list-serve of IPEN. We wanted to be more active. So we were glad that IPEN came forward with idea of focal points. Any organisation that wants to be active within the IPEN network can become a focal point. In Armenia there is one and in many other countries. There are approximately already 4 in NIS regions.

Our activities as a focal point for Russia consist of two major parts. The first is information dissemination, such as making the Public Service Announcement – PSA – which you just saw. These short tv-films, attract a great audience and raise their awareness about dioxin pollution. This PSA was broadcasted on all Russian main TVs, and very frequently. Furthermore, we published an issue paper on how to prevent the threat from POPs. This issue paper was broadly disseminated throughout Russia. All the public interest groups who subscribe to our list-serve got a copy. The issue paper is completely in Russian.

This short television film on the problems of incineration was broadcasted by all main TV stations in Russia

We are also very active in information dissemination through email. We have a broad list-serve, and we do not just have Russian subscribers. Our subscribers

include public activists from the whole former USSR region. As to POPs, we prepared different news issues on the INC negotiations, the main issues under negotiation now and the IPEN activities. We are very proud that several more NGOs from different countries of the former Soviet Union now joined IPEN

In Spring 1999, Eco-accord organised a workshop with more than 30 people representing different sectors; from NGO, media, experts, institutes, state officials and the state committee on environment. It was a real success. It was the first multi-sectorial workshop where we all talked about one and same thing, the elimination of POPs.

ECO-Accord also is doing its best in establishing close cooperation with state officials in the field of environmental protection. This is probably the most difficult part of our work. In countries of transition it is tremendously difficult. State officials think that public people

**Russia has 30.000
tons of PCB stockpiles**

can not be well qualified specialists and therefore it is not important to work with them. They do

their best to avoid public participation. Nevertheless, since September 1999 Eco-accord managed to establish good relationship with state officials dealing with the pops problems. Before INC4, Eco-accord we also took part in the preparatory meetings of the Russian state officials. We talked about the specific Russian problems in solving the POPs issue. There were very few NGOs there. The reason for that is that Russian NGOs are not well aware about POPS problem. Another reason is that it is also not easy to work with state officials.

At the preparatory meeting were representatives of the State Committee on Environment, Ministry of Finance, Ministry of Economy, Ministry Fuel and Energy, Ministry of Defence. They tried to put together a joined position for the INC4.

I will present this official position at the IPEN steering committee meeting next week. Let me give you a brief summary of what it says. As some of you may know, 67% of the Russian territory is permafrost area with very low temperatures. This area, like Northern Canada

and Alaska, is an accumulator of POPs from all over the world. POPs take on a volatile form and transfer in the air from hot areas to cold areas. So this is one of Russia's problem, the deposition of POPs such as PCBs in our permafrost area. At same Russia is a main contributor to global PCB pollution. We have 30.000 of tons of PCBs as stockpiles.

Understanding the serious nature of the POPs situation, Russia actively participated in the development of a Protocol on Heavy Metals and Persistent Organic Pollutants under the UN ECE Convention on long-distance, trans-boundary air pollution. This Protocol was open for signing at the Fourth European Conference of Ministers of the Environment in Aarhus. Unfortunately, Russia didn't sign the document, referring to its economic difficulties which do not permit implementation of the Protocol's provisions.

Currently Russia is participating in the preparation of an international convention on POPs and plans to insist on its interests in the negotiations in Bonn. Just before coming here I took part in the preparatory meeting hosted by the State Committee on Environment. Russian official position on POPs convention was under discussion.

This is Russia's official position; the country will not oppose the elimination of the twelve selected 12 POPS as listed in the Treaty. The elimination process should start after the Convention comes into force.

However, Russia will propose some exceptions. At INC4 in Bonn the Russian official delegation will speak in particular for the temporary exclusion of DDT from the list of 12 POPs, designated for elimination. This is connected with the fact that DDT is still the only affordable means in the struggle with malaria and tick-borne encephalitis. DDT is still in use in more than 20 countries, because of its major role in combating malaria. Malaria poses a threat to some 2.5 billion people in more than 90 countries and contributes to at least three million deaths every year, according to the World Health Organization. Russia does not produce DDT any more, its use is prohibited everywhere and for any purpose except public health medical needs. Russia supports stands for temporary use of remaining stock of

DDT for public health medical purposes only.

In addition, the Russian military is opposed to the destruction of hexachlorobenzene as it is a military product used for creating smoke cover. At the same time Russian officials from the State Committee on Environment speak on support of alternative compounds which are more safe than this one. To begin environmentally sound elimination of hexachlorobenzene, it is important to find out whether hexachlorobenzene is produced in Russia? Who is its supplier? What compounds are used in other countries for the similar purpose? So according to the Russian officials the country will not oppose the elimination of hexachlorobenzene but it needs reasonable time period to eliminate this kind of POPs and its stock-piles.

Russia does not consider it viable to include the organometallic compounds in the "dirty dozen," in particular organo-tin compounds. Up until this point, there is no affordable alternative available in Russia which could be used for protecting the bottom of ships from algae growth.

PCBs is one more serious problem. Russia itself remains essentially the main contributor of polychlorinated biphenyls to the Arctic. On the territory of the country more than 40,000 tons of these substances are used in transformers as a dielectric. As was stated by the Committee on Environmental Protection, Russia now has

Hexachlorobenzene is used by the military as a smoke cover

two new ways to eliminate PCBs: one of them is high temperature elimination. It is an can be used as an industrial process. Another one is

more a reprocessing then elimination. Using a technologic process it is possible to get a new product from of PCBs. This product is environmentally safe and can be used further on. The Russian energy sector is also looking for alternative environmentally safe compounds to be used as dielectric. So according to state officials, Russia will not oppose the elimination of PCBs but it needs a reasonable time period to eliminate this kind of POPs and its stock-piles.

The forth problem is Heptachlor. It is used for under-

ground cable protection. Russia does not oppose its elimination but according to Russian state officials, the Convention must drive a phase-out of Heptachlor currently in use within a reasonable time frame. Still there is no concrete data on the amount of Heptachlor in Russia. The country does not produce this compound but there could be some reserved stockpiles of Heptachlor. So it is important to start an inventory process to determine the concrete amount of Heptachlor in Russia.

Dioxins is one more problem that Russia faces now. According to Russian officials elimination measures over dioxins can be used only after the inventory process is accomplished. As a by-product dioxins is not produced intentionally, but at the same time the amount of dioxin has the potential to increase significantly. The main reason for such a conclusion is in the trend to increase the number of incinerators and to focus on municipal waste incineration. Medical and municipal waste

Russians are not yet aware of the serious health threats from waste incineration

incineration is the top sources of severely toxic dioxin in the environment. The combination of intense public opposition to incinerators and strict environmental pollution regulation have forced the closure of many incinerators in industrial countries. As a result many incinerator companies are targeting developing countries and countries in transition where people are not yet aware of the serious health and environment threats associated with the incineration. Such a policy is troubling as it will lead to the inevitable increase in dioxin release all over the world.

One more source of dioxins in Russia are unofficial dumpsites which are always on fire as nobody is responsible for their management. In Moscow region for instance there is more than 200 unofficial dumpsites where one can find municipal as well as medical wastes. While burning such dumps release great amount of pollutants including dioxins into the air.

Having assumed that developing countries and countries in transition are on the receiving end of POPs contamination Russian officials consider it important that

the same allowances indulgence that are granted applied to developing countries should be granted to spread over countries in transition. In particular when reasonable time frame necessary for the country to implement its commitments under the global POPs Convention is under the discussion.

It is important to Russia that the Convention on POPs be signed by as many countries as possible. This will allow for the solution to the problem on the international level. Unfortunately, Russia itself could again encounter difficulties in signing the convention. The Ministry of Economics, the Ministry of Finance, and the Ministry of Energy consider that the economic situation in Russia does not make it possible to accept international obligations. It is possible to sign the convention only after achieving stable economic growth. The opposite point of view is supported by the Ministry of Foreign Affairs which considers the signing of the POPs convention to be important. In this case, Russia falls into the group of governments, actively solving the problems related to POPs, and which can count on financial and technical support in realising specific projects. These are the main problems the Russian delegation will speak on.

In Bonn Russian NGOs like Eco-Accord will lobby IPEN position within their national delegation. It would be useful if IPENers provide us with the information concerning the ways to eliminate PCBs as well as some information about alternatives to DDT. As far as I know there is an idea to start total vaccination instead of using DDT in the regions where malaria or other insect-borne diseases are a great threat. Your opinions on attitude towards such idea will be also useful for us.

We also would like to get some helpful information concerning raising public awareness in the serious health and environment threats associated with the incineration. Good practical examples in how the public has fought fighting against incinerators can be further used in our work to protect human life and the environment.

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6 | Recommendations after 10 years of fighting dioxin and other POPs pollution

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I was asked to formulate some recommendations for today. My organisation is called "Leefmilieu". We are an association which aim it is to support local action groups. I am the chairperson of Leefmilieu. Most of the active members are specialists in environmental issues; all of them are volunteers. They are engineers and scientists who share an interest in environmental issues. Our major expert knowledge deals with issues in relation with air quality guidelines and environmental permits of companies. We Volunteer to help people in our town who are worried about health and environmental pollution. We help people to find out about air quality and environmental permits given to factories. We are independent. We choose our own targets and depend financially entirely from contributions of our members.

Let me tell you something about a case of a Dutch town near the German border, Nijmegen. It is a town with 150.000 inhabitants, 450 industrial companies, a high incidence of cancer, and many respiratory disorders like asthma and allergies. We were asked for help and carried out an independent investigation. Our investigation showed that no less than 40 industrial plants emit carcinogenic substances, among others dioxins. The full list of emitted carcinogenics are:

- Beryllium
- Formaldehyde
- Dioxin
- PAHs
- Nickel
- Cadmium
- Arsenic
- Benzene
- Chromium

Furthermore our investigation showed that apart from industry, also household, traffic and background emis-

sions (in this case from Germany and Eastern Europe) add to the high dose of carcinogenics received by the inhabitants of our town.

Of the 40 plants, 4 emitted high amounts of dioxins:

- Power plant using coal as feed stock
- Fly ash processing plant
- Municipal waste incinerator
- Iron foundry

These 4 plants were all located in an industrial area which is close to a residential area.

Dioxin is a by-product of incineration processes and a lot of energy is put in diminishing the amount of dioxin released in the environment. At the waste incineration plant as well as at the coal-based power plant, measurements are done regularly. But Dioxin measurements are expensive and difficult. We found out that they were not done correctly. We had to complain about them. With a different technology (measurements lasting longer) the measurements were repeated, and done properly, and it turned out that the dioxin emissions were much higher than first registered. Recommendation: for measuring dioxin you need skilled scientists, well-equipped laboratories and enough money to do the job.

In most cases (as with the iron foundry) measuring dioxin is not common. In our case you have to be sure that there is a problem with dioxin, otherwise nobody will be willing to do expensive measurements. So: study the literature and be pro-active. For the international scientific and technological world this means: make all the information and the technology accessible to everybody.

In the Netherlands citizens do have a right to react on new plans for new permits for companies. According to our law on transparency, all information about the permits is open.

In the environmental permits Dutch companies get, the dioxin emissions are regulated. In the procedure leading to a permit all citizens have the right to read the concept permit and give their comments. For us, knowing what is going on in a factory, the transparency of the process and the possibility to react and to be heard are very important.

When a company in the Netherlands gets a permit, everyone can read this permit. Everyone, who wants to know, can read about the activities of the plant or factory: everybody can read how many emissions to air, water and soil the plant may release. This creates a public participation we think is very important. So we recommend transparency in regulations, public participation in permits procedures etc.

According to me and my colleagues at Leefmilieu, what is lacking in the Dutch situation is an adequate enforcement of the permits. Under Dutch law it is very difficult to bring to court a company when it is not working according to its regulations. Ironically it is easier to condemn a company for not paying enough

taxes than it is for breaking environmental regulations. And the profits made by breaking those regulations are so high that sometimes companies find it very hard to live up to their permits. So: Adequate enforcement of regulations of permits

Therefore, my recommendations for NGOs who work in regions where you are afraid that people suffer bad health from POPs pollution, particularly dioxins, it to:

1. Have the official measurements re-checked
2. Carry out independent measurements if possible
3. Identify sources of potential dioxin emissions
4. Get all the information on the environmental permits which these dioxin generators have and check if they are not breaking the law
5. If this does not exist yet, fight to obtain legislation which obliges companies and authorities to disclose all information on operation permits and emission levels
6. Lobby the government to adequately enforce the regulations and permits

We still have a lot of work in our country. But we are working on it and are increasingly successful. I wish you a lot of success with your work as well.

About **Marga Jacobs**

Marga Jacobs is professor in chemistry and biology at the polytechnic of Tilburg, The Netherlands and is president of the NGO "Leefmilieu" based in Nijmegen, The Netherlands.
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Annexes

1 | IPEN women's working group intervention to the Plenary of the INC4

Background

During the IPEN women's working group meeting in Bonn, the group discussed the contents of an interven-

tion. Susan Siew of WABA took on the responsibility of writing the statement and presenting it during opening plenary to the 120 governments at the INC4.

Thank you Mr. Chairperson,

My name is Susan Siew, I speak on behalf of the International POPs Elimination Network Women's Working Group, whose members are a diverse number of women from organisations worldwide, with shared concerns, experiences and skills to work with you at this historic moment to phase out and eliminate POPs.

We wish you PEACE and SOLIDARITY as you deliberate on the draft Treaty over the next few days, to bring about change in a chemical-tainted environment that has turned violent against nature, against men, women, children, our sons and daughters, and against infants who have yet to see the light of day.

It is therefore, not a cliché, to say that, not only are we borrowing from our children through our unsustainable live-styles and consumption patterns, we are, minute by minute, stealing their future.

Mr. Chairman, Ladies and Gentlemen, Research evidence is pointing to the impact of POPs on the ability of men and women to have healthy children, or even children at all.

There is also strong evidence that fetal exposure to POPs at current background levels is affecting the mental and physical development of our children.

The endocrine disrupting capacity of various POPs on children during early development may cause irreversible changes.

We therefore, depend upon your strength and moral courage to call on your governments and the institutions you represent, to give priority to the interest of our children and future generations their health and safety above the dictates of POWER, TRADE & POLITICS.

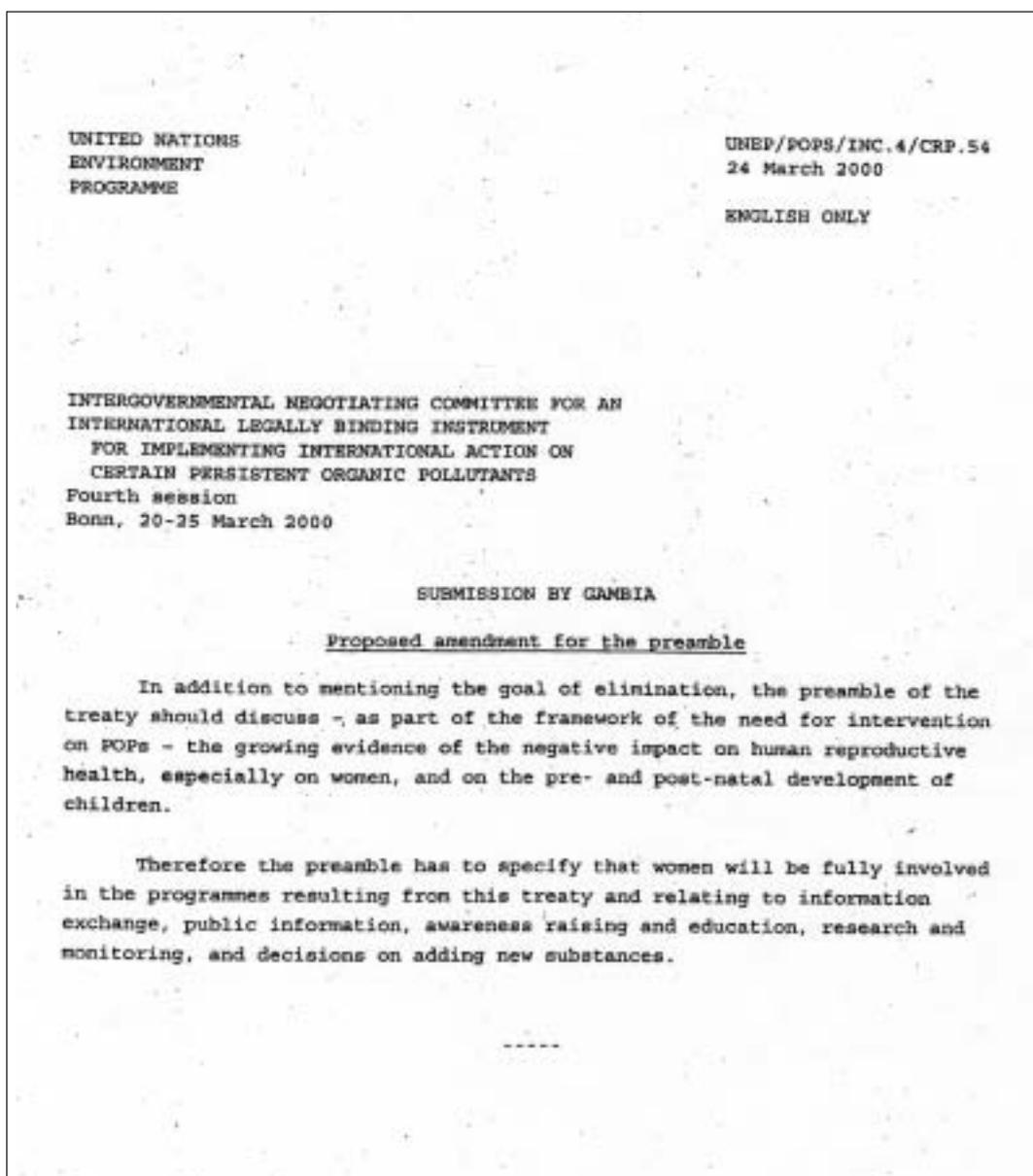
We thank you

Susan Siew
World Alliance for Breastfeeding Action (WABA) on behalf of the IPEN Women's Working Group

2 | IPEN women's working group intervention to the Plenary of the INC4

The text proposed by WECF and the IPEN Women's Working Group was adopted by delegates and submitted as their official text for input into the INC4. This

proposal has been adopted by the Chair as official proposals and will be discussed at INC5.



UNITED NATIONS
ENVIRONMENT
PROGRAMME

UNEP/POPS/INC.4/CRP.53
24 March 2000

ENGLISH ONLY

INTERGOVERNMENTAL NEGOTIATING COMMITTEE FOR AN
INTERNATIONAL LEGALLY BINDING INSTRUMENT
FOR IMPLEMENTING INTERNATIONAL ACTION ON
CERTAIN PERSISTENT ORGANIC POLLUTANTS
Fourth session
Bonn, 20-25 March 2000

SUBMISSION BY GAMBIA

Proposed amendments

F. National Implementation Plans

Women have to be adequately represented and consulted in development and implementation of the National Implementation Plan and should have access to all data, such as those produced by the monitoring programmes.

H. Public Information, Awareness and Education

Women, being in the forefront in horticultural activities in most countries, special initiatives will be taken to fully inform women about the risks of POPs to their health, especially to reproductive health and the health of the developing fetus and young children, and about protective measures. Information about contamination of breastmilk needs to be presented, together with the information about the critical importance of breastfeeding.

Section H (iv): Programmes for training of scientific, technical and managerial personnel should include workers in all sectors and particularly women.

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Page 2

I. Research, Development and monitoring

Section I.(c): Research on effects on human health should give particular attention on the impacts of POPs on the reproductive system of men and women and on the fetus, including differences in their susceptibility in the various stages of the life cycle.

Research should also focus on methods for detoxification from POPs contaminants.

3 | Publication in the Dutch magazine NCDO, reporting on the WECF workshop "Protecting Future Generations"

Overeenstemming op vierde UNEP-conferentie over uitbannen tien chemicalien 'Industrie moet onschadelijkheid stoffen zelf bewijzen'

30 Tien stoffen die al in lage doses schade kunnen aanbrengen aan ons voortplantingssysteem, moeten worden uitgebannen. Daarover hebben 121 VN-delegaties eind maart in Bonn op een conferentie van de VN-milieuorganisatie (UNEP) overeenstemming bereikt. Een belangrijke stap voorwaarts. Toch er nog weinig reden tot gerustheid. Nederland is het land met de op een na hoogste concentraties PCB's en dioxine in moedermelk. Over een verbod van deze stoffen willen sommige industrielanden, waaronder de Verenigde Staten, niet eens praten.

Er zijn in Nederland vijftig chemicalien aangemerkt als verdachte schadelijke chemische stoffen voor de voortplanting. Daaronder vallen dioxine, PCB's en DDT. DDT is weliswaar sinds begin jaren zeventig in Nederland verboden, maar deze stof is zo slecht afbreekbaar, dat het heel langzaam wordt afgebroken. In veel ontwikkelingslanden spuiten vrouwen het giftige bestrijdingsmiddel nog altijd (zonder de vereiste bescherming) over de landbouwgewassen. De VN-delegaties in Bonn besloten DDT niet te verbieden in ontwikkelingslanden waar het middel gebruikt wordt bij malariabestrijding.

Vis en melkproducten

PCB's worden voor uiteenlopende producten toegepast: als beschermlaag op hout, plastic en onder andere als ingrediënt in verf, lak, inkt en pesticide. Dioxine ontstaat als ongewild bijproduct in industriële processen. PCB's en dioxine komen door verbranding in het milieu. Mensen krijgen de stoffen via voeding binnen, vooral door de consumptie van vis(olie), zuivel- en vleesproducten. Visolie wordt in honderden verschillende voedingsproducten gebruikt zoals koekjes en crackers. De stoffen hopen zich op in het lichaam en

kunnen tot ernstige aandoeningen en ziekten leiden. Onderzoek wijst steeds vaker hormoonverstorende stoffen in de baarmoeder en in moedermelk aan als oorzaak van leerproblemen, neurologische verstoringen, verstoren aan het immuunsysteem, miskramen, lager IQ, misvormingen aan geslachtsorganen, borstkanker en onvruchtbaarheid. Bij mannen is de spermakwaliteit en kwantiteit is de afgelopen vijftig jaar in alle geïndustrialiseerde landen (van Denemarken tot Brazilië) gereduceerd en lijkt direct gerelateerd aan hormoonverstorende stoffen. Een ziekte waar in Engeland volgens Marie Kranendonk van WECF een op de tien vrouwen aan leidt, is endometriosis. Een aandoening die het functioneren van de menstruatie verstoort en gepaard gaat met hevige pijnen in het lichaam.

'In Engeland is er veel onderzoek naar deze ziekte geweest. Toch gek dat wij daar in Nederland vrijwel niets over horen', vindt Kranendonk.

Grote belangen

Ondanks de onomkeerbare schade die de stoffen aan het milieu en de mens aanrichten, lukt het maatschappelijke organisaties nauwelijks dit thema hoog op de politieke agenda te krijgen. 'Er staan grote belangen op het spel. In de Verenigde Staten stopt de industrie veel geld in onderzoek die de gezondheidseffecten van verdachte stoffen bagatalliseren', verklaart John Peterson Myers, co-auteur van 'Our Stolen Future' dat in 1996 verscheen. Dit boek bevat alle informatie over hormoonverstorende stoffen die tot dan toe bekend was. Ter gelegenheid van de conferentie in Bonn was Myers eind maart in Nederland bij een voorbereidende bijeenkomst van Women in Europe for a Common Future.

Het is daarnaast heel moeilijk om een direct verband tussen een bepaalde stof en een verminderde vruchtbaarheid aan te tonen. Myers: 'Het gaat over de invloed

van stoffen over een lange periode in het lichaam. Bovendien is de invloed van de cocktail van chemische stoffen zo complex, dat voor een ziekte of afwijking moeilijk een stof aanwijsbaar is.'

Voorzorgsprincipe

In de Verenigde Staten heerst de gedachte: zolang er niets wetenschappelijk is bewezen, moeten we niets doen, zegt Myers. Als stof voor stof de schadelijke werking moet worden bewezen, -de wetenschappelijke aanpak- wint de industrie deze slag. Myers pleit voor het toepassen van het voorzorgsprincipe. Dit betekent dat bedrijven alleen verdachte verstorende stoffen mogen gebruiken, als ze aannemelijk maken dat de stoffen de gezondheid niet schaden. De bewijslast wordt dus omgedraaid.

Om hormoonverstorende stoffen internationaal aan de kaak te stellen, spelen de Europese maatschappelijke organisaties een sleutelrol. 'Onze hoop is hier, in Europa', stelt Myers. 'Organisaties in Europa zouden handelsconflicten tussen de Verenigde Staten en Europa moeten aangrijpen om het voorzorgsprincipe op de agenda krijgen.' In ieder geval is het WECF in Bonn gelukt om de gevolgen van hormoonverstorende stoffen op ongeboren kinderen op de conferentie onder de aandacht te brengen. 'Ons verhaal dat lage doses PCB's en dioxinen zich ophopen bij embryo's in de baarmoeder maakte veel indruk, ook bij Afrikaanse delegaties. Dat heeft ertoe geleid dat onze voorstellen voor

beleidsaanpassingen in de officiële tekst worden opgenomen', vertelt Kranendonk.

Draagvlak

Myers mag hoge verwachtingen hebben van de Europese organisaties, in Nederland krijgen zij het onderwerp, hoe belangrijk ook, nauwelijks onder de aandacht. Zolang de bewijzen niet keihard zijn, schuiven veel mensen de problemen terzijde. Ook wordt gedacht dat de milieubeweging overdrijft. Myers adviseert de maatschappelijke organisaties te werken met ambassadeurs: mensen uit een heel andere hoek die vertrouwen genieten en van wie dezelfde boodschap wel op waarde wordt geschat. Maar ook de groep van slachtoffers -mensen met prostaatanker, borstkanker of bijvoorbeeld ouders van kinderen met leerproblemen- kan een belangrijke rol spelen, denkt Myers. In de Verenigde Staten probeert hij als directeur van de W. Alton Jones Foundation deze mensen te bereiken en ze betrokken te maken bij de milieuproblemen. 'Vaak zijn ze gefocust op hun eigen behandeling. Wij proberen met de mensen te praten over het voorkomen van nog meer slachtoffers. Als dat lukt, kunnen deze mensen krachtige woordvoerders zijn.'

De 5e en laatste ronde van de POP-onderhandelingen wordt in december in Zuid-Afrika gehouden. De VN willen het eindverdrag in mei 2001 in Stockholm ratificeren.

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The text proposed by WECF and the IPEN Women's Working Group was adopted by delegates and submitted as their official text for input into the INC4. This proposal has been adopted by the Chair as official proposals and will be discussed at INC5.

4 | Participants List of the WECF workshop, 16 March 2000

Participants from the Netherlands

1. Maureen Butter, Monitoring Network on Health and Environment, NL
2. Willy Douma, HIVOS, NL
3. Henriët van Dijk, National Council of Women, NL
4. José Höppener, Monitoring Network on Health and Environment, NL
5. N. S. Kooi, The International Institute for the Urban Environment, NL
6. Trix van Kuilenburg, National Council of Women, NL,
7. Maaïke de Loor, NOVIB, NL – Eastern Europe team
8. Marian Nauta-Bijham, National Council of Women, NL.
9. Lidy Overschie, National Council of Women, NL
10. Marion Pfeiffer, National Council of Women, NL,
11. Ingrid van der Velpen, NOVIB –Eastern Europe team, NL
12. Philo Weijnenborg-Pot, National Council of Women, NL,
13. Drs. Conny Westgeest, Ministry of Foreign Affairs, NL
14. Drs. Adriaan. Oudeman, Ministry of Housing, Spatial Planning and the Environment, NL
15. Adrienne van Melle-Hermans , Women for Peace , NL
16. José van Weert , NL
17. Dr .Manusov-Verhage, Provincial Council of Women, NL
18. Martien van der Does, S.B.NOVIB , NL
19. Yulia Khripko WECF (Women in Europe for a Common Future), NL
20. Caroline Haverkorn, WECF, (Women in Europe for a Common Future), NL
21. Olga Ohanjanyan MD, WECF(Women in Europe for a Common Future),NL
22. Marie Kranendonk, WECF, (Women in Europe for a Common Future),NL
23. Liesbeth Perdeck, WECF(Women in Europe for a Common Future),NL
24. Maureen Butter, WECF(Women in Europe for a Common Future),NL

25. Marga Jacobs, Stichting Stedelijk Leefmilieu (NGO Urban Environment), NL
26. Mr. Diecke, Platform for Environmental Policy, NL
27. Bart Heyning, Decentralised Water Purification Technology,
28. Alice Bouman, National Council of Women, NL

Tolken:

29. Nora Martirosyan
30. Svetlana Petrova
31. Tatjana Peer -Monastyrjova
32. Olga Koutjukhina

Participants from Abroad:

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2. Emilia Kostadinova- Nasheva, , Black Sea Law Community, Bulgaria
3. Dr. Michaela Nicoleta Vasilescu, Institute of Public Health, Bukharest, Romania
4. Dr. Ioana Anka Iacob, Institute of Public Health, Bucharest, Romania,
5. Dr. Elena Joukovskaya, MD, Chelyabinsk, Russian Federation
6. Tatiana Chtchour, NGO "Shag na vstrechu", Snezhinsk, Russian Federation
7. Elena Manvelian, MD, NGO "Armenian Women for Health and Healthy Environment" Yerevan, Armenia
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9. Olga Speranskaya, NGO "Eco-Accord", Moscow, Russian Federation
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11. Ljubov Burtseva , NGO MAMA-86, KIEV, Ukraine
12. Svitlana Slesarenok, MAMA-86, Odessa, Ukraine
13. Natalya Kumysch, NGO MAMA-86, Sevastopol, Ukraine
14. Iryna Vykhristyuk, NGO MAMA-86, Tatarbunary, Odessa region, Ukraine
15. Olga Tsygulyova, NGO MAMA-86, Kharkov, Ukraine
16. Galina Oliynikova, NGO MAMA-86, Artemivsk, Donetsk region, Ukraine
17. Liubov Burtseva, NGO MAMA-86, KIEV, Ukraine
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21. Elisabeth Matipei, Massai Women's Water Project, AMREF (African Medical & Research Foundation), Kenia
22. Lucy Njagi, Massai Women's Water Project, AMREF (African Medical & Research Foundation), Kenia
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24. Bozena Pejpkova, Czech Country Women Organisation, Czech Republic
25. Elmira Suleymanova, Women and Development, (WADC) Azerbaijan
26. Marge Tee, Estonian Women's Union, Estonia
27. Ilona Ermasone, Latvia National Women's League, Latvia
28. Sirje Seemendi, Estonian Women's Union, Estonia
29. Benita Ziemele, Latvia National Women's League, Latvia
30. Roumiana Dimitrova, Womens International Club Plovdiv 95, Bulgaria
31. Evelina Koldashi, Director Union Gender Task Force Albania
32. Erida Luka, Green Group of the Union gender task Force, Albania
33. Zenfira Methizade, WADC, Azerbaijan
34. Busuladzic Hasija, Dir. Dept. Water Supply Systems, Serajevo, Bosnia-Herzegovina
35. Halikadic Muamera, Water Supply Systems, Serajevo, Bosnia-Herzegovina
36. Tamara V. Ambrosieva, Belarussian Research Inst. F. Epidemiology & Microbiology