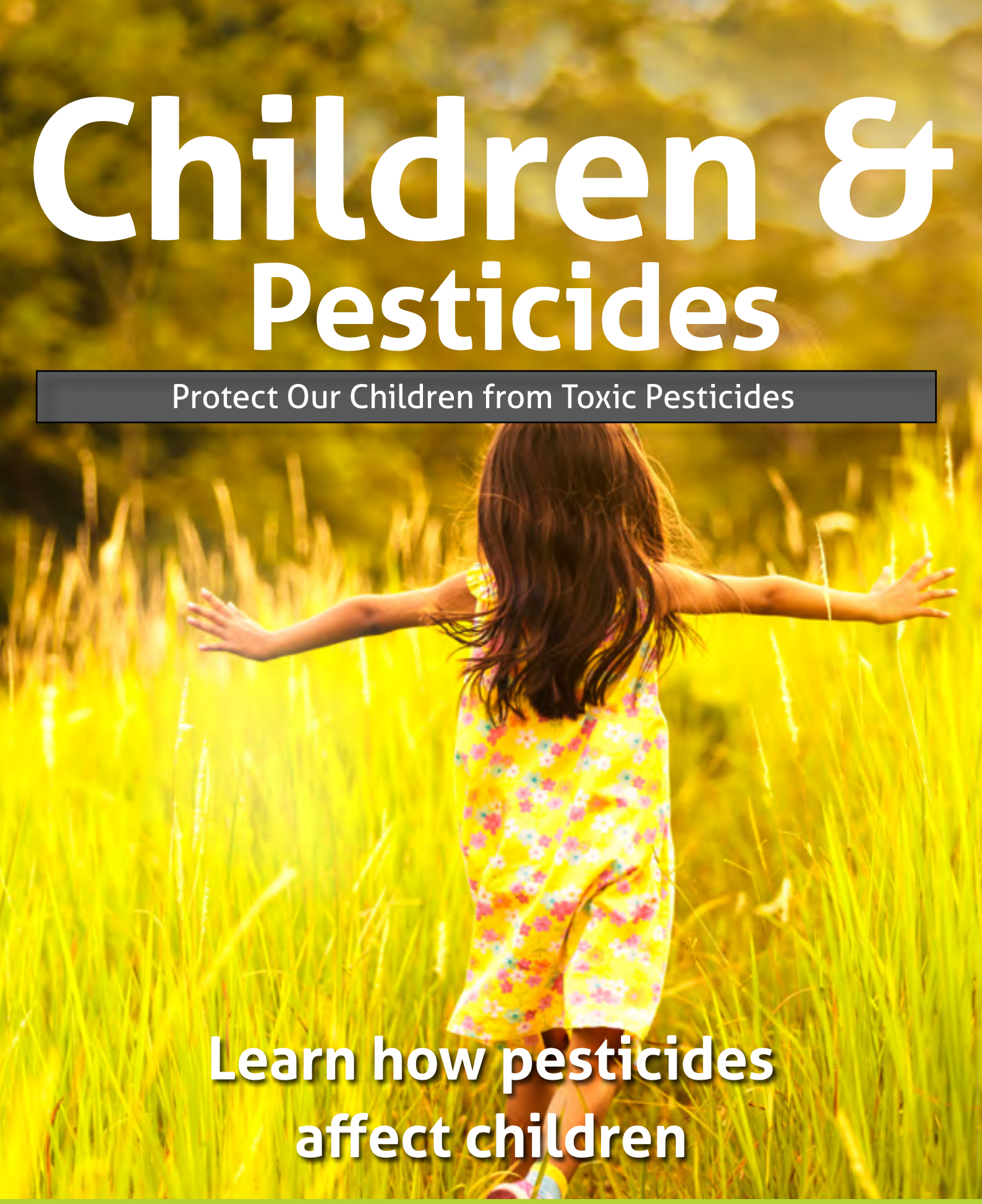
# Children & Pesticides

Protect Our Children from Toxic Pesticides



## Learn how pesticides affect children

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PROTECT OUR CHILDREN

# Protect Our Children from Toxic Pesticides

## Children today are sicker than they were a generation ago

**The past few decades have seen a rapid rise in the consumption of synthetic pesticides. The world now uses about 2.3 million tonnes of pesticides every year, which is 50 times more than in 1950.**

The widespread use of pesticides in agriculture and food, homes, schools, gardens and public places exposes millions of children and adults worldwide to the harmful effects of these toxic chemicals, and consequently to some debilitating and life-long health problems.

Children are particularly vulnerable. For several reasons, they face far greater risks of exposure than adults. Compared to adults, children breathe more air, eat more food and drink more water per unit of body weight which leads to greater exposure in a pesticide-contaminated environment. Early-life exposure can damage their still-developing brain and nervous and other systems, and disrupt mental and physiological growth, leading

to a range of diseases and disorders. These include birth defects, cognitive and behavioural problems affecting intelligence, learning ability and social interactions, disruption of hormonal, reproductive and immune systems, cancers, and metabolic disorders such as obesity and diabetes. Some of the disorders may show up only in adulthood and some can be passed on to successive generations, particularly cancers and changes in the reproductive system.

Mounting scientific evidence now shows that even low-level exposure to pesticides – way below what is generally considered safe – in the womb and early childhood poses a serious threat to children's normal growth and health.

"Children today are sicker than they were a generation ago," says a report, *A Generation in Jeopardy: How Pesticides are Undermining our Children's Health and Intelligence*, by Pesticide Action Network North America (PANNA). "From childhood cancers to autism, birth defects and asthma, a wide range of childhood diseases and disorders are on the rise. Our assessment of the latest science leaves little room for doubt: pesticides are one key driver of this sobering trend". It cautions that "Even environments we would like to consider 'safe' often bring children into contact with pesticides and other chemicals that have been linked to health harms".

The societal impact of this pesticide exposure goes far beyond individuals. Some public health experts and researchers are calling this a "silent pandemic".

There is an urgent need, therefore, to protect children from toxic pesticides so that they can live healthy lives to their full physical and intellectual potential. However, pesticide regulatory policies, standards and practices around the world do not reflect this crucial need. Regulatory standards, which are lax in many parts of the world, are still targeted at adults. This needs to change because 'children are not little adults'.

***"Society as a whole is being undermined by these exposures causing a reduction in IQ and by an increase in behavioural problems and problems of socialisation, as well as by a burgeoning health burden and associated costs", points out Dr. Meriel Watts, Senior Scientific Advisor to Pesticide Action Network Asia and the Pacific (PAN AP).***

# ROUTES AND SOURCES OF EXPOSURE

From the womb through infancy to adolescence, children are exposed to pesticides in many ways – foetal exposure in the womb and in infancy and childhood, exposure to contaminated air, food, water and general environment in homes, schools, play areas, and work places.

In many developing countries, where poverty forces children to work on farms and plantations, they often are engaged in using pesticides or, living near farms, are exposed to pesticide spray drifts from farms. Such pesticide sprays and run-offs often contaminate their drinking water sources, too.

## Exposure in the womb

Mothers exposed to pesticides, earlier in life or during pregnancy, can pass these chemicals, through the placenta in the womb, to the foetus. Studies in several countries – for example, the US, China, Japan, India, Kazakhstan and Thailand -- have found pesticides in umbilical cord blood, the placenta and the amniotic fluid that protects and nourishes the foetus. Many studies have found a wide range of pesticides in the meconium (first faeces) of the new-born.

The food that pregnant mothers eat is another source of exposure. One study showed pesticides in the cord blood of all the children tested whose mothers had eaten soya bean, corn and potato genetically modified to tolerate those pesticides.

## Residues in breastmilk

A number of pesticides are found as residues in women's breastmilk, indicating exposure, not only to the women, but also to the newly-born child transferred in breastmilk. However this does not mean that breastfeeding should be replaced with bottle-feeding. Breastfeeding should be maintained because, despite the residues, it confers health benefits to both the infant and mother. However breastmilk should not contain pesticides so any pesticides that are found in breastmilk should be removed from the market.

DDT contamination is widespread with residues found in breastmilk. Though many countries have banned DDT and some other long-lasting pesticides, residues from earlier use persist in the environment, and many African and Asian countries continue to use DDT for malaria control.

## Baby foods and children's dietary exposure

Highly processed baby foods and fruit juices can concentrate pesticide residues from fresh produce. US researchers have found low levels of pesticide residues in baby foods. Much of the pesticide use worldwide is in fact on fruits and vegetables, which makes food and drink a major source of low-level but continuous pesticide exposure.

This situation has now worsened because of the increasing globalisation of food trade, involving intensive chemical-based cultivation of commercial crops, especially for export, greater pesticide use to preserve food for long-distance transport and then for longer storage and shelf-life in shops. Significantly, studies have shown that children eating organic food had much lower levels of pesticides in their bodies -- as measured by pesticide breakdown products in the urine.

## Exposure at home, schools and public places

**Exposure is generally high where pesticides are used in homes, home gardens and lawns, schools, public places like playgrounds and parks, and public fogging for mosquito control. It is the highest where children live in crowded poor-quality urban housing 'prone to insect-infestation'. Pesticides used indoors tend to persist longer. Children inhale pesticide vapours and pesticide-laden dust, and also touch and play around with things which carry pesticide residues (skin is an important route of pesticide absorption).**

In the US, where indoor pesticide use is a major source of children's exposure, a national survey found that of the 40 pesticides most commonly used in schools, 28 are probable or possible carcinogens (cancer-causing), 26 cause reproductive problems, 26 damage the nervous system and 13 are linked to birth defects. In Australia, where insecticides are widely used in homes and farms, pre-school children have been found to have "widespread chronic exposure" to insecticides.

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Accidental ingestion of pesticides and pesticide contamination of food served in schools, resulting in poisoning and deaths of children, are also common in many developing countries.

# Rural areas fare worse

**Children in rural areas, particularly children of agricultural workers, fare worse. Expectant mothers spraying pesticides on farms or living near farms run greater risk of foetal exposure.**

Pesticide residues in the fields where children play and those carried home by parents on their bodies and clothes, or pesticides stored at home are other sources of exposure. Millions of children are also engaged in farm work, often handling hazardous pesticides ***(See Page 14 "Child labour in agriculture and pesticides")***. Farming as well as non-farming communities living near farms are exposed to pesticide spray drifts and pesticide-contaminated water sources. Exposure and health risks increase significantly with peak seasonal spraying.

From various studies, a clear pattern of exposure emerges from this scenario. Pesticide applicators' houses have the highest levels of residues (almost seven times more than in non-farming houses), followed by farm workers' (not handling pesticides) houses and non-farm workers' houses. A study in the Chang Mai province in Thailand showed a similar pattern of children's exposure to pesticides in rural communities: farm workers' children had higher levels of exposure than children in non-farming families.

# HEALTH EFFECTS ON CHILDREN

Hormonal balance is crucial to an expectant mother's well-being and the healthy growth of the foetus. The mother's hormones orchestrate and control the growth of the foetus and the various organs and systems. Many pesticides can mimic hormones and disrupt this growth process, leading to a range of birth defects, life-long impairments and diseases, including some diseases that may manifest in adulthood. These pesticides are called endocrine disruptors.

## Birth defects

Several birth defects have been associated with parental exposure (home, occupational and community exposure) to pesticides. These include anencephaly (absence of a major part of the brain and skull), missing or malformed limbs, uro-genital abnormalities such as hypospadia (abnormally placed urinary opening on the penis), cryptorchidism (undecended testicles), cleft palate and hare lip, congenital heart diseases, eye deformities, gastroschisis (protrusion of the baby's intestines through a hole in the abdominal wall), spina bifida (incomplete development of the brain and the spinal cord) and problems with the reproductive system. Still births, premature births, and low weight and smaller body size of the new-born, are some of the other related problems.

Birth defects have been found to increase with seasonal and occupational exposure of parents to pesticides and other chemicals before conception. Mother's exposure at critical periods of pregnancy is another key factor.

Strong evidence of such birth defects comes from the Kasargod area in the southern state of Kerala in India, where communities had long periods of exposure to endosulfan (an endocrine-disrupting organochlorine pesticide) sprays ***(See Page 14 , "Endosulfan and birth defects: the Kasargod case")***.

A strong seasonal association between birth defects and atrazine (an endocrine-disrupting herbicide) in water sources has also been found in the US ***(See Page 15 "Seasonal exposure to atrazine and birth defects")***.

Much of the available evidence points to the leading role of organochlorine pesticides (such as endosulfan and DDT) in causing birth defects, but other pesticides, such as organophosphates like chlorpyrifos and diazinon, also have a role.

## Neurodevelopmental and behavioural disorders

Exposure to even low levels of neurotoxic pesticides at critical junctures of foetal growth can alter brain structure and functions (by interfering with brain cell growth and survival) and affect the nervous system. This leads to a range of neurodevelopmental, learning and behavioural disorders. These include: attention deficit/ hyperactivity disorder (ADHD), autism, mental impairment and lower intelligence (lower IQ), and motor and mobility problems.

In children with ADHD, brain functions are affected; they show hyperactivity, impulsive behaviour and lack of ability to sustain attention. Learning is often impaired. Globally, it is estimated that 5.29 per cent of the population under 18 years of age suffer from ADHD. In Asia, it is 3-10 per cent. In the US, 3-7 per cent of all school children are affected, with the rate rising by an average 5.5 per cent every year from 2003 to 2007.

Autism has been linked to changes in the brain structure during foetal development. Poor social interaction and repetitive stereotypic behaviour mark this disorder; mental retardation is associated with 40-55 per cent of the cases. Autism affects 0.6 per cent of the world population (2006 data). No data is available for Asia, but a study in South Korea estimated that 2.64 per cent of the children in the age group 7-12 years are affected.

Pesticides can also have a significant impact on the intellectual abilities and intelligence of children. Three recent studies showed that children exposed to organophosphate pesticides in the womb had lower IQ, memory and perceptual reasoning. An exhaustive review of data in the US found a significant lowering of IQ among children across the country, and that organophosphate pesticides were the culprits.

Studies in Mexico and India have also shown impaired functional abilities in children exposed to heavy pesticide use ***(See Page 15, "Pesticides and mental/ neurological functioning"***)

Organophosphates, which are some of the most toxic and most common pesticides used in homes and agriculture, have a major role in causing neurological effects. Even low levels of exposure to these pesticides affect the action of acetylcholine, a neurotransmitter, which in turn disrupts the normal functioning of the nervous system. Of these pesticides, chlorpyrifos has drawn much attention recently because of its wide use in many countries and because of a number of studies showing its impact on children's developing brains. Many other pesticides are also neurotoxic.

There is also some evidence that exposure to particular neurotoxic pesticides early in life can lead to neurological diseases such as Parkinson's and Alzheimer's in adulthood.

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## Child cancers

**A large number of recent studies link pesticide exposure to the steadily rising incidence of child cancers around the world. Childhood leukaemia, brain tumour, neuroblastoma (tumour in nerve tissue), non-Hodgkin's lymphoma, Ewing's sarcoma (bone tissue tumour) and Wilm's tumour (kidney) are most commonly associated with pesticide exposure. While neuroblastoma is most common among infants, leukaemia and brain tumour are most common among children.**

Many studies find parental exposure (occupational or home use) before conception, foetal exposure at critical periods, and direct exposure in childhood carry significant risks of a child developing cancer. Home use of pesticides during pregnancy increases the risk. Children who live on or near farms with a high level of pesticide use also face much higher risks. A large-scale international study found a link between maternal farm exposure and brain tumours among children.

Early exposure to pesticides that disrupt the hormonal system can lead to some adult cancers related to the reproductive system, particularly breast, prostate and testicular cancers. Many pesticides, including organochlorines, organophosphates and pyrethroids are associated with cancers.

## Reproductive problems

Besides the birth defects mentioned earlier, foetal exposure to endocrine-disrupting pesticides can cause a range of problems related to the reproductive system which show up later in life.

For girls, these include early puberty, menstrual irregularities, uterine fibroids, endometriosis (a painful condition when the endometrium or the uterus-lining tissues grow outside the uterus) and infertility. Men suffer disruption of reproductive development and reproductive functions with lower sperm count, poor sperm quality and poor fertility. In Kasargod, boys showed delayed sexual development indicated by poor development of pubic hair, testes and penis, and lower testosterone production; many pesticides can have 'feminising' (oestrogenic) or 'anti-masculinising' (anti-androgenic) effects on boys.

## Obesity, diabetes and metabolic disorders

Obesity and diabetes are emerging as major problems in many parts of the world. Worldwide, obesity has doubled since 1980, and obesity is linked to diabetes (Type 2), hypertension and cardiovascular diseases, or metabolic disorders. Though lifestyle factors such as diet and physical activity have long been thought to cause obesity, emerging evidence now also links pesticide exposure, particularly in the womb and in early childhood, to obesity and related disorders.

Pesticides can cause weight gain by interfering with the action of hormones that control body weight, glucose metabolism and insulin levels. Organochlorine, organophosphate and carbamate pesticides are found to be involved here. Recent evidence shows that rapid weight gain in the first few months of life and a higher body mass index (a measure of underweight or overweight based on weight relative to height) at 1-2 years of age may indicate later obesity; pesticide exposure in the womb has been found to be strongly associated with both these indicators.

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## Immune system, asthma and allergies

Besides triggering asthma attacks as respiratory irritants, pesticides can cause childhood asthma and respiratory and other allergies by disrupting the immune system.

A disrupted immune system can have far-reaching health consequences throughout life. It will lower the body's ability to resist infections, which can lead to greater sickness and afflictions, including auto-immune diseases.

Various studies have found that prenatal and early childhood exposure to pesticides increased the risk of asthma. Organochlorine, organophosphate, carbamate and pyrethroid pesticides were all associated with the increased risks.

## Epigenetic changes

Some pesticides, especially endocrine disruptors, can trigger 'epigenetic changes' or heritable changes by altering the level of gene activity (gene expression).

Such changes and the associated health effects can be passed on to succeeding generations. Some well-studied examples are breast cancer linked to the endocrine-disrupting fungicide vinclozolin, and reproductive effects such as on sperm, ovaries (associated with methoxychlor, an endocrine disruptor) and the placenta (vinclozolin). Such epigenetic changes are now drawing greater attention.

## Multiple causes and action

Often, in real life, unlike in laboratory studies, children are exposed to not just one pesticide but several pesticides at a time.They are also exposed to industrial chemicals many of which are known to have similar effects as pesticides, particularly in disrupting the endocrine system. In many cases, genetic factors, too, have a role, with chemicals triggering changes and adverse health effects in children genetically susceptible to those changes. All these factors magnify health risks.

Pesticide regulatory standards and practices do not consider the impacts of these multiple causes and their additive and synergistic action. The standards continue to be based on the health impacts a single pesticide is likely to cause, mainly in adults. "Acceptable levels of exposure" are set on the assumption that such exposures may not cause much harm or may cause some health problems which can be reversed. However, in children, such acceptable and even much lower exposures can cause devastating, irreversible and heritable damage, putting generations in jeopardy.

Can we accept this enormous cost that individuals, communities and whole societies have to pay for some perceived and questionable benefits of pesticide use, particularly its large-scale use

in agriculture which exposes millions of children around the world to serious health problems, and which affects their intellectual and physical growth potential?

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# What needs to be done?

Despite the mounting evidence of the severe impacts of pesticides on children, regulatory policies and standards do not consider this special vulnerability. Pesticide policies are strongly influenced by the agro-chemical industry (which often suppresses the adverse health effects of pesticides). The industry propagates the misconception, and almost a public fear, that pesticides are necessary to increase food production to feed the world, particularly the poor in the developing world. Along with government establishments, it further promotes the assumption that there are safe limits ("safe thresholds") for pesticide exposure, although independent evidence increasingly points to the contrary.

These assumptions, policies and standards need to change. In this context, **PAN AP makes the following recommendations.**

- Enact agricultural policies that support farmers to move away from using highly hazardous pesticides towards agroecological practices.

- Ban highly hazardous pesticides (HHPs). Focus the ban on the list of 20 HHPs (Appendix 1) which are problem pesticides and/or widely used.

- Ensure that pesticide evaluation includes health effects at low doses and pre-natal and early-childhood exposures. (Current pesticide evaluation and approval practices, which largely relate to adults, are inadequate to assess the health hazards children face at very low doses.)

- Use studies by independent scientists in approving pesticides and not from industry while requiring industry to reveal all evidence of toxic effects.

- Ensure that studies reflect additive and synergistic effects, and that regulatory policies and standards consider the risks of multiple and cumulative exposures of various toxic chemicals.

- Build individual and community awareness of the pathways of pesticide exposure and their effects on children, and avoid exposure of children and pregnant women to pesticides, including exposures through food.

- Keep homes and schools pesticide-free. Debug them the natural way.

- Substitute the use of HHPs with less harmful means such as agroecological approaches like biodiversity-based ecological agriculture.

- Use methods that cause the least human and environmental harm in managing weeds, pests and crop diseases.

- Apply the precautionary principle in the regulation of pesticides at both international and national levels.

## Child labour in agriculture and pesticides

Around 215 million, or over seven per cent of all the children, are engaged in 'child labour' worldwide. Nearly 70 per cent or 150 million of these child labourers work in agriculture. In some countries, children below 10 make up 20 per cent of the rural child labour force. These include children working in family farms, commercial farms and plantations, and as 'bonded' and forced labour. The children begin work as young as five years of age.

In Africa and South and Central Asia, children work in cotton fields in conditions that expose them to highly hazardous pesticides during or immediately after spraying. They also spray pesticides -- on top of the arduous labour, overwork and low wages, violence, sexual harassment and rape, and lack of recreation that they have to endure.

In many African countries, children, including young girls, working in cocoa and coffee plantations are made to apply pesticides without protective clothing.

In Egypt, about one million children, 7 - 12 years of age, are employed to help with pest management in cotton crops. In Mali, as much as 50 per cent of the workforce in some cotton areas are children; in Kazakhstan, it is 60 per cent.

In India, cottonseed production has the highest percentage of child labour in any sector. In the year 2009-10, nearly 170,000 children below the age of 14, and 211,600 aged 14-18 years worked in cottonseed production; about 70 per cent were girls. They are exposed for long periods to highly hazardous pesticides. Similar practices are seen elsewhere in Asia –in vegetable farms in the Philippines, in tea estates in Sri Lanka, and in rose farms in Bangladesh.

In Latin America, children routinely work in coffee, sugar cane, cardamom and coffee plantations, often exposing them to highly hazardous pesticides. An estimated 18,516 children aged 5-14 years were poisoned by pesticides in Nicaragua over the years 1995 to 2006, though it was illegal to allow children below 14 years to work.

In Mexico too, children work on tobacco plantations and are frequently exposed to pesticides.

*(Poisoning our Future: Children and Pesticides, Meriel Watts, Pesticide Action Network Asia and the Pacific)*

## Endosulfan and birth defects: the Kasargod case

Perhaps the most striking evidence that pesticides cause birth defects comes from the villages of Kasargod (in the state of Kerala in India) where 20 years of aerial spraying of endosulfan on cashew plantations exposed successive generations, including many pregnant women, to this pesticide.

A number of children born to these women had birth defects. These included malformation of the male reproductive tract such as cryptorchidism, hydrocele, hernia; deformities of hands and feet, including stag-horn limbs and other skeletal abnormalities; congenital heart disease; congenital mental retardation and cerebral palsy; and congenital eye problems such as cataracts and retinopathy.

Congenital problems were more prevalent in girls.

Besides birth defects, there were other problems related to neurodevelopment – delayed mental and psychomotor development, learning disabilities, low IQ, and epilepsy.

Girls also developed reproductive problems such as early puberty, endometriosis, menstrual disorders and altered hormone levels.

*(Poisoning our Future: Children and Pesticides, Meriel Watts, Pesticide Action Network Asia and the Pacific)*

## Seasonal exposure to atrazine and birth defects

Seasonal exposure to pesticides during pregnancy has been linked to increased risk of birth defects. A multi-layer national review of the US Geological Survey water data and the US Centre for Disease Control birth defect records found a strong seasonal association between birth defects and presence of the herbicide atrazine in surface water. Infants conceived between April and July, when elevated concentrations of the herbicide are found in surface water, had significantly higher birth defect risks.

*(A Generation in Jeopardy: How Pesticides are Undermining our Children's Health and Intelligence, Pesticide Action Network North America) .*

## Pesticides and mental/neurological functioning

A comparative study in the late 1990s of two groups of children from the Yaqui region in Mexico, one living in a valley where pesticides were used heavily in farming and the other from a pesticide-free farming area in the foothills, clearly showed the differences in their functional abilities. The two groups had common genetic, cultural and social backgrounds. In the valley, pesticides, including multiple organochlorine and organophosphate mixtures and also pyrethroids, were used about 90 times a year, and household pesticides throughout the year. The foothills children had no pesticide exposure, except for the annual DDT application by the government for malaria control. Compared to highland children, the valley children showed a marked decrease in functional abilities (in mental/neurological functions) as measured by physical stamina, ability to catch a ball, fine eye-hand coordination, ability to draw a person (the valley children could draw only random undifferentiated lines while the highland children drew easily recognisable human figures), recall after 50 minutes,

and group play in which the valley children were less creative with minimal group interaction. The valley children were also more aggressive, hitting siblings and getting more upset by parents' corrective comments. The researchers concluded that the functional differences in the valley children indicated brain dysfunction which affected learning abilities and social behaviour.

A similar study conducted in the mid 2000s in India, with children from cotton-growing areas with heavy pesticide use and children from areas where pesticide use was much lower, also showed that the pesticide-exposed children had lower abilities in stamina, cognition, memory, motor skills and concentration. *(Poisoning our Future: Children and Pesticides, Meriel Watts, Pesticide Action Network Asia and the Pacific) (A Generation in Jeopardy: How Pesticides are Undermining our Children's Health and Intelligence, Pesticide Action Network North America) .*

# Appendix 1

## List of Highly Hazardous Pesticides that should be eliminated

1. Chlorpyrifos
2. Monocrotophos
3. Malathion
4. Methamidophos
5. DDT
6. Permethrin
7. Diazinon
8. Paraquat
9. Propoxur
10. Atrazine
11. Dichlorvos
12. Cypermethrin
13. Deltamethrin
14. Mancozeb
15. Methyl parathion
16. Carbaryl
17. Chlorothalonil
18. Parathion
19. Lambda-cyhalothrin
20. Maneb

# About the Campaign

Research confirms that children today have higher rates of childhood cancers, autism, birth defects, asthma and a wide range of childhood diseases and disorders and that pesticides are implicated as causative factors. Although research on pesticides use and their impact on the health of children in the Asia Pacific region is scarce, anecdotal evidence exists. PAN therefore chose to focus its campaign on pesticides that are specifically harmful to children's health because of their special vulnerability and effects on mental and physical development.

The Children and Pesticides Campaign is an extension of the Pesticide Action Network's (PAN) International Call to Action on Highly Hazardous Pesticides (HHPs). The process of defining HHPs began in November 2006 with FAO endorsing the Strategic Approach to International Chemicals Management (SAICM) and continued through to October 2007 when the FAO/WHO Panel of Experts on Pesticide Management discussed options for defining HHPs. Criteria to identify HHPs were outlined by the FAO/WHO Expert Panel; however PAN found important shortcomings in that list of indicators. In particular, pesticides with endocrine disrupting properties, ecotoxicological properties or inhalative toxicity had not been taken into account by the Expert Panel.

Because of these shortcomings, PAN International decided to independently develop a definition of "Highly Hazardous Pesticides" (HHPs) with a more comprehensive set of indicators and to achieve a list of HHPs based on the PAN list of indicators. PAN's definition of HHPs is therefore based on the indicators. (For more details please go to: www.panap.net)

The information in this booklet is a summary of two publications:

*i. Poisoning our Future: Children and Pesticides by PAN Asia Pacific (PAN AP)*
*http://www.panap.net/sites/default/files/Poisoning-Our-Future-Children-and-Pesticides.pdf*

*ii. A Generation in Jeopardy: How pesticides are undermining our children's health & intelligence by PAN North America (PANNA)*
*http://www.panna.org/sites/default/files/KidsHealthReportOct2012.pdf*

PAN AP is grateful to PANNA for the use of information from A Generation in Jeopardy: How pesticides are undermining our children's health & intelligence.

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Pesticide Action Network Asia and the Pacific (PAN AP) is one of the five regional centres of Pesticide Action Network (PAN), a global network dedicated primarily towards the elimination of harm caused to humans and the environment by pesticides and towards promoting biodiversity-based ecological agriculture.

PAN AP's vision is of a society that is truly democratic and culturally diverse, based on the principles of food sovereignty, gender justice and environmental sustainability. PAN AP has developed strong partnerships with peasants, agricultural workers, indigenous peoples, fisherfolks, rural women movements and other small food producers in the Asia Pacific region. Guided by the strong leadership of these grassroots groups, PAN AP has become a strong advocacy network with a firm Asian perspective.

Our mission lies in strengthening people's movements to advance and assert food sovereignty, promote biodiversity-based ecological agriculture and the empowerment of rural women; protect people and the environment from highly hazardous pesticides; defend the rice heritage of Asia and resist the threats of corporate agriculture and neo-liberal globalisation.

Currently, PAN AP comprises 108 network partner organisations in the Asia-Pacific region and links with other civil society and grassroots organisations, regionally and globally.

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