Global Governance of Hazardous Pesticides to Protect Children:

Beyond 2020

PAN Asia Pacific

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Pesticide Action Network Asia Pacific
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This paper outlines PAN Asia Pacific's concern about the impact of hazardous pesticides on children, and the need for greatly improved global governance of pesticides post 2020, to protect the rights of children and to meet the Sustainable Development Goals of Agenda 2030.

Noting that:

1. ICCM4 recognised highly hazardous pesticides (HHPs) as an issue of concern, acknowledging that they *"cause adverse human health and environmental effects in many countries, particularly in low-income and middle-income countries"*, and supported concerted action to address them, encouraging an emphasis on promoting agroecologically-based alternatives (SAICM/ICCM.4/CRP.16);

2. At ICCM4, 31 countries and organizations called for a Global Alliance to Phase Out HHPs (SAICM/ICCM.4/CRP.4);

3. At ICCM3, a proposal to ban HHPs was introduced (SAICM/ICCM.3/CRP.16) and supported by at least 65 countries and organisations;

4. In 2006, the FAO Council recommended that, in order to implement SAICM, activities to reduce risk could include a progressive ban on highly hazardous pesticides;

5. The 2006 SAICM high-level Dubai Declaration *"recognizes the need to make special efforts to protect those groups in society that are particularly vulnerable to risks from hazardous chemicals or are highly exposed to them"* and states that *"we are determined to protect children and the unborn child from chemical exposures that impair their future lives,"* (clauses 23 and 24);

6. That children's exposure to life-impairing highly hazardous pesticides continues unabated;

PAN Asia Pacific calls upon SAICM in its intercessional process to develop a mechanism to be adopted by ICCM5 for global governance of pesticides and phase-out of highly hazardous pesticides, with special attention to the rights and needs of children.

Rationale

1. National governance of pesticides is inadequate

National regulatory processes and government policies fail to protect children from pesticides due to the (i) inadequacy of pesticide registration processes to assess the real effects of pesticides on children; (ii) weak monitoring systems; and (iii) the assumption by most state governments that hazardous pesticides are essential for crop production. These failures stem from the lack of political will to question norms and apply the precautionary principle, despite the latter's widespread inclusion in a number of international conventions and treaties, such as the Stockholm Convention on Persistent Organic Pollutants.

Tragedies like those of Bhopal, Kasargod, Kamukhaan and Silvino Talavera will continue to be repeated until measures are taken to put a stop to the use of highly hazardous pesticides.

Tragedies caused by the failure of states to protect communities from toxic pesticides

Bhopal tragedy (India)

About 45 tons of methyl-isocyanate gas leaked from Union Carbide Corporation's chemical plant in Bhopal, Madhya Pradesh at around 1:00 AM on December 3, 1984 immediately killing about 3,800 people mostly in the slum area adjacent to the plant. The estimated death toll was 10,000, with close to 20,000 premature deaths occurring in the subsequent two decades (Sharma 2005). Epidemiological studies conducted soon after the accident revealed significant increases in the incidence of pregnancy loss, infant mortality, decreased fetal weight, chromosomal abnormalities, and impaired associate learning/motor speed/precision, ocular and respiratory illnesses. Many of the exposed population gave birth to physically and mentally disabled children (Dhara & Dhara 2002).

Kasargod endosulfan tragedy (India)

The state-owned Plantation Corporation of Kerala carried out trials on aerial spraying of endosulfan in 1977-78 in its 45,000-hectare cashew plantation in Kasargod. Regular aerial spraying 2 to 3 times per year commenced in 1981 and caused disabilities in the villagers and domestic animals of Padre, Enmakaje. Kerala Sastra Sahithya Parishad (1994) reported that the disability rate among the people was 73% higher than the overall disability rates for the entire state. Locomotor disability and mental retardation was 107% higher (Quijano 2002).

A total of 197 cases from 123 households, were documented to have cancer, cerebral palsy, mental retardation, epilepsy, congenital anomalies and psychiatric disorders. The cancers include abdominal, uterine, liver and neuroblastoma. A community survey estimated 9,500 victims in the district (Irshad & Joseph 2015). Among the many victims are Shruti, born with a twisted leg and only four fingers in each hand, with those on her right hand malformed; and Vishnu Batt, who is developmentally delayed, stunted in growth and with deformed legs (Sundaram 2015).

Kamukhaan tragedy (Philippines)

A community of 700 individuals in Davao del Sur, Kamukhaan had rich natural resources until the entry of Lapanday Agricultural Development Corporation banana plantation in 1981. Large doses of pesticides are sprayed aerially 2-3 times a month sweeping through the entire plantation and the village. During spraying, the strong and odorous fumes blanket the community. Fumes sting the villagers' eyes, make their skin itch, suffocate and make them weak and nauseous.

The plantation also ground-sprays the bananas with highly hazardous Furadan (carbofuran) and Nemacur (fenamiphos). Rains bring pesticide-riddled water into the village where it rises up to as high as waist level. It contaminates the river and the sea resulting in fish kills. It poisons the land so that the coconut trees stopped bearing fruit and livestock die. Villagers who unavoidably wade in the water and the children who play in it get ill. Infants are born with a range of abnormalities, from cleft palate to badly disfigured bodies, and with impaired mental and physical development, and some die at birth or shortly after (Quijano 1999).

Silvino Talavera's death (Paraguay)

On January 2, 2003, 11-year old Silvino cycled to buy some meat and rice. He got sprayed with pesticides used for soy monoculture on his way back. He immediately washed in the river but was hospitalized that day together with his family who fell ill after eating the food Silvino brought home. Silvino returned from the hospital on January 6, but on the same day, another soy producer sprayed 15 meters from their house.

Silvino lost consciousness and was brought to the hospital with three brothers and 20 villagers. Silvino was pronounced dead the following day. His family suffers many health problems (lung, stomach problems, allergies, headaches and bone aches) as a result of the continuous pesticide exposure (Radio Mundo Real 2010).

2. Existing global governance is inadequate

Global governance of pesticides is weak and fragmented. It relies heavily on the voluntary International Code of Conduct on Pesticide Management (FAO & WHO 2014) that, under its former title of the FAO Code of Conduct on the Distribution and Use of Pesticides, was first agreed in 1985. Despite name changes, revisions, and the development of guidelines, there are widespread violations of this Code by industry and some governments. Additionally, the Code and its guidelines fail to include environment impacts such as pollinator decline and other biodiversity losses.

In addition to the Code, two binding UN Conventions address a limited number of pesticides. The Stockholm Convention on Persistent Organic Pollutants bans a small number of mostly obsolete pesticides that are deemed to be POPs.[1] The Rotterdam Convention on Prior Informed Consent in Trade of Certain Hazardous Chemicals and Pesticides has the requirement for information on, and agreement to the import of, listed pesticides (33 to date, of which 9 are also listed under the Stockholm Convention).

Additionally, the UN's International Labour Organisation (ILO) Conventions address issues related to children's occupational exposure to pesticides:

- Under ILO Convention 138, the minimum legal age for children to be employed in hazardous work, which includes exposure to pesticides, is 18.
- ILO Convention 182 forbids children being involved in *"work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children"* (ILO 2011).

Yet nearly 70% of the 215 million child laborers worldwide work in agriculture – around 150 million children. In some countries, children under the age of 10 make up 20% of the rural child labour force (ILO 2006, 2011).

In Mali, as much as 50% of the work force in some cotton areas are children; in Kazakhstan, that figure rises to 60%; and, in Egypt, as many as 1 million children between the ages of 7 and 12 are employed to help with pest management in cotton crops (EJF 2007).

Despite these existing mechanisms, a large number of highly hazardous pesticides remain in use especially in low income countries where unacceptably high levels of exposure and poisoning continue to occur (see below). Many of the working children use or are exposed to HHPs. As workers, they have little if any information about, or control over, the types of

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1 Current use pesticides covered by the Stockholm Convention are DDT, lindane and endosulfan.

pesticides they are using or even to stop applying these pesticides. The lack of protective equipment – ill-adapted to hot tropical weather conditions, not suitable for children, and rarely used – contributes to pesticide poisoning.

One indication of the significant failure of governance at both national and global level is that there is still very little understanding of the extent of even acute poisoning by pesticides, let alone chronic impacts on health, or the environment. The recent paper by the Nordic Council of Ministers (2017) – *Global Governance of Chemicals and Waste* – when stating *"It is estimated that excessive exposure to and inappropriate use of pesticides contribute to poisoning a minimum of 3 million people per year"* used a seemingly up-to-date reference, UNEP 2016.

However, UNEP in turn referenced a paper published in 1990 (Jeyaratnam 1990), which was based on information from a study undertaken in two Asian countries in the 1980s. Despite these severe limitations, the Jeyaratnam paper is still the most authoritative estimate of global acute pesticide poisonings which is a very real indication of the lack of attention to this problem at the global level. Jeyaratnam actually used the figure 3 million as an estimate of hospitalised cases of pesticide poisoning, and estimated that there could be as many as 25 million poisonings in developing countries alone, per year. There is no reason to assume that poisoning levels are any less now:

"In Central America, PAHO has tracked a steady increase in acute pesticide poisoning cases each year for the past two decades, and this trend closely parallels upward trends in pesticide imports …. Acute pesticide poisoning is widespread in Latin America, and PAHO estimates that acute pesticide poisoning cases are underreported by 50-80%" (Laborde et al 2015).

There is no clue as to how many children are affected by pesticides each year, but indications are that the number would be unacceptably high.

International conventions and national regulations are inter-linked and the former can facilitate change at the national level, while strong national policies can promote strong leadership in international conventions.

3. Pesticide use must be addressed to meet Sustainable Development Goals

Meeting the Sustainable Development Goals (UN General Assembly 2015) without addressing the global problems with pesticides will be impossible, particularly SDG 3 *"Ensure healthy lives and promote well -being for all at all ages"*, because of the ongoing poisoning of children, workers, families and communities, the contamination of food and drinking water, pollution of all environmental media, loss of biodiversity and destabilisation of ecosystems.

The continued adherence to an industrial system of agriculture based on highly hazardous pesticides that poison and pollute, long after this system has been widely revealed to be not in the best interests of countries, farmers, communities, consumers and the environment,[2] will also prevent the realisation of the following additional SDGs:

- Goal 1. End poverty in all its forms everywhere
- Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 5. Achieve gender equality and empower all women and girls
- Goal 6. Ensure availability and sustainable management of water and sanitation for all
- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 10. Reduce inequality within and among countries
- Goal 12. Ensure sustainable consumption and production patterns
- Goal 13. Take urgent action to combat climate change and its impacts
- Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

The high-level concern about industrial agriculture, and information on why the SDGs are more able to be met by agroecological means of production, as recommended by ICCM4, than by industrial production can be found in PAN's book *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology.*[3] This is an open-access book produced specifically for the SAICM discussions on HHPs.

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2 See for example: the 2009 IAASTD – International Assessment of Agricultural Knowledge, Science and Technology for Development; the 2011 report of the UN Special Rapporteur on the Right to Food to the 16th Session of the UN Human Rights Council; FAO international and regional symposia on agroecology.

3 Watts MA and Williamson S. 2015. *Replacing Chemicals with Biology: Phasing our Highly Hazardous Pesticides with agroecology.* Pesticide Action Network International, Penang. https://panap.net/2015/11/replacing-chemicals-biology-phasing-highly-hazardous-pesticides-agroecology/

4. Unabated use of hazardous pesticides violate human and especially children's rights

The Nordic Council of Ministers (2017) rightly points out that the Dubai Declaration makes only one mention of human rights, and fails to mention children's rights. They conclude that *"a stronger link should be formed between chemicals and waste and socio-economic questions, including human rights and the health of vulnerable populations such as children"*. PAN Asia Pacific supports this view.

WHO, in its Constitution declares "the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being," and recognises the child's healthy development as of basic importance. The Convention on the Rights of the Child, reiterates children's entitlement to special care and assistance "by reason of [their] physical and mental immaturity…before as well as after birth". Proactive measures must be in place to "diminish infant and child mortality" (UNCRC 1989).

In the same vein, the Stockholm Convention acknowledges that "health concerns … resulting from local exposure to persistent organic pollutants … impacts upon women and, through them, upon future generations."

The UN Conference on Environment and Development (UNCED 1992) adopted the concept of inter-generational equity, noting that the effects of certain chemicals are irreversible and have potential to compromise the health and well-being of future generations. It also recognised that life, health and environment are intertwined. The destruction of ecosystems deprives succeeding generations of rich natural resources – it threatens their livelihood, production of safe food and general well-being. The UN Economic and Social Council Report on Human Rights and the Environment (Ksentini 1994) directly linked the right to a safe and healthy environment to the right to life.

The right to life is a "supreme right", without which no other rights would be meaningful (UDHR Article 3, ICCPR Article 6, UNEP 2016). The Bhopal, Kasargod and Kamukhaan tragedies have led to the suffering and death of countless men, women and children. Silvino Talavera's death brought to fore children's greater susceptibility to the hazards of pesticides. Yet, State Parties who should "ensure to the maximum extent possible the survival and development of the child" and "take all effective and appropriate measures with a view to abolishing traditional practices prejudicial to the health of children" (UNCRC 1989 Articles 6 & 24) have not taken their role to heart.

The unabated use of HHPs is in violation of humans' right to health, safe environment and life. Children's rights are especially trampled since they are most vulnerable to toxins.

5. Children are especially vulnerable to pesticides

The developing foetus and small children are extremely vulnerable to the effects of toxic chemicals as they breathe more air, eat more food and drink more water per unit of body weight which leads to greater exposure in a toxin-contaminated environment. Early-life exposure can damage the developing brain and body systems, disrupting mental and physiological growth that leads to a range of diseases and disorders (Watts 2013).

Exposure to pesticides that are mutagenic and/or teratogenic, and are transmitted either across the placenta to the foetus or though breast milk to infants, pose developmental risks to children:

- The aerial spraying of endosulfan, a known neurotoxin, endocrine disruptor and mutagen, for 20 years over cashew nut plantations in Kerala resulted in a large number of serious diseases and conditions that particularly affected children in the vicinity of the plantation, including neurological, developmental and reproductive conditions and cancers (NIOH 2002).
- Nearly 30 years after the Bhopal tragedy, deformities and other development problems are still observed among children (News Asia 2014).
- The environment and the farmworker community of Lake Apopka in Florida, USA were exposed to POPs pesticides aldrin, dieldrin, chlordane, DDT and toxaphene for over 50 years. Children from the second and third generation of those who were exposed now suffer chronic diseases (Farmworker Association of Florida 2006).

Pesticides are now considered by public health experts to be causing a silent pandemic through their neurodevelopmental impacts and negative effects on the health and intelligence of children (Watts 2013, Lanphear 2015). Such pandemic can be stopped only by protecting children from exposure to toxins.

More information on the impacts of pesticides on children can be found in Annex 1 to this paper and in Watts (2013).

6. Children's exposure to pesticides is undeniable and unacceptable

Toxins are readily transferred across the placenta from the mother to the developing foetus (Daston et al 2004). Pregnant women's exposure leads to foetal exposure. Evidence of *in utero* exposure include the detection of (i) seven pesticides and their metabolites in the umbilical cord blood of up to 83% of the infants (Whyatt et al 2003), and (ii) residues in the first faeces of newborns (Ostrea et al 2006).

Children are exposed through their food. Infants in Bhopal were found to consume through breast milk, 8.6 times more endosulfan than the WHO-recommended daily intake levels, as well as chlorpyrifos, HCH, malathion, and methyl parathion (Sanghi et al 2003). In Assam, India breast milk was found to contain high levels of DDT and DDE, and high levels of HCH with 100% of samples exceeding the WHO guideline (Mishra & Sharma 2011). 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.

Metabolites of organophosphates (OPs) were found in the urine of 99% of urban pre-school children in Seattle, USA. The metabolites were present even in those whose parents did not use pesticides, indicating that at least some of them came from diet (Lu et al 2001). Proof of exposure resulting from pesticide residues in conventionally-produced food is provided by the decrease in urinary levels of chlorpyrifos and malathion metabolites in children after they converted to organic diets (Lu et al 2006, 2008).

Another route of exposure is through pesticide drift. A study of one pesticide, atrazine, showed that drift can travel 600 to 1000 miles after application and stay in the soil for up to 100 days (LSP & PANNA 2010), putting untold millions at risk.

- Farm children in Malaysia have depressed blood cholinesterase levels indicating OP insecticide exposure (How 2014).

- About 47% of Orang Asli children of Selangor, Malaysia have traces of OP metabolites in their urine (Sutris et al 2016).
- School children poisonings in Mendocino and Ventura Counties in California, USA (Kegley et al 2003), Davao del Norte, Philippines (Inquirer 2006), Nuwara Eliya, Sri Lanka (Watts 2013) and most recently in Po Ampil Primary School in Cambodia (KEMI 2015) were due to pesticides.
- A documented case of a healthy child becoming mentally handicapped at the age of three while playing during an aerial spray in Davao del Sur, Philippines (PANAP 2017).

Exposures are likely to be high where household insecticide use or pest extermination occurs, where pesticides are used on lawns or home garden, or where public health fogging is done to control human disease-bearing vectors like mosquitoes (Watts 2013).

The application of shampoo containing permethrin or lindane to treat head lice and vector control in schools or at home further expose children to pesticides.

Pesticides exposure is aggravated by poverty as malnutrition can worsen pesticide effects. This is compounded by racial and ethnic discrimination and even casteism that are interlinked with increased inequality, ensuring that these communities are kept disempowered, poor, invisible, unable to address the problems that come with pesticides, and lacking resources to change their farming to organic or agroecology. The majority of child labourers exposed to HHPs come from these communities.

Pesticide residues in food and water in Asia

A Nordic project (Skretteber et al 2014) showed the presence of pesticide residues in fruits and vegetables from the Southeast Asian countries with residues most frequently found in guava, pitaya, chili pepper, chives and basil. Of the 111 different pesticides found in the samples, the insecticides cypermethrin, chlorpyrifos and imidacloprid, and the fungicides carbendazin/benomyl and metalaxyl were the most frequently detected.

Thai-PAN (Atthakor 2016) through multi-residue pesticide screens conducted by UK-based laboratories, found similar results in the market-sold vegetables and fruits in Thailand. Residues of banned carbofuran and methomyl were detected in cucumbers and mandarins, with all mandarin and guava sampled found to be too dangerous to eat. All chilies tested were contaminated.

India's Ministry of Agriculture found pesticide residues in 800 food samples and residue exceeding permissible levels in 46 percent of the samples in the states of Andhra Pradesh and Telangana in 2015 (Rao 2016). A comprehensive review of food pesticide contamination studies in seven cities of Pakistan (Faheem et al 2015) showed that there are samples of fruits, vegetables and meat that exceed the maximum residues level. Testing of Quaker Oats Quick 1-Minute also showed traces of the pesticide glyphosate (Business Insider 2016).

In the Phillipines (Bajet 2015), carbaryl was detected in all vegetables tested while chlorpyrifos was found in 63% of the samples. Other pesticides detected were malathion, carbofuran, methomyl, traizophos, profenos, and diazinon. Vegetables tested include pechay, tomato, eggplant and green beans.

Pesticides have contaminated the water resource of at least six villages in northern Laos where villagers were found getting sick from drinking water (Radio Free Asia 2014). Organochlorine pesticide residues were also found in the surface water of Bertam and Terla Rivers in Cameron Highlands, Malaysia (Abdullah et al 2015), in the rivers of China (Tan et al 2009, Zhou et al 2006), India (Malik et al 2009), Korea (Kim et al 2009), Vietnam (Hung & Thiemann 2002) and Thailand (Poolpak et al 2008; Samoh & Ibrahim 2009).

7. Pesticide poisoning of Asian children

Numerous cases of child poisoning occur throughout the world but are particularly high in Asia, where pesticides banned in the developed countries are still in use. Below is a brief synopsis of some recent cases.

Bangladesh

In 2015, 12 children in Bangladesh aged 2 to 6 developed symptoms of pesticide poisoning including fever, convulsions and unconsciousness after eating pesticide-laced litchis (The Daily Star 2015). Eleven died shortly after. This was not an isolated incident as 14 children also shared the same fate in 2012 (The Daily Star 2012).

Cambodia

In Oddar Meanchey province, 67 villagers including 49 children were poisoned after eating meat and vegetables kept in inadequately washed metal tubs previously used to hold pesticide for cassava trees (The Phnom Penh Post 2013).

Insecticide-tainted cucumbers caused the mass poisoning of 610 villagers, 440 of whom are children, during an anti-child trafficking event for local school children in Siem Reap Province (Khmer Times 2015).

From initial fact finding missions by PANAP and the Cambodian Center for Study and Development in Agriculture (PANAP 2016), children in rural Cambodia are often exposed to brain-harming pesticides like chlorpyrifos and the potential cancer-causing herbicide glyphosate during school hours.

China

Thirty-nine preschool children in China were poisoned, two of whom died, after consuming tetramethylenedisulfotetramine or TETS-contaminated food (Liberty Voice 2014). Although banned in the early 1990s, this rodenticide is widely used due to its availability and low cost.

Dubai

A three-year old Filipina together with another Filipino, died after inhaling toxic gas from banned aluminium phosphide which leaked through the AC duct of their Dubai apartment. The girl's parents and four others were also hospitalised. The hospital report established the presence of phosphine gas in the victims' bodies (Emirates 24/7 News 2014).

India

At least 27 children in India aged 4 to 12, were killed after eating their mid-day meal (The Times of India 2013). Forensic examination showed the presence of high toxic levels of monocrotophos, a highly hazardous pesticide. WHO had urged India to ban monocrotophos in 2009.

Previous incidents (The Times of India 2013) include: (i) the acute poisoning of 32 school children in 2002 due to the use of phorate in Kerala banana plantation; (ii) poisoning of students in 2006 brought about by phorate use in a Punjab sugarcane field; (ii) 30 schoolchildren falling ill in an agricultural field in West Bengal in 2005; (iii) hospitalisation of a 3 year-old child of Muktsar district after consuming pesticide-contaminated food; and (iv) death of a Safdipur village boy after drinking pesticide-contaminated water.

Malaysia

Carbamate-laden food caused severe poisoning of more than 30 people aged 2 to 71 in Siputeh, Batu Gajah (The Malay Mail 2016). The pesticide was found in food stall samples of nasi lemak sambal, kuey teow goreng, kuih bom and cucur badak.

Children aged 10 to 11 living near rice paddies were found chronically poisoned by an organophosphate (Hashim & Baguma 2015). The children had poor motor skills, poor hand/eye coordination, attention speed and perceptual motor speed.

Pakistan

The intentional contamination of baked goods and candies with pesticides due to an alleged business dispute resulted in the death of at least 33 people, including five children (Mail Online 2016). A chemical examination indicated the presence of chlorfenapyr in the laddu, a baked confection.

8. Double standards embedded in pesticide trade exacerbates violation of children's rights

The existence of double standards in the international trade of pesticides from developed countries to developing countries is still prevalent and involves both the export of hazardous pesticides and the transfer of production facilities. Numerous highly hazardous pesticides, such as paraquat, are produced in and exported from countries that do not allow their use. This situation is intensified by the lack of resources for prevention and control of pesticides in developing countries and lack of legislation and inspection by governments. Overall, this factor further contributes to the continued impact of pesticides on children's health and well-being.

Only one country in Asia is known to prohibit the importation of pesticides that are banned in their home country: Palestine (Watts et al 2016). Additionally, the Palestinian Authority actively confiscates pesticides illegally imported into the Occupied West Bank, including those not registered in their country of origin. This small territory, struggling against immense odds, can be a role model for the rest of the world in this respect.

Many of the pesticides banned in developed countries are still in use in developing countries. Annex 2 provides information on 21 pesticides highly hazardous to children that are still in use in many countries of Asia-Pacific.

Recommendations for protecting children from HHPs

1. SAICM develop a proposal for ICCM5 for a mechanism for global governance of pesticides, incorporating human rights measures, to enable the Agenda 2030 SDGs to be met and to ensure children's rights are met.
2. Countries cease operating under a double standard with regard to pesticides, i.e. prevent the export of pesticides that are not registered for use in their own country due to health and environmental considerations.
3. Pesticide companies abide by all aspects of the International Code of Conduct on Pesticide Management, but most especially do not allow their pesticides that require personnel protective equipment (PPE) to be exported to or used in countries where local conditions make the use of PPE impractical.
4. Countries and industry should ensure that the availability and use of pesticides does not violate children's rights.
5. WHO instigate a major project, in collaboration with countries and other stakeholders, to identify the global incidence of pesticide poisoning and the pesticides causing the most problems.
6. Uphold the right of the child to the enjoyment of the highest attainable standard of health guaranteed in Article 24 of the Convention on the Rights of the Child and investigate the human/children's right violations of corporations.

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Annex 1.
Impact of pesticides on children

Pesticides cause coma and death

Symptoms of acute poisoning in children vary with the type of pesticide, but for the commonly used organophosphates (OPs) and carbamates, they include fatigue, dizziness, blurred vision, nausea, vomiting, dry throat and difficulty breathing, stinging eyes, itchy skin, and a burning nose; and muscular symptoms like stiffness and weakness. Death can occur rapidly, or over the course of a few weeks (Goldman 2004). In the case of Silvino, death came within 24 hours due to massive exposure. Other symptoms that may occur are seizures, paralysis, coma, depression, inarticulate speech, memory loss, rapid pulse, anxiety, involuntary twitching, sweating, difficulty in walking, and uncontrolled urination (Watts 2013, Rengam et al 2007).

Pesticides cause birth defects

Dimethoate, carbaryl, benomyl, captan, maneb, mancozeb, propiconazole, paraquat and 2,4-D are teratogenic (Garry et al 1996, Garcia 2003). Parental exposure has been associated with congenital abnormalities (Magoon 2006, de Siqueira et al 2010) including abnormally placed urinary opening on penis, absence of one or both testes (Kristensen et al 1997, Carbone et al 2006, Rocheleau et al 2009), micropenis (Gaspari et al 2011a), missing or reduced limbs (Schwartz et al 1986, Schwartz & LoGerfo 1988), anencephaly (Lacasana et al 2006), spina bifida (Brender et al 2010), and congenital heart disease (Yu et al 2008). The critical period of maternal exposure to pesticides is from the month before conception and the first trimester (Nurminen et al 1995, Garcia et al 1998). The critical period for paternal exposure is during the three months prior to conception (Brouwers et al 2007, Pierik et al 2004). Parental exposure has been linked to stillbirths (Goulet & Theriault 1991, Rupa et al 1991, Taha & Gray 1993, Nurminem et al 1995, Pastore et al 1997, Medina-Carrilo et al 2002). One study found that agricultural workers exposed to OPs had significantly increased sperm chromosome nullisomy involving the sex chromosomes, increasing the risk of genetic syndromes such as Turner syndrome (Garry 2004).

The most striking evidence that pesticides cause birth defects is Shruti of Kasargod, India who manifested deformities of hands, feet and other skeletal abnormalities among other congenital diseases of the heart, brain and eyes, from parental exposure to endosulfan. The congenital problems were observed to be more prevalent in girls (NIOH 2002, Quijano 2002).

Pesticides damage the brain

Voluminous studies (Watts 2013) have linked parental pesticide exposure – e.g. DDT, DDE, metolachlor, lindane – to low birth weight and decreased head circumference of children. In his review of the impact of toxins on the developing brain, Lanphear (2015) declared that "we are in the midst of an epidemic of brain-based disorders" and that "learning disabilities and mental disorders are now two of the most prevalent morbidities in children." He drew a strong link between exposure to environmental toxins and neuropathy. The fetus or newborn lacks critical enzymes to metabolize toxins, such as PON1, that is known to metabolize OPs.

Neurotoxic OPs may be a key factor in ADHD. Animal studies have shown OPs cause cognitive deficits and hyperactivity (Bouchard et al 2010, Marks et al 2010). Pesticides are now regarded as one of the culprits in autism, with both OPs and organochlorines listed in the top ten causes (Landrigan et al 2012). Rowe et al (2016) found that residential proximity to areas that use OP and carbamate pesticides during pregnancy is associated with poorer cognitive functioning in children at 10 years of age. Bellinger (2012) identified OPs as responsible for the significant lowering of IQ across the whole US population.

Newborn infants in New York, exposed in utero to chlorpyrifos from household use, were found to have delayed cognitive and psychomotor development. Those most exposed had significantly more attention problems, ADHD and pervasive developmental disorder at three years of age (Rauh et al 2006, Gulson 2008). It was found that these effects were independent of socio-economic factors (Lovasi et al 2011). It was further found that prenatal exposure to chlorpyrifos alter children's brain structure (Rauh et al 2012).

Pesticides cause cancer

There is an increasing amount of epidemiological evidence (Watts 2013) that both direct childhood exposures and parental exposures to pesticides are associated with childhood cancer such as leukaemia, brain cancer, non-Hodgkin's lymphoma, neuroblastoma, Ewing's sarcoma, and Wilm's tumour. Others include soft-tissue sarcoma, colorectal cancer, germ cell cancer, Hodgkin's disease, eye cancer, renal and liver tumors, thyroid cancer, and melanoma.

Meta-analysis studies confirm the hazards of pesticides

A recent review (Marquez et al 2016) of meta-analysis studies confirmed that: (i) pesticide exposure during pregnancy increases the risk of cancer outcomes in a child; (ii) parental exposure before conception for both parents increases risk of leukemia and brain tumors in children; (iii) a father's occupational pesticide exposure before conception is strongly linked to increased cancer risk in his children, suggesting damage to developing sperm; and (iv) living in rural agricultural areas increases risk of childhood leukemia.

While the review focused on studies investigating childhood cancer outcomes, Marquez et al. noted several studies that found links between prenatal or childhood pesticide exposures and incidence of cancers later in life, e.g. girls exposed to DDT before they reach puberty are five times more likely to develop breast cancer in middle age (Cohn et al 2007), and that *in utero* DDT exposure increases breast cancer risk (Cohn et al 2015).

Annex 2.
Pesticides highly hazardous to children still in use in the Asia-Pacific

Pesticide	Type	Primary Crops/Use	Hazards to Children	No. of countries where banned*
Atrazine	Herbicide	Corn, soy, sorghum, sugarcane	Birth defects, cancer, endocrine disruption, immunotoxicant	37
Carbaryl	Insecticide	Tomatoes, eggplants, olives, oranges, apples	Birth defects, cancer, endocrine disruption, developmental toxicant, neurotoxicant, immunotoxicant	32
Chlorothalonil	Fungicide	Potatoes, peanuts, tomatoes	Cancer, endocrine disruption, immune and developmental effects	2
Chlorpyrifos	Insecticide	Cotton, corn, oranges, bananas, apples, vegetables	Acute poisoning, birth defects, cancer, endocrine disruption, neurotoxicant, immune and predisposal to obesity and diabetes	1
Cypermethrin	Insecticide	Onions, garlic, lettuce, broccoli, cereals/grains, oilseeds, fruits	Acute poisoning, cancer, endocrine disruption, behavioral effects and delayed mental development, Parkinson's disease later in life	0
DDT	Insecticide	Mosquito control	Endocrine disruption, neurotoxicant, predisposal to obesity and diabetes	68
Deltamethrin	Insecticide	Carrots, corn, rice, spinach, wheat	Cancer, endocrine disruption, neurotoxicant, immunotoxicant	0
Diazinon	Insecticide	Chinese Kale, Tomatoes, spinach, apples, peaches	Acute poisoning, cancer, developmental toxicant, neurotoxicant, endocrine disruption, predisposition to diabetes and Parkinson's disease	29

Dichlorvos	Insecticide	Beans, brassica seedlings, structural & commodity fumigation, poultry houses	Acute poisoning, cancer, neurotoxicant, endocrine disruption, immunotoxicant, predisposition to diabetes and Parkinson's disease	30
Lambda-cyhalothrin	Insecticide	Hay, pistachios, rice, lettuce, soy, wheat	Acute poisoning, cancer, endocrine disruption, neurotoxicant	28†
Malathion	Insecticide	Rice, mango, eggplant, lettuce	Acute poisoning, birth defects, cancer, endocrine disruption, neurotoxicant, predisposition to ADHD, diabetes and obesity	1
Mancozeb	Fungicide	Potatoes, banana, lettuce, Asian pear	Acute poisoning, allergic sensitization, birth defects, cancer, developmental toxicant, endocrine disruption	1
Maneb	Fungicide	Potatoes, banana, lettuce, broccoli	Acute poisoning, behavioral effects, birth defects, cancer, developmental toxicant, endocrine disruption, immunotoxicant, predisposition to Parkinson's disease	1
Methamidophos	Insecticide	Cotton, rice, citrus, maize, grapes, soybeans, tobacco, vegetables, hops, peaches, bananas, pineapple	Acute poisoning, behavioral effects, death, developmental toxicant, neurotoxicant	47
Methyl parathion	Insecticide	Walnuts, potatoes, grapes	Neurotoxicant, endocrine disruption	26
Monocrotophos	Insecticide	Cotton, rice, pulses, groundnuts, tomatoes, eggplants, mangoes, grapes, chilies, cardamom, coconut, oil palms, coffee,	Birth defects, cancer, endocrine disruption, neurotoxicant, possible immunotoxicant	57

		tea, castor, citrus, olives, maize, sorghum, sugar cane, sugar beet, pea, potatoes, soybeans, cabbage, mustard, onion, pepper, ornamentals, tobacco		
Paraquat	Herbicide	Cotton, oil palms, bananas, grapes, cereals, pulses, oil seeds, vegetables	Acute poisoning, death, endocrine disruption, immunological effects, neurotoxicant, implicated in diabetes	35
Parathion	Insecticide	Cereals, fruit, nuts, vines, vegetables, ornamentals, cotton, field crops	Acute poisoning, death, birth defects, cancer, neurotoxicant, immunotoxicant, predisposition to diabetes and obesity	26
Permethrin	Insecticide	Pistachios, lettuce, cotton, wheat, maize, alfalfa, vector control	Cancer, endocrine disruption, neurotoxicant, immunological effects	29
Propoxur	Insecticide	Structural, landscape Sugar cane, cocoa, grapes, maize, rice, vegetables, cotton, alfalfa, forestry, ornamentals	Acute poisoning, cancer, developmental toxicant, endocrine disruption, immunosuppressant	29
Glyphosate	Herbicide	Rice, Soy, corn, cotton, canola, oil palm	Birth defects, cancer, endocrine disruption, immunotoxicant, kidney damage, implicated in Parkinson's disease	1

For the full PAN International list of Highly Hazardous Pesticides and the full PAN International Consolidated List of Bans (PAN CL), see http://pan-international.org/resources;

* The PAN CL is not complete, as many countries do not publish lists of banned pesticides, and/or do not notify the Secretariat of the Rotterdam Convention, which is the only international body that keeps track of such bans.

† Not banned in any country, but is not approved in the European Union.

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On-line petitions for the establishment of pesticide-free buffer zones

Global

https://www.change.org/p/urge-the-state-governments-to-institute-pesticide-free-buffer-zones-around-schools?recruiter=47221390&utm_source=share_petition&utm_medium=facebook&utm_campaign=share_facebook_responsive&utm_term=des-lg-no_src-no_msg

PAN Asia Pacific (PANAP), one of five regional centres of the Pesticide Action Network, is dedicated to the elimination of harm upon humans and the environment by pesticide use and the promotion of sustainable biodiversity-based agriculture. In addition, PANAP helps strengthen people's movements in their assertion of rights to land and livelihood; advancing food sovereignty and gender justice.

For more information:

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For a just and pesticide-free future

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