

# Is it Zika 'Virus' or Pesticides and Birth Defects?

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"Although a causal link between Zika infection in pregnancy and microcephaly has not, and I must emphasize, has not been established, the circumstantial evidence is suggestive and extremely worrisome," WHO Director-General Margaret Chan said, reported by Reuters. "An increased occurrence of neurological symptoms, noted in some countries coincident with arrival of the virus, adds to the concern."

Pesticides in Brazil and Pernambuco state are more likely to be the cause of microcephaly and birth defects than Zika virus and the links below speak for themselves.

"The farmers of Brazil have become the world's top exporters of sugar, orange juice, coffee, beef, poultry and soybeans. They've also earned a more dubious distinction: In 2012, Brazil passed the United States as the largest buyer of pesticides.

This rapid growth has made Brazil an enticing market for pesticides banned or phased out in richer nations because of health or environmental risks."

Why Brazil has a big appetite for risky pesticides

"According to the latest figures available from Brazil's health ministry, published on 20 January, 3,893 cases of microcephaly have been recorded since the start of 2015. Pernambuco accounts for 1,306 of those, around a third of the total. In 2014, there were 150 cases across the whole of Brazil." [1]

City at centre of Brazil's Zika epidemic reeling from disease's insidious effects

The most obvious cause of birth defects in this area is direct contact and absorption of pesticides.

"A study of pesticide use on tomatoes in the Northern State of Pernambuco, Brazil, indicates high exposure to pesticide workers and poor application methods which threaten the ecology of the area."

"Women washed the pesticide application equipment, generally in the work environment, without protective clothing or without observing the recommended three-fold washing process. [2]

Poisoning assessment

Many of the pesticides used were hazardous organochlorine and OP insecticides. Of the workers interviewed, 13% suffered some type of acute poisoning that required first-aid treatment; 28% reported nausea during application of pesticides; and the majority experienced some symptoms immediately after exposure. 36% reported health problems related to the immune system (frequent itching of skin, eyes, and nose; or fever); 36%, skeletal/muscular problems (pains in joints); 33%, central and peripheral nervous system problems (dizziness, numbness in superior limbs, alterations in sleep patterns, and vomiting); 28%, digestive system problems; 25%, sensory organ problems; 18%, cardiovascular problems; 13%, respiratory system problems; and 11%, with urinary-genital system problems

#### Reproductive effects

Of the women workers, 32% reported being pregnant more than five times, 53% reported having prenatal examinations, 97% reported that they were not poisoned by pesticides during pregnancy. Almost three-quarters of the women (71%) reported miscarriages, and 11% reported having mentally and/or physically impaired offspring.

#### Neuro-psychological symptoms

Symptoms of minor psychiatric disturbances were observed in 44% of women and 56% of men surveyed (in the general Brazilian population, the prevalence is 5% to 15%)”

“The results of the laboratory analysis showed the maximum residue limits (MRLs) are regularly exceeded: methamidophos in 25% of the samples, and ETU in 78%. ETU can cause goitres (a condition in which the thyroid gland is enlarged), birth defects and cancer in exposed experimental animals. ETU has been classified as a probable human carcinogen by the US EPA. The organochlorine insecticide, endosulfan, which is banned for use on tomatoes was detected in 28% of samples at levels of up to 510 parts per billion.”

“It is important to introduce education on the hazards of pesticides and good agricultural practices in the school curriculum as many children accompany their family members into the fields”

#### Tomato production in Brazil: Poor working conditions and high residues threaten safety

“Pesticides were found in the milk from 11 farms and one milk cooler (Fig.1), totalizing 12 positives milk samples. The main pesticide was fenthion, detected in four samples of 12 (33.33%), followed by dimethoate (25%), coumaphos (8.33%) and malathion (8.33%). In CB group, the pesticides detected were carbofuran (25%), aldicarb (16.67%) and carbaryl (8.33%). In some samples, two or more active principals were detected, what explains percentages over 100%. The frequency of pesticides found in this study is in agreement with Araújo et al. (2000) that noted that the most pesticides commonly used in Pernambuco are from OP class, followed by CB and pyrethroids.” [3]

#### Organophosphorus and carbamates residues in milk and feedstuff supplied to dairy cattle

“It is very well known that acute or chronic increase of retinoic acid (RA) levels leads to teratogenic effects during human pregnancy and in experimental

models.

The characteristic features displayed by RA embryopathy in humans include brain abnormalities such as microcephaly, microphthalmia and impairment of hindbrain development; abnormal external and middle ears (microtia or anotia), mandibular and mid facial underdevelopment, and cleft palate. Many craniofacial malformations can be attributed to defects in cranial neural crest cells.” [4]

#### Pesticides Used in South American GMO-Based Agriculture

“There has been ongoing controversy regarding the possible adverse effects of glyphosate on the environment and on human health. Reports of neural defects and craniofacial malformations from regions where glyphosate-based herbicides (GBH)...” [5]

#### Glyphosate-Based Herbicides Produce Teratogenic Effects on Vertebrates by Impairing Retinoic Acid Signaling

“The report says that national consumption of agrochemicals is equivalent to 5.2 litres of agrochemicals per year for each inhabitant. Agrochemical sales increased from USD 2 billion in 2001 to 8.5 billion in 2011. The report names GM crops as a key cause of the trend: “Importantly, the release of transgenic seeds in Brazil was one of the factors responsible for putting the country in first place in the ranking of agrochemical consumption – since the cultivation of these modified seeds requires the use of large quantities of these products.” [6]

The report continues:

“The cropping pattern with the intensive use of pesticides generates major harms, including environmental pollution and poisoning of workers and the population in general. Acute pesticide poisoning is the best known effect and affects especially those exposed in the workplace (occupational exposure). This is characterized by effects such as irritation of the skin and eyes, itching, cramps, vomiting, diarrhea, spasms, breathing difficulties, seizures and death.

“Already chronic poisoning may affect the whole population, as this is due to multiple exposures to pesticides, that is, the presence of pesticide residues in food and the environment, usually at low doses. Adverse effects of chronic exposure to pesticides may appear long after the exposure, and so are difficult to correlate with the agent. Among the effects that can be associated with chronic exposure to pesticide active ingredients are infertility, impotence, abortions, malformations, neurotoxicity, hormonal disruption, effects on the immune system, and cancer.”

#### Brazil’s National Cancer Institute Names GM Crops as Cause of Massive Pesticide Us [7]

#### Health information systems and pesticide poisoning at Pernambuco [8]

Most of this is not new, with Pernambuco it’s just concentrated.

#### The Long Battle Over Pesticides, Birth Defects and Mental Impairment

There may be links with mosquitos and Zika virus but time will tell, if they manage to reduce

the mosquito problem with more insecticides that may be a good thing but if birth defects keep rising in these areas it will be the pesticide use to blame.

If that happens we might have to start thinking about what on earth we are doing?



Notes:

1. <http://www.reuters.com/investigates/special-report/brazil-pesticides/>
2. <http://www.theguardian.com/global-development/2016/jan/25/zika-virus-mosquitoes-countries-affect-ed-pregnant-women-children-microcephaly>
3. <http://www.pan-uk.org/pestnews/Issue/pn46/pn46p12.htm>
4. [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0100-736X2011000700009&lng=en&nrm=i so&tlng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-736X2011000700009&lng=en&nrm=i so&tlng=en)
5. [http://www.academia.edu/5023929/Pesticides\\_Used\\_in\\_South\\_American\\_GMO-Based\\_Agriculture\\_A\\_Review\\_of\\_Their\\_Effects\\_on\\_Humans\\_and\\_Animal\\_Models](http://www.academia.edu/5023929/Pesticides_Used_in_South_American_GMO-Based_Agriculture_A_Review_of_Their_Effects_on_Humans_and_Animal_Models)
6. <http://pubs.acs.org/doi/abs/10.1021/tx1001749>
7. <http://sustainablepulse.com/2015/04/10/brazils-national-cancer-institute-names-gm-crops-as-cause-of-massive-pesticide-use/#.VqyuxVmoS2W>
8. [http://www.scielo.br/scielo.php?pid=S1415-790X2015000300666&script=sci\\_arttext](http://www.scielo.br/scielo.php?pid=S1415-790X2015000300666&script=sci_arttext)
9. <http://www.counterpunch.org/2014/10/24/the-long-battle-over-pesticides-birth-defects-and-mental-impairment/>

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