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ENVIRONMENT AND CLIMATE CHANGE

Protests held worldwide against Monsanto, genetic modification of food and use of pesticides

EDWARD C. CORRIGAN | October 21st 2013 | 1

October 16, 2013 was World Food Day. Four days before this event thousands took to streets across the World to protest the use of Genetically Modified Organisms (GMOs) products and pesticides that are suspected of being linked to diseases. The giant multi-national corporation Monsanto was one of the main targets of the protests. Over 50 countries took part in the March for World Food Day, and in cities all across the United States and Canada.

Many of the demonstrators have been calling for the permanent boycott of GMOs and "other harmful agro-chemicals," according to March against Monsanto's official web page. Protesters displayed large banners denouncing GMO products, and many donned fancy dress to bring attention to this important issue. A group in Washington DC dressed as bees to highlight the impact of insecticides on declining bee populations.

Why have so many people taken to the street to protest the presence of chemicals and pesticides in our food? Why are so many people concerned about genetic modification of the crops that make up much of our diet?

The Precautionary Principle

The precautionary principle or precautionary approach states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of a scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking an action.

The principle is used, and should be used, by policy makers to justify discretionary decisions in situations where there is the possibility of harm from taking a particular course or making a certain decision when extensive scientific knowledge on the matter is lacking.

The principle implies that there is a social responsibility to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result.

Regarding international conduct, the first endorsement of the principle was in 1982 when the World Charter for Nature was adopted by the United Nations General Assembly, while its first international implementation was in 1987 through the Montreal Protocol. Soon after, the principle integrated with many other legally binding international treaties such as the Rio Declaration and Kyoto Protocol.

In some legal systems, as in the law of the European Union, the application of the precautionary principle has been made a statutory requirement in some areas of law.

The precautionary principle denotes a duty to prevent harm, when it is within our power to do so, even when all the evidence is not in. This principle has been codified in several international treaties to which Canada is a signatory. Canadian domestic law makes reference to this principle but implementation remains limited and needs to be strengthened.

In 2001 the Canadian Supreme Court adopted this principle in the Hudson Decision [Date 2001-06-28, Neutral citation 2001 SCC 40, Report [2001] 2 SCR 241] which upheld the right of Municipalities to restrict the use of pesticides in their jurisdictions.

I am not a scientist or expert on pesticides. I am a lawyer, environmentalist, writer, activist and sometimes even a politician. This is an edited version of my prepared talk given at a rally held in London, Ontario on the risks of chemical contamination, genetic modification of plants and the adverse health impacts on humans. In 2006 I gave a similar presentation to the London City Council and have published a few articles on the risks pesticides and other chemicals pose to humans.

Back in 2001 when I was on London, Ontario, City Council (2000–2003) Bill Armstrong, still a member of City Council, former councillor David Winninger and I were the only three elected City Councillors to support a bylaw restricting the cosmetic use of pesticides.

In 2006 London City Council after a public campaign to support protecting the environment and then later the province of Ontario, enacted laws restricting the use of pesticides for cosmetic purposes.

Looking back on this issue it seems absurd how some City politicians and also provincial and federal politicians, refused to consider the evidence that pesticides and chemicals can cause real harm. Today that struggle to enlighten our political decision makers continues.

Study Shows Build-Up Of Chemicals In Human Body

The largest study of chemical exposure ever conducted on human beings, was released on July 21, 2005 by the U.S. Center for Disease Control and Prevention (CDC). The national exposure report examined how chemicals are being absorbed into the human body. Dr. Julie Gerberding, the CDC Director indicated that most American children and adults were carrying in their bodies' dozens of toxic compounds

and pesticides used in consumer products, many of them linked to possible health threats.

The CDC study documented bigger doses in children than in adults of many chemicals, including some pyrethroids. These substances are found in virtually every household pesticide. Also found were phthalates, which are in nail polish, other beauty products and soft plastics.

The 475-page CDC study looked at 148 toxic compounds in the urine and blood of about 2,400 people age six and older in 2000 and 2001. Gerberding said this is the largest and most comprehensive report of its kind ever released anywhere by anyone." The findings were broken down by age group and race.

CDC officials also relayed good news. Steep declines were found in children's exposure to lead and secondhand cigarette smoke. About 1.6% of young children tested from 1999 to 2002 had elevated levels of lead, which could lower their intelligence and cause brain damage. This figure is compared with 88.2% in the late 1970s and 4.4% in the early 1990s. Gerberding called this an "astonishing public health achievement." The reduction was attributed to the removal of lead from paint and gasoline.

Deeply troubling environmental health experts, however, was finding more than 100 other chemical substances in the human body, and particularly in children.

Dr. Jerome A. Paulson, an associate professor of pediatrics at the George Washington University School of Medicine and Health Sciences who specializes in children's environmental health said, "The report in general shows that people 'kids and adults' are exposed to things that aren't intended to be in their body." The doctor added, "In and of itself, that is a concern. Whether it's harmful or not we can't tell from this particular study."

"We have fouled our own nest," Dr. Paulson said. Adding, "We contaminated the environment sufficiently that there are measurable amounts of potentially toxic substances in people 'kids and adults.'"

The CDC study did not try to gauge the health threat the chemicals might pose. A detectable amount of a compound in a person's body does not mean it causes disease or other damage, the Center noted.

For many compounds in the study, experts have little data on what amounts may be harmful or what they may do in combination. According to Dr. Thomas Burke, associate professor at the Johns Hopkins Bloomberg School of Public Health, "We are really at the beginning of a very complicated journey to understand the thousands of substances we are exposed to."

The discovery of pyrethroids in most people is especially significant. Previously no one had examined the human body for their presence. Pyrethroids are synthetic versions of natural compounds found in flowers. They have been considered safer than older pesticides, such as DDT and chlordane that build up in the environment, and have been banned in the United States.

According to the experts pyrethroids in high doses, are toxic to the nervous system. Pyrethroids are the second most common class of pesticides that result in poisoning. At low doses, it is believed that these synthetic chemicals might alter hormones. The pyrethroids are used in large volumes in household pesticides, on farms and are often used to kill mosquitoes.

In animal tests, and in one recent study of human babies, some of the compounds have been shown to alter male reproductive organs or to feminize hormones. Eleven of 12 phthalates tested were found in higher concentrations in children than adults. Phthalates are used in fragrances.

Representatives of the chemical and pesticide industry praised the report. They stated that human biomonitoring is the best available tool to measure exposure. Chemical industry officials echoed the CDC in saying that finding chemicals in the human body did not necessarily mean they posed a threat.

American Chemistry Council spokesman Chris VandenHeuvel said the CDC study demonstrates "that exposure to these man-made and natural substances is extremely low." Director Gerberding said that "for the vast majority" of the 148 chemicals examined in the report, "we have no evidence of health effects."

Many toxicologists and environmental scientists, however, disagree. Some of these compounds are some bad actors," Dr. Burke said. Studies of the effect of these compounds on animals, and people, suggest that most of these substances can affect the brain, hormones, reproductive system or the immune system, or that they are linked to cancer.

Many of the compounds have not been studied sufficiently to know what happens with chronic exposure to low doses. "No evidence of health effects does not imply that they are not harmful," Paulson said. "It just means we don't know one way or another."

Assessing the impact of chemicals after humans have been exposed to them should not be the preferred approach. Chemicals, and in particular toxic substances, should be proven safe before exposing human populations to their effects.

In the US environmental groups have called for comprehensive tests to be done by chemical companies on the effects of industrial compounds before they are used. The European Parliament has already adopted the "precautionary principle" into many of its laws.

The evidence suggests that many contaminants accumulate more in children than in adults. This means that children are exposed to larger amounts of chemicals perhaps from crawling, breathing more rapidly or from putting items in their mouths. Alternatively that their smaller bodies are less able to metabolize or cope with the chemical substances.

Children undergo extraordinary cell growth, in the womb and in the first two years after birth, from brain neurons to immune cells. There are more opportunities for toxic compounds to disrupt the growing cells, Paulson said. Tests done on animals show that fetuses and newborns are more susceptible to harm from chemicals.

According to the CDC study, one of every 18 women of childbearing age, or 5.7%, had mercury levels that exceeded what the U.S. Environmental Protection Agency deemed safe to a developing fetus. Medical studies on school children show exposure to mercury in the womb can lower IQs, with memory and vocabulary also being impaired.

With more chemicals in the environment humans, especially fetuses and children, are vulnerable. Many of the chemicals are known to have adverse effects. However, the presence of these chemicals is not natural and the long term effect of these substances individually and in combination is not known.

Many medical experts suggest that there is a link to increased exposure to chemical compounds, to rising cancer rates, allergies, breathing problems and lower human fertility.

Evidence Linking Chemicals And The Obesity Epidemic

It is widely accepted that Americans and Canadians, Westerners in general, are getting fatter, and everyone thinks they know why: more eating and less moving.

It has been suggested by some scientists that the presence of Antibiotics might increase obesity by killing off beneficial bacteria. According to Joseph Kemnitz, director of the Wisconsin National Primate Research Center, after studying obesity in animals, "Some bacteria in our intestines are associated with weight gain," Kemnitz said. "Others might provide a protective effect."

Paula Baille-Hamilton who studies toxicology and human metabolism, started perusing scientific literature for chemicals that might promote obesity. She turned up so many papers containing evidence of chemical-induced obesity in animals (often, she says, passed off by study authors as a fluke in their work). After studying the subject for three years she published in 2002 an aptly titled review paper: "Chemical Toxins: A Hypothesis to Explain the Global Obesity Epidemic."

Baille-Hamilton "found evidence of chemicals that affects every aspect of our metabolism." Carbamates, which are used in insecticides and fungicides, can suppress the level of physical activity in mice. Phthalates are used to give flexibility to plastics and are found in a wide array of scented products, from perfume to shampoo. In people, they alter metabolism and have been found in higher concentrations in heavier men and women.

In men, phthalates interfere with the normal action of testosterone, an important hormone for maintaining healthy body composition. Phthalate exposure in males has been associated with a range of effects including low testosterone, lower sperm count and infertility.

Baille-Hamilton's work highlights evidence that weight gain can be influenced by endocrine disruptors, chemicals that mimic and can interfere with the natural hormone system.

What Is The Monsanto Connection?

Glyphosate, the active ingredient in Roundup®, is the most popular herbicide used worldwide. The industry asserts it is minimally toxic to humans, but many Scientists argue otherwise. Glyphosate supposedly only affects plants and insects and not mammals including humans.

Eighty percent of genetically modified crops, particularly corn, soy, canola, cotton, sugar beets and most recently alfalfa, are specifically targeted towards the introduction of genes resistant to glyphosate, the so-called "Roundup Ready® feature" In humans, only small amounts (~2%) of ingested glyphosate are metabolized to aminomethylphosphonic acid (AMPA), and the rest enters the blood stream and is eventually eliminated through the urine.

Residues of Glyphosate are, however, found in the main foods of the Western diet, comprised primarily of sugar, corn, soy and wheat. Also of concern is the fact "Biotech giant Monsanto has recently been awarded yet another victory by the United States government thanks to a recent Environmental Protection Agency decision to allow larger traces of the herbicide glyphosate in farm-grown foods." This increase was granted despite a number of studies linking glyphosate to various diseases in humans.

Glyphosate's inhibition of cytochrome P450 (CYP) enzymes many scientists argue is an overlooked component of its toxicity to mammals. CYP enzymes play crucial roles in biology, one of which is to detoxify xenobiotics. [foreign biological substances]

Thus, glyphosate enhances the damaging effects of other food borne chemical residues and environmental toxins. Negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body. Interference with CYP enzymes acts synergistically with disruption of the biosynthesis of aromatic amino acids by gut bacteria, as well as other impairments in human body functions.

Studies have shown sharp increases in glyphosate contamination in streams in the Midwestern United States following the mid-1990s, pointing to its increasing role as the herbicide of choice in agriculture. A now common practice of crop desiccation through herbicide administration shortly before the harvest assures an increased glyphosate presence in food sources as well.

The industry asserts that glyphosate is nearly nontoxic to mammals, and therefore it is not a problem if glyphosate is ingested in food sources. Acutely, it is claimed to be less toxic than aspirin. As a consequence, measurement of its presence in food is practically nonexistent. A vocal minority of experts believes that glyphosate may instead be much more toxic than is claimed, although the effects are only apparent after a considerable time lapse.

Thus, while short-term studies in rodents have shown no apparent toxicity, studies involving life-long exposure in rodents have demonstrated liver and kidney dysfunction and a greatly increased risk of cancer, with shortened lifespan.

Glyphosate's claimed mechanism of action in plants is the disruption of the shikimate pathway, which is involved with the synthesis of the essential aromatic amino acids, phenylalanine, tyrosine, and tryptophan. The currently accepted dogma is that glyphosate is not harmful to humans or to any mammals because the shikimate pathway is absent in all mammals.

This argument is not correct. This pathway is present in gut bacteria, found in mammals, including humans, which play an important and heretofore largely overlooked role in human physiology. In addition to aiding digestion, the gut microbiota synthesize vitamins, detoxify xenobiotics, and participate in immune system homeostasis and gastrointestinal tract permeability. Furthermore, dietary factors modulate the microbial composition of the gut.

The incidence of inflammatory bowel diseases such as juvenile onset Crohn's disease has increased substantially in the last decade in Western Europe. It is reasonable to suspect that glyphosate's impact on gut bacteria may be contributing to these diseases and conditions.

There are reasons for concern. The fact that female rats are highly susceptible to mammary tumors following chronic exposure to glyphosate suggests that there may be something else going on. A systematic search of the literature has led researchers to the realization that many of the health problems that appear to be associated with a Western diet could be explained by biological disruptions that have already been attributed to glyphosate.

While many other environmental toxins obviously also contribute to these diseases and conditions, some researchers believe that glyphosate may be the most significant environmental toxin, mainly because it is pervasive and it is often handled carelessly due to its "alleged" nontoxicity.

We should be very concerned about the increased exposure to glyphosate and other chemicals in our food, water supply, and the air we breathe. The fact that these chemicals, many of them toxic and suspected cancer causing agents, have a suspected connection to a wide variety of diseases and conditions that build up over time cause a great deal of harm to our own human bodies.

In my opinion, a clear parallel can be drawn to the use of pesticides in our own neighbourhoods, our water supply, the air we breathe and also perhaps most importantly the food we eat and increased rates of disease. As we learn more about the linkages between pesticides, and other chemicals, including glyphosate, and rising rates of cancers, respiratory ailments, allergies, birth defects, and infertility the stronger the imperative to take action.

The Supreme Court of Canada endorsed the "precautionary principle" in the Hudson decision that upheld a municipal pesticide bylaw. The "precautionary principle" suggests that we avoid potential and suspected health hazards. This is a good rule to govern how we live. If we suspect that something is harmful we should take measures to protect ourselves and reduce the risk of harm. It is this rule that should be applied with pesticides and other chemicals as mounting evidence shows that pesticides and chemicals foreign to our bodies are linked to various health problems.

The "Precautionary Principle" is the rule that should be governing our lives and the lives of our children. Not using chemicals that the scientific evidence shows are increasingly building up in our bodies and where there is evidence to suggest that these chemicals, many of which are toxic, are linked to "most of the diseases and conditions associated with a Western diet, which include gastrointestinal disorders, obesity, diabetes, heart disease, depression, autism, infertility, cancer and Alzheimer's disease."

We should be following the "precautionary principle" and not experimenting on the effects of these chemicals to see what happens to us, our children and future generations. Humans also should not be used as lab rats.

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Tags: [food security](#), [monsanto](#).

1 comments

Excellent article. I enjoyed reading the support for your position and totally agree that "following the "precautionary principle" should be the rule governing our lives". However, how can we do that? if the CDC release such a report in 2005, what has happen since then? 8 years after we still see how Monsanto keep working in the same pathway. Interestingly, there is a huge debate in Colombia as per the government is trying to impose on the agricultural people and farm workers that they cannot storage seeds but rather have to buy the seeds from Monsanto and other companies alike, coincidence?

#1. Posted by Mauricio Marin in London,Ontario on October 26th 2013 at 7:38am