CHEMICAL PESTICIDES CAUSING POPULATION INFERTILITY AND BIRTH DEFECTS

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In the summer of 2003, I visited 18 countries of the European Union in five months and stayed as a guest with Mette Meldgaard's family when I was in Denmark. During the meal, I learned from the family that the first organic farming movement in Denmark started in 1981. Of all the total farmland in Denmark, 8% is engaged in organic farming. Of all the food sold in Denmark, 6% is organic, which is the highest in Europe. I was told that in the early days of the organic farming movement, the Danish public made one observation of the organic farmers. They noticed that practically all the organic farmers had more children than the chemical farmers. Then started the speculations as to why this is so. The consensus has been that the organic farmers have more active sperms. The media accepted such an explanation, and started spreading it. So it is now commonly accepted in Denmark that organic farmers have higher sperm counts and that their sperms are more alive and more capable of penetrating the egg membranes. There was Danish greenhouse chemical farmer who had no children at all. One day he quit farming with chemicals and switched to organic. After that, he produced several children. At the table, there were discussions as to why organic farmers' sperms are special.

There, without much thought, I offered my theory instinctively. "Before I came to Denmark," I said, "I visited Italy, and there I was told by the organic people that in all of Europe, Italy is suffering from the steepest population decline. So, how come in a Catholic country where the church's teachings are against population control the population decline is the steepest? While up here in Denmark, which is a Protestant country, the fertility rate is the highest among the organic farmers." Around the table, there were theories of Women's Liberation in Italy and family restructuring in the society. My theory, however, was based on the use of chemical pesticides.

Chemical pesticides contaminate the environment, the soil, and the food. Such toxic contaminants could have either damaged or weakened the male sperms and have severely decreased their fertility ability. Denmark has the second highest percentage of organic farming in Europe, the highest being Austria, which is 10% organic. Italy is among the lowest in percentage of organic farming in Europe. So the Italians as a

population have been more affected by chemical pesticides. If there is any organic farming in Italy, it is in northern Italy, along the Swiss and Austrian borders. Organic farming decreases southward down to 0% in southern Italy. "Therefore," I said, "the population decline in Italy must be associated with the increasingly negative impact of the chemical pesticides." Attributing population decline to chemical pesticides was not agreeable to all at the table. They said that my explanation was too simplistic. But, I did not insist that I was right. I became vigilant on the issue. With my eyes open, I have kept looking for more evidence.

When I was in China two years ago, I happened across a news release from the Chinese Official, Xinhua News Agency. In it, it was stated that 80% of sperm donors at a sperm bank in Shanghai have been rejected. They did not meet the sperm bank's qualification requirements. Two factors have been listed for the rejection: low sperm counts, and poor sperm quality. Professor Wang Yixin, in charge of the Shanghai Human Sperm Bank, attributed these factors to environmental pollution. Pollution from water they drink, food they eat, and the air they breathe. We can very obviously assume that the water, the food, and the air have all been contaminated by chemical pesticides. The Chinese statistics had it that 20% of all chemicals contain reproductive toxins. Apart from affecting the sperm quality, they are capable of producing mammary and uterine cancers. They also linked a marked rise in teenage obesity and sexual immaturity to pollution. A footnote hereby to point out, that in the late 1970's China began to adopt the modern way of farming by using chemical fertilizers, chemical pesticides, and machinery.

I returned to North America on September 4, 2003 by taking the cruise ship Grandeur of the Seas, leaving Harwich, England, and calling on different ports in Europe and North America before arriving in Boston, Massachusetts at the final destination. But before the ship could enter Cork, Ireland, there arose a gale-force storm, which forced the ship to abandon its visit to Cork. Instead of visiting Cork, the ship decided to call on Halifax in Canada, which was not a scheduled port of call. The switch disappointed many passengers. For them, Cork was a more attractive place to visit than Halifax was. I was also disappointed. When we arrived in Halifax that early morning of September 12, 2003, I decided to disembark. Why go to Boston, and then from Boston back to Canada? I decided this would be too much of a hassle. It made more sense to get off in Halifax and, from Halifax, stop off in a few places in Canada before coming home to Victoria. So I was the only passenger who got off in Halifax. Fellow passengers later informed me that after I got off the ship, rumours circulated on board that one Chinese man had jumped ship, which was very amusing!

Once on shore, I contacted Professor David Patriquin at Dalhousie University who was surprised that I suddenly appeared in Halifax, and came to have tea with me. I explained to him the circumstances of my appearance. Professor Patriquin immediately said, " God has changed the direction of the wind to blow you to Halifax!" He explained why he said so. "I want you to go to Charlottetown, Prince Edward Island, today," he said, "because there is an organic market scheduled for tomorrow where you can meet many organic farmers and many leading figures in the movement. They would be pleased to meet you."

When I was at the organic market on Saturday September 13, 2003, I met many people and learned many things. I was told that PEI has twelve times the national rate of child asthma and twice the national rate of prostate cancer. I was told that PEI has a huge population of children with learning disabilities and that PEI has four times the national rate of spinal cord defects in newborns. PEI's water table is high to the surface of the ground, and so is more susceptible to pesticide spray contamination. The main crop grown in PEI is the potato. So they have to spray pesticides in such a way as to get the pesticides to the potatoes in the ground. I was very shook up.

Statistics Canada has provided some interesting information as well. For Canada, maternal death rates have reached 7.8 per 100 000 live births, the highest rate since 1981. It is commonly reported in the media nowadays that exposure to pesticides can cause birth defects and childhood cancers . Prince Edward Island (PEI) has the lowest life expectancy in Canada.

Something very obvious about PEI is that PEI is the smallest province in Canada. However, it has the highest population per square mile in Canada, with 64 people per square mile. Therefore, the agricultural land and residential areas are close to each other. When chemical pesticides are sprayed from an airplane, the air covering the residential areas will have almost as much chemical pesticides as the air over the farmland. In other words, the pests on the farm and the people in their houses get the same amounts of toxic chemicals.

In the last fifty years, there has been a significant increase in the use of pesticides (and artificial fertilizers) in PEI. The average size of farms in the early 1900's was 90 acres. Now the average size of farms is 300 acres. The number of family farms has dropped from 15 000, to just over 1800 in 2001. Still, more than twice as many people live on farms in PEI as in the rest of Canada. Naturally, the people that live on PEI get a greater dose of chemical pesticides than those in the rest of Canada.

On Holy Cross Sunday, September 14, 2003, I attended the Anglican Cathedral Church of St. Peter in Charlottetown, PEI. After church, during the social tea hour, I brought up the pesticide problem with the people. Half of the people denied the problem, but the other half reluctantly admitted that there is such a problem. However, I learned that since the PEI groundwater level is very high and close to the surface, they get their drinking water from the ground water, which is contaminated with the pesticides from the potato farms. At one time, PEI grew Genetically Modified Organism (GMO) potatoes, but McCain Company refused to buy them, so they stopped growing them. (I was told that the GMO potatoes, therefore, have been moved to the Ukraine to be grown using PEI expertise.)

At the church social hour, I also learned that western male sperm counts and strength have dropped due to hormone-disrupting chemicals, of which pesticides is one. The chemicals kill worms through hormone disruption, therefore the same chemicals can

harm the sperms of the male population through contamination. A certain fungicide does the same thing.

I was invited to lunch by Father Robert Tuck and his wife, Catherine. During lunch, in the course of the conversation, Father Tuck mentioned that he has read a report that PEI's fertility rate is going down more so than other provinces in Canada. Although Father Tuck acknowledged that there was a problem, he refused to associate it with the use of pesticides. As a matter of fact, a lot of people on PEI have either refused to acknowledge or simply ignored the dangers of chemical pesticides. So I went away from PEI with the intent of writing a paper about my visit.

Outside of PEI, rampant reports have pointed out research facts of chemical pesticides damaging the natural world. My report would like to single out the danger of chemical pesticides causing infertility in general, and in the human population in particular. The following are some of the glaring examples which have been reported in recent days.

Pesticides have been linked to birth defects according to new research from America and Germany. A study on the rates of birth defects have concluded that the chlorophenoxy herbicides may be causing birth defects in wheat farming regions (Health Perspectives 111:1259-1264). The Pesticide Action Network in Britain has called for immediate reduction on the use of chemical pesticides. Canadian researchers at McGill University reported that chemical pesticides cause deformities in frogs. Reports from new research results indicate that men living in rural mid-Missouri have significantly lower sperm numbers and quality then their urban counterparts. (By quality, it is meant the ability of the sperm to penetrate the female egg membranes.) Alternative Agriculture News; Volume 20, No. 12, December 2002. Marshfield Clinic Research Foundation, in Marshfield, Wisconsin has reported that women who handle pesticides or fungicides are 27 times more likely to become infertile. (Results of this study published in July issue of *Epidemiology*, 2003.) Documentation of chemical pesticides affecting human sperm quality and female pregnancy can be easily obtained from media literature or the Internet in our modern times. However, private communications with farmers on the Canadian prairie have revealed that an insecticide used against Warble flies could very likely lead to Mad Cow Disease. Even more surprisingly, pesticides have been attributed to causing Alzheimer's disease. But our long-range concern is for population fertility.

When does a human life begin? Human life begins with the union of the sperm with the egg. This union ensures the passing on of human life into the future. If any external factors harm either the sperm or the egg, it affects fertility. It is common knowledge that chemical pesticides are intended to harm the pests, but what if in the process of killing the harmful pests, it also harms either the sperm or the egg? In this paper, we pointed out that research literature has provided overwhelming evidence of the pesticides either producing birth defects or decreasing fertility rate. For example, we all know that among the cancers caused by chemical pesticides, a common one is prostate gland cancer. Now the prostate gland secretes the fluid for the sperm to swim in. The prostatic fluid of a cancerous prostate gland might affect the activity of the sperm

especially the motility. All these sexual tissues are interrelated. In fact, the entire human organism as a whole, when damaged by chemical pesticides in part can affect the organism as a whole. In particular, the reproductive tissues are very sensitive and they are regulated by hormones produced elsewhere, away from the sexual reproductive tissues. For instance, the head of the sperm has a core of genetic material. It is mainly the DNA. This core containing the DNA is known as the 'payload'. In modern biochemistry, it is commonly agreed nowadays that the hormones can influence the genetic DNA molecules. Nowadays, in the meat industries, the farmers have used hormones to promote the growth of the cattle. These meat hormones have been known to change the sexual characteristics in males. To make animals grow faster, female hormones have been used and as a result, males have been reported to exhibit female secondary sexual characteristics.

What if some chemical fertilizers are intended to disrupt the hormonal cycles and the reproductive system of the pests? What if these chemicals have contaminated our drinking water or food? Would not they also damage our human hormonal cycles and reproductive system and as a result affect human fertility? More alarming is the report that the GMO canola and GMO soya are making the weeds more resistant to the Roundup herbicides, so that more poisonous herbicides will have to be used. This would mean that there would be more contamination. The sum total of all the pesticides does have its effect on the global fertility. As it is reported by the United Nations, "The decline in the number of babies per woman is the biggest story in global population."

A small farm in a small village in Gansu Province growing organic corn for the second year in a row. The yield is in fact higher than when chemicals were used. They taste better and most important of all, they have few or no pest problems. Why? The simple answer to all this is, healthy soil produces healthy crops. No chemical pesticides are necessary.