

By: ~~October/2007~~, Science Editor

Does Pollution Turn Men Into An Endangered Species?

By impairing hormonal mechanisms

There should be a worldwide sex ratio of 106 newborn boys to 100 newborn girls. Boys are anyhow more fragile and by puberty, the ratio will be 1:1. Even 1:1 at birth is not good, but when this drops to one boy for each two girls, this is disastrous. This is the case of the Chippewas of the Aamjiwnaang First Nation, an 850 members community, inhabiting the shores of the St. Clair River outside Sarnia, Ontario. The main suspect for this is pollution. "It was like a deep family secret getting out. They had enough girls for three baseball teams, but not enough boys for even one boy team.", said Jim Brophy, director of the Occupational Health Clinic for Ontario Workers' Sarnia branch. The Chippewas of Aamjiwnaang live close to a group of chemical plants named Chemical Valley, which dump many toxic chemicals in the nearby air and water. But the contamination has reached even the northernmost areas of the Arctic Circle, apparently too remote from be exposed to hazardous chemicals, still the same was found: a sex ratio of 1:2 at birth. Investigations made in 2007 point to high amounts of contaminants in the food chain, including fish, seals, whales, clams and crabs. "Indigenous Arctic peoples show high levels of chemical contamination, because they depend on local fish, marine animals, seabirds and reindeer meat, which are significantly more contaminated than imported food by persistent organic pollutants like PCBs, dioxin and DDT." wrote the researches. A report delivered by the Arctic Monitoring and Assessment Programme established the connection between the severe drop in male baby births with pollution, but how these chemicals affect sexual development is still not known. "PCBs, DDTs and other persistent organic pollutants are known from research to possibly trigger male and female hormone signals incorrectly." said Lars-Otto Reiersen, executive secretary of AMAP in Oslo, Norway. An early proof of this connection occurred in 1976 when thousands of people were exposed to dioxin following an industrial accident at a chemical factory in Seveso, Italy. Subsequent researches revealed that in the case of those people, their children presented a birth sex ratio of 1:2. A very recent study at IntrAmericas Centre for Environment and Health found distorted birth sex ratio in some Canadian communities connected to dioxins even when the cause of the contamination was located 25 km (15.5 miles) away. The sex ratio was distorted at 46 newborn males born to 54 females. The 65 dioxin sources in the atmosphere were oil refineries, electric power plants, paper mills, metal smelters, fuel and wood burning and especially large-scale burning of urban and medical waste. The contaminant entered also water, soil and food (fish, meat and dairy products, as dioxins are highly soluble in fats) in very small amounts. "Arctic indigenous populations, whose lifestyle is based on the consumption of traditional country foods, are subject to some of the highest exposure levels to PTS (persistent toxic substances) of any population groups on Earth," signaled the AMAP report. But the decline in male births has been detected around the world, from US to Japan, at least in the last 30 years. A 2007 research found high decrease in male births and increase in male fetal deaths in Japan and White Americans since 1970: there were 135,000 fewer White men in the U.S. and 127,000 less men in Japan. And the drop of the sex ratio was just from 106:100 to 104.6: 100! "The falling sex ratio coupled with the disproportionately male fetal deaths supports the hypothesis that males are being culled in some systematic fashion," explained the researchers. The cause was linked to exposure to gender-bending pollutants, like certain plastics and metals proven in laboratory tests to preferentially impair male-producing Y sperms or to induce female development in genetically male embryos. "There are environmental and other factors-probably not genetics, because such changes couldn't happen in a decade or two-working to threaten the ability of the human species to make healthy babies," lead author Devra Davis, director of the University of Pittsburgh Cancer Institute's Center for Environmental Oncology and professor of epidemiology at the university's Graduate School of Public Health, told MSN. Some reject the contamination by endocrine-disrupting chemicals as the main culprit for all this. Dr. Harry Fisch, a longtime researcher on male reproductive health, believes that older parental age could be involved, recalling for a recent Centers for Disease Control and Prevention research which detected fewer boys being produced by older mothers and older fathers. "Before you start saying that chemicals in our global environment are the culprit, you have to look at your own personal environment. The bottom line is that we're seeing a trend toward older parents."

said Fisch. Still, most researches point towards endocrine disruption. "This is a very serious issue that speaks to our future reproductive health. We tend to look at chronic diseases, like cancer and autism, in isolation, while these reproductive issues-higher rates of miscarriage, for example-tend to go below the radar and may offer clues for the huge rates of diseases we're seeing.", said Brophy.