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Checking out the chemicals in your blood

A $36 million federal study of 5,000 Canadians will document the extent of chemical pollution in the body

April 14, 2007 Richard Brennan Ottawa Bureau

OTTAWA - Health Minister Tony Clement was floored when he discovered his body was a container for a chemical soup.

"I knew there would be a long list of trace elements, but to have the (elevated) mercury levels and the PCB levels, I just didn't expect that," Clement recalls after receiving his blood/chemical results earlier this year.

He and three other federal MPs volunteered to have their blood samples taken by lobby group Environmental Defence for chemical testing purposes late last year.

Now, for the first time, the federal government, led by Statistics Canada, will conduct an extensive program to test 5,000 Canadians between the ages of 6 and 79 for chemicals, as well as to check on their general health and well-being. The first stop is Clarington, east of Toronto, one of 15 communities involved in Ontario, New Brunswick, Alberta, Quebec and British Columbia. Communities in Toronto will also be targeted.

The blood testing will give federal health officials a glimpse into the world of chemical pollutants and the extent to which Canadians have been affected by these man-made toxins - many of them carcinogenic - that invade their daily lives. The United States has done similar testing for decades.

It's all geared toward developing programs and policies to prevent diseases and promote better health habits.

The survey, which will take two years to complete, is coupled with a decision by the government to launch a $300-million, four-year Chemicals Management Plan aimed at regulating some 23,000 so-called legacy chemicals. These are chemicals produced or imported before 1988 when the government began assessing their risks.

Clement says the government's Chemicals Management Plan is revolutionary.

"We have reversed the onus on 4,000 chemicals that are deemed to be at-risk chemicals. We have said to industry that you have to prove ... that they are safe to be included in your product, and if you can't prove that, then you have to start replacing it with something that is safe."

Environmental Defence has tested about 25 Canadians for chemical content since 2005, including the four MPs.

"We wanted to put a human face on pollution," says Rick Smith, the group's executive director. "We wanted to change the pollution debate from a theoretical, arcane debate into a gut level, highly personal debate.

"We found in many cases the kids are more polluted than the parents are," he says. Smith says everyone had significant levels of flame retardant chemicals, which are coated on or

injected into many products found in any household and which are largely unregulated in Canada.

"Regardless of what family of chemicals we tested, we found them in somebody," he says.

A year ago, Environmental Defence tested Barri Cohen and her daughter, Ada, who was then 10. They live in downtown Toronto.

"I was surprised at the outcome and I was very alarmed," Cohen says of her daughter's results.

"There was a long list of chemicals found in her body ... especially when it was found that she had more pollutants than I did. I think she has one of the highest levels of manganese in the study, and she also had banned substances like PCBs and DDT."

According to the U.S. Environmental Protection Agency, long-term exposure to high levels of manganese may affect the central nervous system and can cause, among other things, lethargy, tremors and psychological impairment.

In 1989, DDT, the highly toxic insecticide, was fully banned in Canada, though its use had been highly restricted since the late 1970s.

"It tells you how persistent these chemicals are and, therefore, how important it was to get them off the market," says Cohen, a documentary filmmaker and producer.

Cohen has produced a film with the National Film Board of Canada called Toxic Trespass, which details her family's experience with the chemical testing. It will be released in the fall.

Jeanine Bustros, the director of the physical health measures division of Statistics Canada, says the new study, expected to cost about $36 million, begins with a voluntary questionnaire, followed by blood and urine samples taken in a mobile clinic.

"This information will represent the Canadian state of health based on direct health measures," she says, adding the sample communities were randomly selected.

Besides taking samples, health-care professionals will collect information on things like standing height, sitting height, weight, waist circumference, hip circumference, smoking, blood pressure, resting heart rate, physical activity, lung function, strength and endurance, oral health and nutrition. Also, DNA from 3,000 volunteer participants 20 and older will be stored for further research.

When it's over, Bustros says, Health Canada will have a better handle on things like the level of obesity among Canadians, the incidence of diabetes, the level of physical activity and environmental influences.

"Right now, we have no information in Canada about (the level of contamination) from any of our chemicals," she says.

Bustros says the information collected will also determine whether diseases are more prevalent in certain areas, whether there are trends for certain health factors based on historical data, and if there is a relationship between diseases and certain risk factors.

"As we do more surveys, we will be able to determine how we've progressed, what has changed, and to develop policies to have better health," she says.

According to StatsCan, many countries have a long history of health surveys, including direct physical measurements that have led to important findings.

In the U.S., the National Health and Nutrition Examination Survey helped create standard growth charts for children, allowing doctors and parents to better understand their development and well-being.

The American survey's biggest impact was in linking high cholesterol and heart disease in the 1960s, as well as showing that Americans had too much lead in their blood, which pushed their governments to phase out lead as an additive in gasoline.

A similar survey in Australia found that for every known case of diabetes, there was one undiagnosed case.

Smith says testing by Environmental Defence showed that in cases where the federal government has banned harmful chemicals "there have been immeasurable results ... so the federal government needs to get its act in gear and needs to get rid of ... cancer-causing chemicals and replace them with non-toxic substitutes.

"Canada is one of the few industrial countries in the world that doesn't have national smog standards. We don't have national fuel efficiency standards. It's ridiculous.

"On a per-capita basis, Canada is one of the worst polluting countries in the world, and it doesn't have to be that way."