GOVERNMENT OF CANADA'S PARLIAMENTARY COMMITTEE ON PESTICIDES - DECEMBER, 1999

IN DECEMBER, 1999, THE GOVERNMENT OF CANADA'S PARLIAMENTARY COMMITTEE ON PESTICIDES HELD A MEETING UNDER THE CHAIRMANSHIP OF THE HON. CHARLES CACCIA, MP, TO INVESTIGATE THE HEALTH RISK METHODOLOGIES USED IN CANADA IN ASSESSING THE HUMAN HEALTH RISK PRESENTED BY PESTICIDE USAGE.

DR. ROSALIE BERTELL, AT THAT TIME PRESIDENT OF THE TORONTO BASED **INTERNATIONAL INSTITUTE OF CONCERN FOR PUBLIC HEALTH** WAS INVITED TO SUBMIT HER GLOBALLY PUBLICIZED CONCERNS REGARDING THE SERIOUS WEAKNESSES FOUND IN THE METHODOLOGIES USED BY PRIVATE SECTOR HEALTH RISK CONSULTANTS.

NOW, OVER TEN YEARS LATER, NOTHING HAS CHANGED. THE RECENT HUMAN HEALTH RISK ASSESSMENT CARRIED OUT BY THE FRENCH-OWNED OIL CONGLOMERATE **TOTAL E & P CANADA LTD** FOR ITS PROPOSED NEW TAR SANDS UPGRADER IN FORT **SASKATCHEWAN, ALBERTA, CANADA** (SEE THE LINK AT THE END OF THIS ARTICLE,) STILL CONTAINS IMPLAUSIBLE ASSUMPTIONS, DUE TO THE FACT THAT THE METHODOLOGY IS TOTALLY INCAPABLE OF EVALUATING, AMONG OTHER ISSUES, THE HEALTH EFFECTS OF THE COMBINED EXPOSURE TO MULTIPLE CHEMICALS (CEMC.)

THE FOLLOWING IS A GENERAL STATEMENT OF THE SCIENTIFIC VIEWPOINT SUBMITTED TO THE COMMITTEE BY DR. BERTELL IN 1999. THE STATEMENT IS BASED ON A VERBATIM ACCOUNT OF THE HEARING.

RISK ASSESSMENT METHODOLOGY

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PREDOMINANT CHARACTERISTICS OF THE METHODOLOGY:

1. Current risk assessment techniques appear to be designed to minimize the probability that a corporation or government can be successfully sued or held liable for damage to human health. The methodology determines the limit of proof of harm which could be invoked and presented in a court in any future legal action taken against the polluters.

2. The methodology trivializes the supremacy of the protection of the public from potentially toxic materials in the environment.

3. Input data for a human health risk assessment requires dose-response precision, which eliminates from consideration a large number of (if not most) hazardous substances for which dose-response data *simply does not exist,* despite the proclamations to the contrary of private sector health risk consultants.

The outcome of a risk assessment carried out according to currently prevailing government and corporate criteria is that the victimized public is forced to incur the expense of procuring the highest level of proof possible before protection against harm will be provided. There is no room in this methodology for the application of the precautionary Precautionary Principle.

COMPUTERIZED HEALTH RISK ASSESSMENT METHODOLOGY REQUIRES PRECISE DOSE - RESPONSE DATA IN ORDER TO FUNCTION

In toxicology there is very little direct human dose-response data; and what does exist is based on occupational observations of severe end points - i.e. death, cancer mortality and information gleaned from disability statistics connected with worker's compensation claims. There is little or no data on, for example, the risks of epileptic seizures in children. Therefore community risk assessment methodology frequently has to depend on *occupational exposures and the constraints of their confined biological endpoints*.

Most human health hazards are portrayed as associations or causal factors backed up by animal studies, involving the identification of biochemical and microbiological mechanisms, etc. Many hazardous associations lack important human dose-response data because these data are time-consuming and expensive to obtain; and are even ruled out for ethical reasons when human experimentation is required. Example: the medical X-ray of pregnant women.

A human health risk assessment of toxics in the environment requires that a dose to individual members of the community be accurately estimated so that possible medical effects can be assessed. This estimated dose is affected by many factors, including natural phenomena which can be complicated and unpredictable. For example dosage estimates are affected by assumptions about the average wind direction, length of time a pollutant takes to filter through the ground to the ground water, and factors attempting to delineate the rate of dilution or dispersion of the pollutant. Personal life style preferences are implicated here, including the highly unpredictable time individuals may spend indoors, outdoors, or completely away from the zone of contamination. Although these factors are open to considerable error and manipulation, they are nevertheless fed into the computer risk assessment model as factual parameters in the overall community dose calculation.

RISK ASSESSMENT METHODOLOGY REQUIRES A STANDARD BY WHICH TO COMPARE THE EXPOSURE

Risk assessment methodology compares its estimate of the exposure dose to the public from the source or product being assessed with established regulatory guides or with "background" levels. However, regulatory guidelines are often based on occupational exposures, where there is a closed environment and measured doses are possible. These guidelines are not appropriate for 24 hr. 7 days per week environmental situations since they are derived for adults (usually male), and they are based on an eight-hour day exposure, maximum 40 hours per week, with a respite of 16 hours each day in a non-polluted environment. A child with an immature immune system can be in a polluted environment for 24 hours a day, seven days per week - and more.

Children have differences in physiology, food consumption and life style habits from adult males in the workplace. Their bodies are immature in many ways, providing them with less protection against the harmful effects of a pollutant. Example: exposure to lead threatens mental development in children.

"Background" levels of a pollutant are usually defines as (measured) pollutant in local environment, excluding the pollutant source under assessment. For example other comparable, or even the same pollutants from a source other than that being assessed, can be called "background". An example would be the licensing of a nuclear power plant, where other nuclear reactors in te same zone can be considered "background". Pollutants in the real world are cumulative in effect, both in time and geographically (temporally and spatially.)

Example: when using a regulatory comparison, the assessment of pesticides on grass in a public park can ignore a child's exposure in the home or school; or one could use pesticide exposures in home, school and elsewhere, to inflate "background" levels. In the first case, the exposure being assessed looks small compared to regulatory limits, while in the second case it looks small compared to "background". In addition, the exposure of a child in utero and during the first five years of life can be ignored when a risk assessment of the effect of a pesticide on a six year old only is being considered.

Another way in which a pollutant can be presented as a minimal risk is to focus on a chemical element, for example, arsenic, and then consider human exposures to all chemical compounds containing arsenic. Some of these chemical compounds are hazardous and some for example, those commonly found in shell fish - which make up the vast majority of arsenic exposures to humans, are largely excreted from the body unchanged (indicating no bio-physiological action while in the body). In this way, a risk assessment can make the effects of the additional hazardous arsenic compounds to look small relative to total arsenic in the human diet.

SENSITIVITY OF WORKERS TO A POLLUTANT CANNOT BE USED TO ASSESS VULNERABILITY OF CHILDREN AND THE ELDERLY

Adults can build up a sensitivity to workplace chemicals over time. This can be prevented or mitigated by rotation of jobs or the adjustment of working shift times. Estimates of average exposures producing such sensitivity exist for some substances. However these workplace estimates are not appropriate for addressing the immune incompetence of the elderly or the immature immune systems of the young. Very little dose-response data is available for the vulnerable portion of the population. It cannot be claimed that they are protected when workplace data for chemical sensitivity is used. While the persons promoting the risk assessment methodology can argue that the data they need does not exist, they cannot claim to have used an acceptable substitute. Again, *there is no reliable data*.

RISK ASSESSMENT METHODOLOGY HAS NO WAY TO DEAL WITH THE TOXIC SOUP TO WHICH MOST PEOPLE ARE EXPOSED

Current health risk methodologies are completely lacking in protocols to deal with the effects of combined exposures - synergistic or antagonistic - to multiple chemical exposures.

ADDITIONAL INFORMATION ON THE FLAWS FOUND IN CURRENT HEALTH RISK ASSESSMENT METHODOLOGIES ARE AVAILABLE ON THIS WEB SITE AT
HTTP://WWW.COMMHEALTH.NET/HEALTH-RISK-ASSESSMENT-REPORTS/
