

Rachel's Environment & Health News

#284 - A Breakthrough In Control Of Toxics

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An important breakthrough in control of toxics occurred during April. The International Joint Commission (IJC), a government body with responsibility for environmental quality of the Great Lakes, made far-reaching official recommendations which, for the first time, embody a truly modern approach to the identification and control of toxic chemicals. It appears to be a real first step toward a sustainable world.

In a nutshell, the IJC now recommends[1] that the U.S. and Canada:

- a) Ban incineration in certain areas near the Great Lakes;
- b) Phase out the use of chlorine in manufacturing;
- c) Adopt a "weight of the evidence" approach, not waiting for scientific certainty to be established but taking action to protect against toxics as soon as the "weight of the evidence" indicates the need for action.
- d) Define many chemicals as "persistent toxic substances" and then ELIMINATE them because recent history tells us persistent toxics cannot be safely managed.

Although the first two recommendations--ban incineration and phase out chlorine--are the most startling, it is really the last two recommendations that constitute a radical departure from the past.

In recommending a "weight of the evidence" approach and in recommending the elimination of all persistent toxic substances, the IJC has turned its back on risk assessment and numerical standards. Today risk assessment and numerical standards form the backbone of the U.S. regulatory system for controlling toxic substances. The IJC says the traditional regulatory system has failed and must be abandoned.

In their joint 1978 Water Quality Agreement, the U.S. and Canada defined a "toxic substance" as "a substance which can cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions or physical deformities in any organism or its offspring, or which can become poisonous after concentration in the food chain or in combination with other substances."

The IJC now recommends defining a class of chemicals called "persistent toxic substances," which should then be ELIMINATED because they cannot be managed safely.

The IJC recommends that a persistent toxic substance be defined as any toxic chemical that bioaccumulates, or any toxic chemical that has a half-life greater than eight weeks in any medium (water, air, sediment, soil, or living things). Substances with either of these characteristics should be ELIMINATED, the IJC says.

The "half life" of a substance is the time it takes for half of it to disappear. For example, DDT has a "half-life" of about 20 years in soil; if a pound of DDT is released into soil today, half of it will still exist 20 years from now. The IJC recommends that any toxic substance with a half-life greater than 8 weeks be considered too dangerous to be released and should be ELIMINATED.

A substance bioaccumulates if its concentration increases as it moves through the food chain. For example, DDT may be found at one ppm (part per million) in fish and at 10 ppm in fish-eating birds. Thus DDT bioaccumulates. The IJC says any toxic substance that bioaccumulates should be ELIMINATED.

What is the IJC?

The IJC was created in 1909 by the governments of Canada and the U.S. to oversee the Boundary Waters Treaty, which guides Great Lakes-related behavior of the two nations. Starting in 1912, and again in 1945 and 1964 the IJC was asked by the two governments

to report on water quality of the lakes. The studies revealed progressive deterioration. In 1972 and again in 1978 the two nations signed Water Quality Agreements aimed specifically at improving water quality in the lakes. The goal of the 1978 Agreement was broad: "to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem." It is up to the IJC to manage and monitor efforts to achieve the goals of the 1978 Agreement. In 1981, the IJC began issuing a report every two years, describing the condition of the lakes in relation to the goals of the 1978 Agreement. The 6th biennial report from the IJC, released in April, 1992, contains these far-reaching recommendations.

U.S. EPA (Environmental Protection Agency) and its Canadian counterpart, Environment Canada, must respond to the IJC recommendations within six months. In the past, many IJC recommendations have been adopted by the governments of the U.S. and Canada because IJC recommendations are typically buttressed by many studies and much data. That is the case with the present recommendations.

Regarding the Great Lakes environment, the IJC report says, "The principal problem is the presence and impact of persistent toxic substances on all sectors of the ecosystem." The report says the old way of protecting ourselves against these toxic materials has failed: "...the Commission concludes that attempts to regulate persistent toxic substances have not resulted in an efficient or successful set of programs." The IJC report says, "Surely it is time to ask whether we really want to MANAGE persistent toxic substances after they have been produced, or whether we want to ELIMINATE and PREVENT their existence in the ecosystem in the first place."

The report goes on, "It is clear to us that persistent toxic substances have caused widespread injury to the environment and to human health. As a society we can no longer afford to tolerate their presence in our environment and in our bodies.... Hence, if a chemical or group of chemicals is persistent, toxic and bioaccumulative, we should immediately begin a process to eliminate it. Since it seems impossible to eliminate discharges of these chemicals through other means, a policy of banning or sunsetting their manufacture, distribution, storage, use and disposal appears to be the only alternative." The IJC defines "sunsetting" as "a comprehensive process to restrict, phase out, and eventually ban the manufacture, generation, use and disposal of a persistent toxic substance."

The IJC says, "Such a strategy should recognize that all persistent toxic substances are dangerous to the environment, deleterious to the human condition, and can no longer be tolerated in the ecosystem, whether or not unassailable scientific proof of acute or chronic damage is universally accepted.... Therefore the focus must be on preventing the generation of persistent toxic substances in the first place, rather than trying to control their use, release, and disposal after they are produced."

This is a very important point. The IJC is urging adoption of a "weight of the evidence" approach to controlling toxics, not waiting until absolute scientific proof is available because by then it may be too late. On this point the IJC says:

THE COMMISSION RECOGNIZES THAT SCIENTIFIC DATA ARE OPEN TO INTERPRETATION AND THAT, NOTWITHSTANDING THE CONFIRMED CAUSE-AND-EFFECT LINK IN SOME CASES, UNEQUIVOCAL CONCLUSIONS MAY BE DIFFICULT TO REACH IN OTHERS, ESPECIALLY IF INDIVIDUAL STUDIES ARE CONSIDERED IN ISOLATION. WITH LOW CONTAMINANT CONCENTRATIONS, SUBTLE EFFECTS AND POTENTIALLY CONFOUNDING FACTORS, UNEQUIVOCAL EVIDENCE OF INJURY TO HUMANS BY PERSISTENT TOXIC SUBSTANCES MAY BE DIFFICULT OR IMPOSSIBLE TO OBTAIN

CRITICS HAVE ATTEMPTED TO FIND FLAWS WITH INDIVIDUAL STUDIES IN ORDER TO DISCREDIT FINDINGS AND CONCLUSIONS ABOUT PERSISTENT TOXIC SUBSTANCES. WHILE LIMITATIONS TO STUDY DESIGN MAY EXIST, THIS DOES NOT NECESSARILY INVALIDATE THE FINDINGS AND CONCLUSIONS WHEN CONSIDERED IN A WEIGHT-OF-THE-EVIDENCE CONTEXT. AT SOME POINT THE EMERGING MASS OF DATA AND INFORMATION MUST BE ACCEPTED AS SUFFICIENT TO PROMPT... ACTION AGAINST ENVIRONMENTAL CONTAMINANTS

There is abundant evidence that wildlife in the Great Lakes are being harmed by persistent chemicals, the IJC says. But "Most troubling of all is the experts' conclusion that humans are being affected as well. Indeed, they estimate that levels of some of these chemicals measured in the human population are in the same range, and in some cases even greater, than those found in adversely affected wildlife populations."

The IJC report points to evidence that fish, birds, and mammals around the Great Lakes are suffering from thyroid dysfunction, decreased fertility, decreased hatching success, gross birth defects, metabolic abnormalities, behavioral abnormalities, demasculinization/feminization, defeminization/masculinization, and compromised immune systems. (See RHWN #146, 263, 264.)

The report attributes these diseases and abnormal conditions to persistent toxic substances like lead, mercury, DDT, PCBs, PAHs [polycyclic aromatic hydrocarbons] and a broad spectrum of persistent chlorinated hydrocarbons such as hexachlorobenzene, pentachlorophenol, furans, and dioxins.

The 1978 Water Quality Agreement adopted "zero discharge" language as a philosophy, but now the IJC seems bent on turning it into a workable program. The Commission says "Zero discharge does not mean less than detectable. It also does not mean the use of controls based on best available technology, best management practices, or similar means of treatment that continue to allow the release of residual chemicals." Zero means zero, and ZERO DISCHARGE means ELIMINATION.

--Peter Montague

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[1] The recommendation to ban incineration was included in the International Joint Commission's report, AIR QUALITY IN THE DETROIT- WINDSOR/PORT HURON-SARNIA REGION (Ottawa, Canada, and Washington, DC: International Joint Commission, February, [1992].) All other recommendations that we discuss appear in the IJC's SIXTH BIENNIAL REPORT ON GREAT LAKES WATER QUALITY (Ottawa, Canada, and Washington, DC: International Joint Commission, April, 1992). Both reports are available free from the IJC office at 1250 23rd St., NW, Suite 100, Washington, DC 20440. Telephone: (202) 736-9000. In Canada, phone (519) 256-7821.

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