EXTRACTIONS

a newsletter from O'CONNOR ASSOCIATES

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NEW MERCURY GUIDELINES

Health Canada has lowered by two thirds the recommended maximum daily mercury exposure for women of child-bearing age and young children. The new level is 0.2 micrograms per kilogram of body weight (µg/kgBW), down from 0.47 µg/kgBW. The standard for men remains unchanged at 0.47 µg/kgBW.

The reduction reflects growing concern among researchers over mercury pollution. While the largest single source of mercury for most people is dental amalgam fillings, many fish such as tuna, cod, and sea bass can contain relatively high amounts. The Canadian Food Inspection Agency tests extensively for mercury. The highest level it found during 1996-97 was for sea bass from the U.S., which contained 1180 micrograms of mercury per kilogram and was rejected at the border. High levels were also found in crab from South Korea; halibut, sablefish, and tuna from the U.S.; and dogfish and cod from Canada. However, Canadian salmon and scollops and canned tuna from Thailand contained levels well below the guidelines.

Many researchers link the high levels of mercury in some fish and wildlife to emissions from coal-fired power plants and municipal waste incinerators.

[from *Globe and Mail*, April 20, 1998]

PLASTICS TEASED APART

Manufacturers need recycled plastics as a raw material, but current technology can't economically provide the necessary purity. Jim Brown, Engineering Professor Emeritus at the University of Western Ontario has developed a new electrostatic separator that may change those economies.

In his process, clean plastic is first ground into 3-5 mm pieces and fed into a rotating hopper. As they tumble, different plastics take on different charges. The pieces then fall into a tall chamber which has oppositely charged electrodes on either side, pulling negatively charged pieces one way and positively charged pieces the other. The separated piles can be returned to the hopper as many times as required to achieve the desired purity.

Western's Office of Industry Liaison has supported a new spin-off company, Plas-Sep, picking up the costs of patenting the process and marketing the equipment. Plas-Sep shipped its first production unit last December.

[from *Western Gazette*, Spring 1998, p. 19]

AMENDMENT TO CEPA

On March 12, 1998, Environment Minister Christine Stewart introduced legislation to amend the Canadian Environmental Protection Act (CEPA). The proposed new Act will safeguard the health of Canadians from the threat of pollution and strengthen environmental protection in Canada.

The Act would encourage greater citizen participation by providing easy access to environmental information and providing opportunities for public input before decisions are made. As well, it would allow citizens to bring civil suits in cases of significant damage to the environment if the government fails to enforce the Act. The Act would also:

- implement a fast-track approach to evaluating and controlling toxic substances
- ensure the most harmful substances are phased out, or not released into the environment in any measurable quantity
- improve enforcement of regulations
- improve "whistle-blower" protection to encourage more Canadians to report CEPA violations
- allow for more effective cooperation and partnership with other governments and Aboriginal peoples

"The new CEPA puts the health of Canadians and the protection of the environment first as we move into the new millennium," said Minister Stewart.

[from <http://www.ec.gc.ca/press/cepa98_n_e.htm>]

FRESH WATER EXPORTS?

Two recent proposals to export huge amounts of fresh water from Canada are churning the waters of federal-provincial relations. The Nova Group of Saulte Ste. Marie, Ontario, wants to export 600 million litres of water a year to Asia from Lake Superior, while the McCurdy Group of Companies has applied to export by tanker about 52 billion litres of water a year from Gisborne Lake near Fortune Bay on Newfoundland's south coast.

The issues revolve around whether water is a commodity. Provinces have control over extraction of water, but Ottawa has control over its export. While the Federal government has no rules at present to prohibit bulk sales of Canadian water abroad, it is "...still opposed to the large scale export of water, and this includes by tanker," said Sophie Legendre of the federal Department of Foreign Affairs and International Trade.

Nationalists and environmentalists argue that treating water as a commodity could open Canadian water resources to American or Mexican companies under NAFTA and puts water flows and water levels at risk.

[from *Globe & Mail*, May 14, 1998]

GERANIUMS ABSORB HEAVY METALS

Want a natural method to remove large amounts of toxic heavy metals from contaminated soil? Try planting geraniums.

Praveen K. Saxena and Sankaran KrishnaRaj, research scientists in the Department of Horticultural Science, University of Guelph, Guelph, Ontario, have recently identified the Frensham Lemon-Scented geranium as a prime candidate for remediating soils contaminated with metals such as lead, cadmium, and nickel. These plants have the ability to survive on soils containing several metal contaminants and >3% total hydrocarbons. The geraniums uptake metal ions through their prolific roots and store them in the shoots at higher levels than any other known hyperaccumulator.

When treated with a mixture of metals over two weeks, the geraniums accumulated in excess of 45 800 mg lead + 1300 mg cadmium + 1400 mg nickel per kg dry weight of roots, and somewhat less than that in the shoots. Once the valuable aromatic oils are extracted for perfume, the geraniums can be incinerated and the metals recycled from the ash. On lead contaminated soils, the geraniums contain more than 6% dry weight of lead.

Geraniums also appear to be superior for phytoremediation because they are propagated by cuttings and therefore have none of the limitations, such as seed dispersal and weed-like growth characteristics, of other known hyperaccumulators.

The study was funded by the Environmental Science and Technology Alliance of Canada [ESTAC], a consortium of Canadian companies. The University of Guelph has filed a US patent application to secure the rights for the use of Pelargonium species to remediate contaminated soils. Further studies are under way to determine the plant's hardiness for use in Canada and to introduce genes for phytochelatin synthase for increased metal uptake and binding.

[personal communication with the authors]

DISSOLVING ASBESTOS

Physically removing and destroying asbestos-laden fireproofing material in old buildings is a lengthy and costly process. W. R. Grace & Co. (Boca Raton, Florida) and the Brookhaven National Laboratory (Upton, N.Y.) have developed an in-situ chemical process that will halve both time and cost. An aqueous solution of acid, fluoride ions, and surfactants is sprayed directly onto the fireproofing material as a foam. The chemicals selectively dissolve the asbestos fibres ($3MgO_2SiO_22H_2O$). A day later, the salts produced are rinsed away, leaving behind inert materials that retain the original fire protection. Asbestos levels are reduced to less than the 1 percent by weight level deemed safe by the U.S. Environmental Protection Agency.

[from *Chem. Eng.*, January 1998, p. 23]

NEW ENVIRONMENTAL WEBSITE

The next time you want to hire new employees or train existing employees, check out the *Compendium of Canadian Environmental Education & Training Programs*, a publication you can order on-line from the *Council Publications* area on the website of the Canadian Council for Human Resources in the Environment Industry. The *Compendium* has information about environmental education programs at the major post-secondary institutions across Canada and training programs offered at the national, provincial, and regional levels.

The *Council Activities* area on the site lists youth training programs that have a wage subsidy component.

[from <http://www.cchrei.org/>]

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