

EXTRACTIONS



a newsletter from **O'CONNOR ASSOCIATES**

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ONTARIO MUNICIPALITIES TO GET WATER AND SEWAGE WORKS

Ontario municipalities will get full title to provincially-owned water and sewage treatment plants under a new act introduced in January. Municipalities currently own three-quarters of these plants; the Ontario Clean Water Agency owns the rest. The new legislation, Water and Sewage Services Improvement Act, 1997, will consolidate ownership of the facilities at the municipal level, and the province will no longer act as regulator, owner, operator, and funder. Environment and Energy Minister Norman Stirling states, "We are restructuring water and sewage services to improve the way that they are delivered, so the taxpayer receives value—the best possible service with optimum efficiency and least cost. It will allow the province to focus on setting and enforcing tough standards."

Ontario has:

- 500 water treatment plants
- 437 sewage treatment plants
- 200,000 kilometres of watermains and sewage pipes

[from *Env. Science and Engineering*, March 1997, p. 77]

MOLLUSCS TO CAPTURE CO2

John Stringer of the Electric Power Research Institute (EPRI) will be meeting with scientists at NASA soon to discuss enzyme-based systems for capturing CO₂. EPRI wants to control CO₂ emissions from power plants; NASA wants to immobilize CO₂ in spaceships. Both are looking at enzymes that molluscs use to speed up the process of absorbing carbon dioxide and calcium that makes the calcium carbonate for their shells. Gillian Bond, a researcher at the New Mexico Institute of Technology, has recently isolated the enzyme carbonic anhydrase and is testing it to determine how fast it speeds up the shell-building process.

[from *Enviroline Technology Review*, Vol. 8, No. 8, March 1997]

ENVIRONMENTAL INSURANCE

A specialized environmental insurance industry is developing to meet the needs of business and industry for protection in the face of growing public awareness of environmental concerns, growing government regulation, and growing toxic tort litigation. For example, the US firm ECS Underwriting Inc., had \$170 million in gross written premiums in 1995, up from \$53 million in 1989.

Public awareness was raised in the early 1970s after a series of incidents such as the Love Canal in New York.

In 1980, the US government passed the "Superfund" legislation providing a comprehensive plan for cleaning up the nation's most hazardous waste sites. Also, in the early 1980s, environmental toxic tort litigation exploded. According to David M. Rosenberg, executive vice president for ECS, "It used to be that environmental risk was a problem primarily for the hazardous waste and chemical industries, but now that has changed dramatically. Now virtually every business—from architecture and engineering firms to manufacturers and commercial developers—faces potential environmental liability."

[from *Env. Science and Engineering*, March 1997, p. 30]

13 TOXIC SUBSTANCES TO GO

The federal government has targeted 13 toxic substances for virtual elimination from the Canadian environment.

Eight of the substances are pesticides: aldrin, dieldrin, DDT, heptachlor, toxaphene, mirex, chlordane, and endrin. The other five are industrial chemicals or contaminants: dioxins, furans, PCBs, hexachlorobenzene, and short-chain chlorinated paraffins. With the exception of short-chain chlorinated paraffins, the use of the pesticides and industrial chemicals is already discontinued, severely restricted, or banned in Canada.

Once the designations of the contaminants and by-products are confirmed later this year, industry must show how they will prevent releases of the substances which are still used or generated in Canada.

[from Environment Canada news release, March 20, 1997]

INCINERATORS RETURN TO ONTARIO

After a five-year ban imposed by the former government, the Ontario Ministry of Environment and Energy recently reintroduced the option of using incinerators for waste reduction by municipal governments who are running out of space for landfills. Technology has improved and current incinerators have effective emission reduction systems virtually eliminating releases of harmful substances.

Ontario environmental advocacy groups have suggested that vinyl products should be removed before the waste is incinerated to prevent the release of dioxins into the air. Responding to that suggestion, the Vinyl Institute of Canada reported a recent study that found no relationship between the chlorine content of the waste and dioxin emissions. Rather, the study, conducted by the American Society of Mechanical Engineers and supported by both the US Environmental Protection Agency (EPA) and Environment Canada, found that incinerator temperatures were the main key to controlling dioxin formation. In the temperature range typical of modern municipal waste incinerators (1500 to 1800°F) generation of dioxins is minimal. The study analyzed over 1900 test results from a worldwide sample of 169 large-scale, commercial incinerator facilities.

The new Ontario Guidelines for Energy from Waste Plants are based on US EPA standards and have emission limits as stringent as any in the world.

[from *Can. Env. Protection*, Vol. 9, No. 1, Jan/Feb 1997]

PLASTICS FUEL CITY

The city of Niigata, Japan, has recently begun diverting its plastic waste from landfills and obtaining useful energy at the same time. Rekisei Mineral Oil (Niigata) built the liquefaction plant that will turn 6000 tonnes per year of collected plastic waste (about one-third of the city's total garbage) into 2400 to 3600 tonnes per year of heavy oil for fuelling various municipal facilities. All plastics can be processed except polyethylene terephthalate (PET) which can be recycled in other ways. The liquefaction process first removes chlorine from the plastic which is then thermally and catalytically decomposed at 400°C at atmospheric pressure. Government officials are monitoring this project closely as many Japanese municipalities are running short of landfill options.

[from *Chemical Engineering*, February, 1997 p. 42]

NEW ENVIRONMENTAL PROTECTION ACT INTRODUCED

Last December, Environment Minister Sergio Marchi introduced Bill C-74, the Canadian Environmental Protection Act, 1997, to provide tighter regulations of toxic materials, more power for federal and provincial inspectors and measures designed to facilitate whistle-blowing and civil suits against polluters. It includes a reverse onus policy for producers and users of new chemicals. "If you can't prove it's safe, you can't use it," said Mr. Marchi. The act will allow Environment Canada to deal more quickly with substances that are man-made, inherently toxic, persistent, and bio-accumulative. It also provides for a National Advisory Committee of provincial and aboriginal representatives to advise the federal government. Bill C-74 was still on the order paper for second reading when Parliament dissolved before the recent election.

[from *Enviromation*, January 1997, p. 174]

LEECH GENES STUCK TO CANOLA

Maurice Maloney, a University of Calgary molecular biologist, is producing the anticoagulant medicine called hirudin by attaching a gene from the saliva of bloodsucking leeches to canola oil plants. This kind of genetic engineering has been common for a decade, but it's often been hard to separate the protein created from the rest of the plant material. Maloney solved this long-standing problem by attaching the genes to oleosins, which are natural oily proteins found in all oilseeds. When the plants were harvested and ground up with water, the leech protein, which was attached to the oleosins, floated to the surface. Maloney introduced an enzyme to separate the leech protein from the oleosins. The separated leech protein then dissolved in the water, while the oleosins remained on the water surface.

Maloney's company, with others, is planning a factory to tap into the potential \$500 million market for the drug which is currently manufactured with expensive bacteria-based systems. "It will be more like a farmer's dairy than a conventional factory and will most likely be built in Calgary," Maloney says.

[from *Calgary Herald*, March 15, 1997, p. B5]

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