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## Japanese firm buys duplicate of Ontario's Science Circus

The Ontario Science Centre in Toronto has signed an agreement with a Japanese company for the sale of a duplicate of the centre's well known travelling exhibition, the Science Circus.

Dr. J. Tuzo Wilson, director general of the centre and Masao Ikeda, president of Mitsui and Company (Canada) representing the Japanese publishing firm Kyoikusha Company, signed the \$700 000 contract in Toronto.

Present at the signing were Ontario Premier William Davis, Minister of Citizenship and Culture Bruce McCaffrey, and Consul General of Japan in Toronto, Yuzo Hatano.

The Science Circus comprises more than 40 participatory displays including workshops, films and demonstrations. Initially the Ontario Science Centre will staff the Japanese exhibit while training Japanese personnel in its operation.

Kyoikusha, one of the leading Japanese book publishers, has bought the Science Circus, but Simco (Science International Marketing Corporation), a Japanese design firm, will be responsible for its management and operation.

According to Simco's President H. Harada, the company was interested in the Science Circus because of its innovative presentation and "hands on" approach to science. He added that the exhibit would provide a resource "that is both a learning experience and fun". It will be the only exhibition of its kind in Japan, said Mr. Harada, and because of its portability will be accessible to a very large audience.

The idea of the Science Circus was first developed by The Ontario Science Centre in 1973 and since that time it has toured across Canada and has travelled to London and Birmingham, England.

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## Quebec to sell hydro power to New England

The sale of power by Hydro-Quebec to New England beginning in 1986 will require an investment of almost \$400 million in an interconnection on both sides of the border.

Hydro-Quebec, with a mounting surplus of hydro power at least through 1986 because of the slowdown in domestic demand growth and rising generating capacity, has signed three agreements with the New England Power Pool (NEPOOL), a group of 64 utilities in the six New England states. They involve separate energy, interconnection and energy banking contracts.

### Eleven-year agreement

The energy agreement provides for the sale by Hydro-Quebec of up to 33 billion kilowatt-hours of interruptible power to NEPOOL over 11 years from 1986. Depending on prices, this could represent revenue of up to an estimated \$5 billion.

The interconnection contract provides for different types of power exchange between the two systems, whereby prices and quantities are decided on a short term basis and could cover emergencies.

Under the energy banking contract, NEPOOL would provide Quebec during off-peak hours power produced in its thermal stations when costs are low. This would enable Hydro-Quebec to store

water in its reservoirs and return the energy to NEPOOL when production costs are higher.

The exchanges require construction of a 450-kilovolt DC transmission line between the future Des Cantons substation near Sherbrooke, Quebec and the Comerford substation in New Hampshire via Vermont.

Construction costs of the interconnection will be about \$211 million on the Quebec side and about \$187 million on the US side.

NEPOOL is continuing preliminary negotiations toward future firm power sales from Quebec. New England is already committed to importing firm power from the Point Lepreau nuclear station in New Brunswick.

The Quebec power will become available to the NEPOOL members through NEPOOL's operational arm, the New England Power Exchange. The pool distributes bulk power throughout the region on a single-system basis, using the most economic power first.

The availability of Quebec power will save about five million barrels of oil a year, worth more than \$100 million (US) at current prices, NEPOOL estimates. Hydro-Quebec could earn revenue of up to \$400 million a year starting in 1987, assuming the interconnection is completed on schedule.

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## New sewage treatment tested

Sometimes technological innovation finds itself dealing with some pretty low life. For years chlorine has been used to destroy bacteria found in sewage water but now, *Pseudomonas aeruginos*, fecal *Streptococci* and *Clostridium perfringens* are having their life cycles ended by ultraviolet light.

An experiment at the Ontario Ministry of the Environment water pollution control plant in Tillsonburg has been proving that ultraviolet light is a viable alternative to chlorine treatment.

The system was developed and installed by Trojan Environmental Products of London, Ontario, a company specializing in water treatment products.

Company president Hank Vander Laan said at a recent public demonstration of the project that sewage treatment plants and lagoons throughout North America almost always discharge into natural bodies of water. Disinfection of this water is almost exclusively by chlorination.

### Chlorine toxicity

"However," he said, "there is an increasing body of research that indicates chlorination residuals in sewage plant effluents are toxic to fish. There is also a rising concern over the negative environmental impact of chlorination practices.

One alternative to chlorination is ultraviolet radiation. Mr. Vander Laan said the use of ultraviolet light has been studied by many groups in both Canada and the United States in both laboratory and pilot-scale studies. However, the Tillsonburg experiment is the first time a full-scale operation has been conducted.

Working with the Ministry of the Environment, with funding from the federal industrial research assistance, Trojan designed and engineered an ultraviolet device for specific application in the Tillsonburg treatment plant.

To date, said Mr. Vander Laan, the tests have met or exceeded all Ministry of Environment guidelines. In addition, the ultraviolet light has also been found to destroy a number of viruses which are resistant to chlorination.

Costs to date compare favourably with chlorine treatment methods, said Mr. Vander Laan, adding that the system would prove itself in new plants by eliminating the need for chlorine storage facilities.

Trojan has applied for patents for the idea in the United States and Europe.