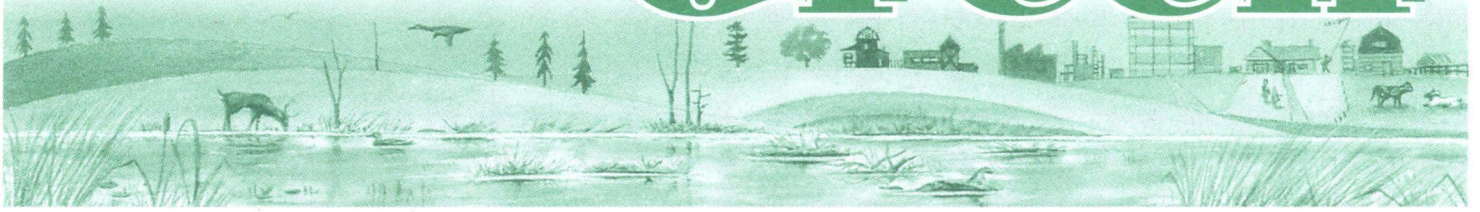


# Let's Talk Green

Volume 6, No. 6, November 1996



The National Newsletter of Environment Canada

ISSN 1188-3022

## Raising the Irving Whale

Environment Canada Environnement

Let's talk green

Vol: 6 No: 6 Date: 961100 ND

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Environment Canada Environnement Canada

Canada

features...

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The largest ocean salvage operation in Canadian history—a tremendous success!

## War on Aliens Heats Up ..... 11

Invasive plants and animals threaten Canadian biodiversity.

## R<sub>x</sub> for RSI .....20

Department initiates Prevention Program for Repetitive Strain Injuries.



Photo by Roger Percy

A happy crew gathers in front of the diving habitats, diving bell and related equipment on board the lift vessel BOA BARGE 9 on lift day. From left, Ansel Ferguson, PEI Public Advisory Committee Member, Ken Hamilton, EC Project Co-Director, EC Minister Sergio Marchi, Hugh Hall, EC Project Manager, Helene Chevrier, Magdalen Islands Public Advisory Committee Member, Arnold Witte of Donjon McAllister, Roger White, Communications Advisor and Les Morris, London Offshore Consultants.

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# Raising the Irving Whale

## Lift day with Environment's Roger Percy

On July 30, after 25 years of waiting for salvage technology to mature, another year for a court injunction, and months of meticulous preparation, actually raising the barge Irving Whale from the floor of the Gulf of Saint Lawrence took just one hour.

With nearly ten years on the project, Environment Canada's Atlantic Regional Environmental Emergencies Coordinator, Roger Percy was too busy taking water and sediment samples on board to think about what was happening around him.

"Once it broke the surface, my job got a lot more intense," says Percy. "I felt relief more than anything else, but at that stage our work had only just begun, because of all the sampling needed."

Speaking matter-of-factly about his own role as acting manager of Enforcement and Emergencies, responsible for daily situation reports to the joint Atlantic and Quebec Regional Environmental Emergencies Teams (REET), Percy commends the whole team effort rather than any one individual.

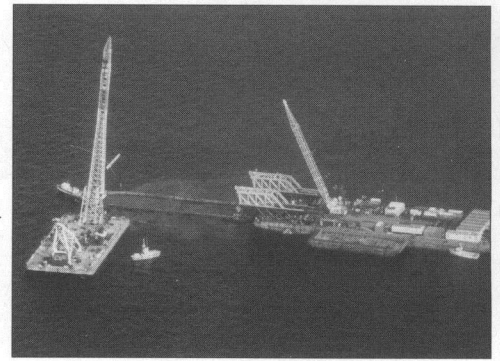


Photo by Merv Fingas

An aerial view of the lift site, taken from Environment Canada's DC-3 remote sensing aircraft.

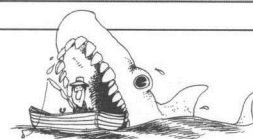
"There were a lot of good times and certainly a lot of rough times," says Roger Percy. "The last couple of days were particularly hectic. I was quite exhausted..." His voice fades in thought to the day of the Irving Whale.

For more information: **Roger Percy** at (902) 426-2576 or e-mail: [percyr@cpdar.am.doe.ca](mailto:percyr@cpdar.am.doe.ca).

## Irving Whale—The recovery team

"During the Irving Whale Recovery Project, there were a lot of people behind the scenes, a lot of work going on that the public will never know about," says Roger Percy, speaking about the tremendous team effort that many hundreds put towards the Irving Whale Recovery Project. Among the legions:

- Personnel from the Environmental Protection, Atmospheric Environment and Environmental Conservation branches of EC;
- The Regional Environmental Emergencies Teams (REET) (Atlantic and Quebec) - comprised of federal and provincial agencies and industrial organizations with environmental expertise. They were used as the coordinating mechanism, providing consolidated environmental advice to the on-scene commander, in this case, Captain Bill Dancer of the Canadian Coast Guard;
- Environmental Technology Centre (Headquarters) - Carl Brown and Merv Fingas, Emergencies Science Division, flew overhead in a DC-3 aircraft, using a laser fluorosensor to monitor before, during, and after the lift, as well as during the transit to Halifax;
- The weather service (AES) and Fisheries and Oceans work-group who provided immediate, on-site advice on modelling for spills (where PCBs might go if released), deploying a weather buoy and offering real-time sea state and weather information crucial to the lift;
- The Atlantic Geoscience Centre of Natural Resources Canada which offered shipboard sidescan sonar, aimed at the Irving Whale and sea bottom to detect exactly where the barge and possible boulders were located;
- The Canadian Coast Guard used the Sir William Alexander as a command ship, other vessels and personnel and their Dash 8 surveillance aircraft, providing eye-in-the-sky direction;
- The P.E.I. and Magdalen Island Public Advisory Committees who provided advice, assistance and public input to the project;
- The salvage company Donjon McAllister, barges and submersibles;
- The Department of Canadian Heritage, Provincial Environmental Departments, Provincial Emergency Measures Organizations, and the Irving Oil Company without whom all of this would not have been possible.



# The Irving Whale of St. Lawrence comes to life

## "I'm going to raise it. Does anyone have any objections?"

With those ten words, the salvage director, looked at the complement around the room. The 48-hour weather window had arrived, the team had done its groundwork, the word was "Go!". And so started one of the most fevered days in Canadian marine salvage/pollution prevention history—recovering the sunken barge Irving Whale.

Once the strain was placed on the slings, the Irving Whale had to be raised. Huge cranes tugged and pulled in sync; remote-operated-vehicles with cameras, scrutinized action underwater; divers and work crews prepared to board; aircraft flew overhead to monitor for oil slicks; far-flung forces were put on alert from P.E.I. to the Magdalens; news cameras rolled; the Minister and other observers waited with trepidation; then amazingly, after 26 years in a

**Amazingly, after 26 years in a watery grave, the Irving Whale ascended effortlessly**

watery grave, the Irving Whale ascended effortlessly.

As the superstructure emerged, a crew was put on the bow to start the pumping process. Another boarded to pump out other compartments.

"They had to remove as much weight as possible, as soon as possible, to float the vessel" says Emergencies Coordinator Roger Percy. "And because of concerns for PCBs, we had analyses of their concentration in the various compartments before they actually raised her. Once they got the barge up, they had to pump water fast. If the weather came up it could have been a real problem."

Marine samples of discharging water were analyzed quickly on site so that if elevated PCBs were detected the salvage crew could transfer that water to a waiting barge instead of directly into the ocean.

All in all, the Irving Whale was in remarkably good shape, still had its original paint, and was basically structurally sound. It hadn't corroded that much because of the depth and temperature. Thanks to the skillful research of the professional team, the condition of the barge was known before she was raised, and there were a lot of safety measures put in place to protect the environment.

For more information: **Roger Percy** at (902) 426-2576 or e-mail: [percyr@cpdar.am.doe.ca](mailto:percyr@cpdar.am.doe.ca).

### What now...?

Much remains to be done to ensure appropriate disposal of collected wastes, adequate remediation of the salvage site and recovery of the governments costs for the operation.

Samples that have been obtained over the last year and one half have not exceeded the Canadian guidelines, in terms of danger from shellfish consumption, even close to the site. A resampling program has been undertaken by the Department of Fisheries and Oceans. The fishing (snow crab) exclusion zone will remain in place until sampling results are in and any priority hot spots are determined.

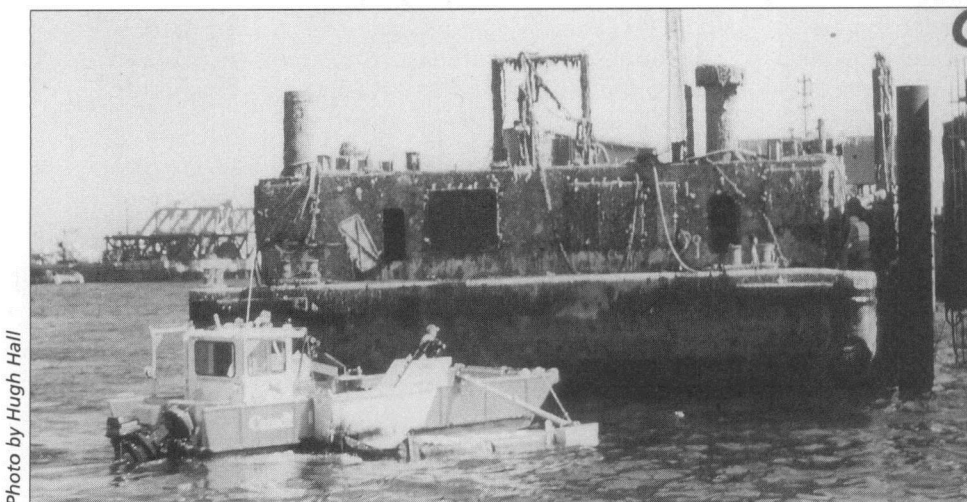


Photo by Hugh Hall

The recovery site in the Gulf of St. Lawrence, the day after the lift. A Coast Guard vessel and crew recovers oil at the stern of the Irving Whale while the barge is afloat.



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PRAIRIE AND NORTHERN REGION

## Two If By Sea

It's April. The sun is climbing higher in the northern sky, and the far north is already enjoying 24 hours of sunshine. Yet winter is still entrenched over the Canadian Arctic. In Edmonton, at the Arctic Weather Centre, staff are finalizing plans for the annual Marine Seminar. The Canadian Coast Guard and private shipping companies are preparing for the shipping season, as well.



Photo by Canadian Ice Service

Arctic ice makes getting supplies to small communities a difficult problem—and a rare occurrence.

Spring stretches into summer, and the Arctic sea ice begins to melt. Supplies and fuel reserves are dwindling for residents of remote communities, who are anxiously awaiting the arrival of the provision ships. (Because it's so expensive to airlift supplies, most of the re-supply is done by sea.)

The shipping season is short—barely four months—and trips are made as quickly as possible (weather and ice conditions permitting) to resupply the communities before the early Arctic winter arrives in September. From June through October, the Centre will supply marine forecasts twice a day.

As soon as there is enough melt for safe passage, the ships—mostly fuel tankers, cargo vessels and Canadian Coast Guard ships—will set out from southern ports, headed for destinations as far away as Eureka on Ellesmere Island. A ship's arrival at a coastal community is cause for celebration. A year's worth of dry goods, fuel, household and building supplies, heavy equipment and modular homes will be unloaded in just a few days.

As for next year, how many cases of Coke should one order?

For more information: **Lynda Schuler**  
(403) 951-8905.

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PACIFIC & YUKON REGION

## Whitehorse sewage treatment upgrade

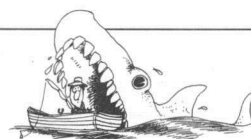
The poor quality of some municipal sewage effluents is a hot issue in many parts of Canada. This has certainly been the case for the City of Whitehorse, Yukon, and the local EPS staff. After several years of consistent pressure from federal regulators and a municipal election which saw a full slate of pro-treatment councillors elected, this city of 23 000 will commission a new \$20 million treatment system this fall.

The Yukon is well known for its expansive pristine wilderness

vistas and attracts increasing numbers of Canadian and foreign visitors every year. You can be sure the poor quality of the Whitehorse effluent being discharged to the Yukon river was not mentioned in any of the "local attraction" brochures! However, a couple of years ago it was lamented in the *National Geographic* as a blight on this otherwise spectacular landscape. The new system can store eight million cubic metres of wastewater in the 3km<sup>2</sup> lagoon. This will provide the 10 months

of storage which has been shown to be necessary in the north to achieve *Fisheries Act* compliance. It is one of the largest municipal lagoon treatment systems in Canada. To ensure the new lagoon will have as long a service life as possible, the City has also embarked on an aggressive water use reduction program. Previously, water use here was approximately double the national average.

For more information:  
**Vic Enns** (403) 667-3403.



PACIFIC AND YUKON REGION

# A License to Print Green

Not all lithographic printers have a licence to print money. But after a training session on pollution prevention practices and compliance issues in May, participating printers came away with a licence to print green.

The event was organized by the Fraser Pollution Abatement Office of Environment Canada and the Greater Vancouver Regional District. It started with a satellite down-link for the U.S., simulcast across North America. (In Canada, the Atlantic, Ontario,

and Pacific and Yukon regions participated). The Pacific and Yukon Region followed up with government and industry speakers.

**Here are some of the program highlights:**

- solid waste and air quality,
- environmentally-friendly practices, and
- “closed-loop” printing. (Transcontinental Printing provided an industry perspective. The company

is the first in Canada to recycle and reuse all effluents—there are no floor drains in their press rooms).

Interested in learning more about printing green? The session notebook and video are available from the Environment Canada Library in North Vancouver.

For more information:  
**Christine Commerford**  
(604) 666-5265 or e-mail:  
Christine.Commerford@ec.gc.ca.

PRAIRIE AND NORTHERN REGION

# Ships ahoy in Yellowknife

Environment Canada's Yellowknife offices participated in a charity sailing regatta on June 22, in support of the NWT Council for the Disabled. Local forecasters provided a special weather report, which fortunately included perfect blue skies and straight winds over Great Slave Lake. Local staff raised over \$1 600 and took home the trophy for the most donations.

Environment Canada's crew included Tim Coleman, Magnus Bourke, Ed Collins, Mike Kuntz, and captain Todd Burlingame aboard his sailboat, the *S.V. Tardis*. With corrected time, the crew finished a respectable fifth place of sixteen entrants. Led

by young fans four-year-old Melanie and six-year-old Kaley Coleman, Environment Canada also won the vote for having by far the most enthusiastic on-shore cheering section.

For more information:  
**Heather Lynne Hamilton**  
(403) 920-6052.



EC staff in Yellowknife won top place for fundraising in the N.W.T. charity sailing regatta.



(Left to right): Todd Burlingame, Magnus Bourke, Ed Collins, Mike Kuntz. (Absent: Tim Coleman)



## Nature Table Meeting

The Nature Table—EC's strategic decision-making body for biodiversity and ecosystems programs—met in Aylmer Quebec on October 10-11. The purpose? To launch the next business planning cycle.

A range of initiatives were discussed at the meeting, including harmonization, the sustainable development strategy, the future of State of the Environment reporting, and science/policy integration. Discussions focussed on the implications of these initiatives for EC's programs and on providing strategic direction for business planning. All agreed that the meeting was a success; work has been ongoing to carry Nature Table decisions through to implementation.

For more information: **Sally Thornton**  
(819) 997-5079.



(Left to right) Doug Bliss (Atlantic Region); Simon Llewellyn (Ontario Region) and Loney Dickson (Prairie and Northern Region).



(Left to right) Bob Slater, François Guimont (Quebec Region) and Mike Goffin (Ontario Region).

## Michael Kuntz Mourned

On October 23, a helicopter accident claimed the life of Michael Kuntz, a hydrometric technician from Environment Canada's Yellowknife office. Michael and his co-worker, Danny Dubé were conducting water survey work on the Snare River north of Yellowknife when the accident occurred. Michael was 32 years old and worked for the Water Survey Branch for over 12 years.

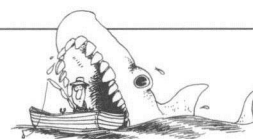
During that time, Michael developed very close relationships with his co-workers. Always cheerful, even when working in rugged, freezing conditions Mike's quick sense of humour kept everyone's spirits high. "Mike was a real character. He always kept everybody laughing," said his co-worker Murray Jones.

Murray's fond memories of Mike's escapades drew some tearful laughter from the nearly 350 people at Mike's memorial service. Among

those who attended were the Boy Scout troop and members of the boys' hockey team where Mike volunteered a lot of his time. He was also an eager participant to any good cause, and recently helped to crew Environment Canada's sailboat in a race benefitting the disabled (see page 6).

The engraved plaque celebrating Mike's shared sailboat victory drew tears from staff when it arrived shortly after his death. However, Todd Burlingame, who on race day flourished the trophy with a victorious crew, offered the comforting thought that the photo remembers happier times with Mike. The trophy will remain a memorial to Mike's kindness and his service both to the department and to the community.

Mike will be greatly missed by his family, including his 3 children Andrew, Cole and Spencer and by his many friends and colleagues.



# Freeze Frame

The talk was all about various and assorted reptilian, mammalian and piscine specimens ... and frozen bird eggs. Environment Canada's Canadian Wildlife Service Specimen Bank—which freezes and stores tissue in perpetuity for environmental research—was featured at the 2nd International Symposium on Biological Environmental Specimen Banking in Stockholm, Sweden, in May.

The Canadian Wildlife Service (CWS) began storing tissues in the early 1960s. Back then, these specimens were used to analyze toxic chemical residues. Today, the CWS Specimen Bank, located at the National Wildlife Research Centre (NWRC) in Hull, Quebec, is proving invaluable to researchers who are using new technologies to re-evaluate long-standing environmental challenges. The Bank boasts more than 55 000 specimens, stored in over 400 000 containers—the largest collection of its kind in Canada.

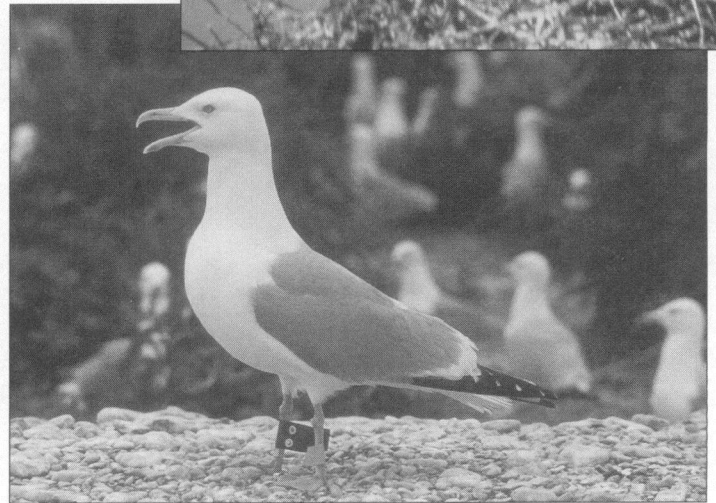
Most prevalent among the Bank's specimens are the eggs of fish-eating birds (herring gulls, cormorants and herons, for example). These birds are at the top of the food chain, and accumulate chemical contaminants—like chlorinated pesticides and metals—over a wide geographical area. Because only excess eggs are taken from the nest, the birds are not harmed. There are also tissue specimens from mammals, amphibians, reptiles and fish.

Bryan Wakeford, Head of Laboratory Services at NWRC, addressed Symposium delegates. He noted some successes:

- In 1982, the CWS research team was the first to report dioxin contamination in animal tissues collected around the Great Lakes.
- Certain chemicals are no longer produced in the Niagara region; as a result, contamination levels can be shown to have decreased markedly.
- With improved pulp and paper manufacturing processes, fewer toxic chemicals are being discharged into the environment (shown through a study of stored tissue).



*Most prevalent among the Bank's specimens are the eggs of fish-eating birds (ie. Herring gulls, cormorants and herons).*



With every passing year, as the collection grows and scientists expand their knowledge of environmental and ecosystem trends, this world-class facility is contributing to the preservation of the environment for future generations of Canadians.

For more information: **Bryan Wakeford**  
(819) 997-1412.





# Sustainable Energy Needs?

Today, Canadians from all walks of life exhibit an unprecedented awareness of air pollution and the greenhouse effect. Fundamental to these front-burner issues is how we use energy—to make electricity, to heat or cool buildings, and to power motor vehicles, for example. The science of fuel combustion, and the engineering of new equipment, has got to keep up with society's need for more sustainable energy.

Environment Canada recently co-sponsored the first Combustion Conference in Canada. CANMET Energy Research Lab organized the event, held in Ottawa, with support from the National Research Council (NRC). More than 200 people from government, industry and academia came to share ideas and talk about:

- burning a wide variety of fuels,
- low-NO<sub>x</sub> combustion,
- furnace modeling and optimization,
- process control and measurement,
- business partnerships and economic opportunities, and
- energy/environmental education.

A new partnership between the three sponsoring organizations and Industry Canada was announced at the Conference. The partners expect to encourage effective cooperation on combustion and fuels research. They will solicit industry and university participation; to that end, they are developing an Internet web site. They are also planning an International Flame Research Conference for May 1997.

Environment Canada personnel chaired some of the technical sessions. As well, David Egar



Donna Mackevic is all smiles at the Air Issues booth, set at the 1996 Combustion Conference in Ottawa.

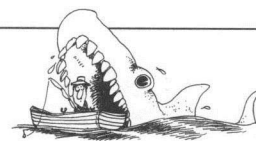
(Air Pollution Prevention) spoke on “emissions from stationary combustion sources,” Ed Witushek (Pacific & Yukon Region) on “biomass fuel emissions,” Dave Campbell (Hazardous Waste Branch) on “use of hazardous wastes in cement kilns,” and Manfred Klein (Oil, Gas and Energy Division) on “low emissions in gas turbines.”

Special thanks to Kash Ram (Clean Technology Advancement Division) who also contributed to the conference; and to Donna Mackevic, Dominique Kayser and Muriel Constantineau (Air Issues Branch) for setting up a display booth.

For more information: **Manfred Klein**  
(819) 953-6630.

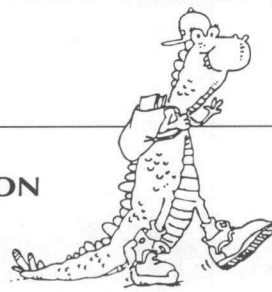
## Write to us! Letters to the editor

*Let's Talk Green* will publish your signed letter to the editor, providing it is within the boundaries of good taste and Canadian law.



PRAIRIE AND NORTHERN REGION

# International



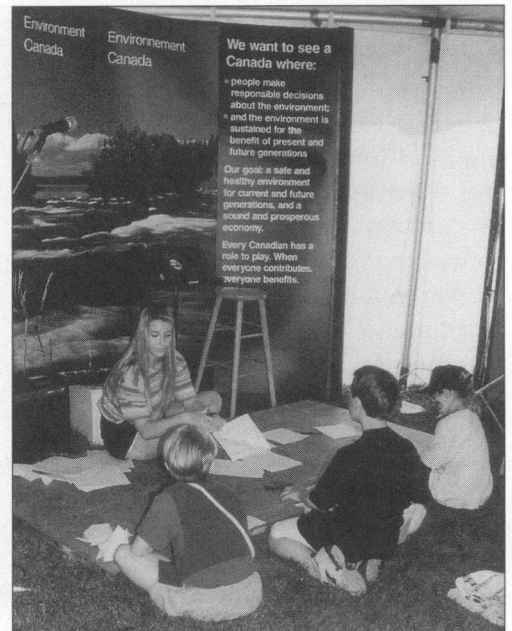
# Children's Festival

The Regina International Children's Festival, held June 12-15, 1996 was given a "green boost" by the EC Regina Green Team. For the second year in a row, volunteers from the Green Team helped gather green information for displays, set up the displays in the tent and interacted with the children who visited the Environment Tent during the festival duration.

This year's EC input included reusing/recycling information with interactive activities (origami animals were made out of old EC reports), live musical performances of environmental songs, the "Healthy Living with Sunshine" interactive display and a bird house display which exhibited various types of homes for our feathered friends.

The EC display in the Environment Tent was complemented by its neighboring displays from Ducks Unlimited, Pheasants Forever, BFI Recycling and Prairiescape Greenhouse. In total, 20 000 children, teachers and parents visited the Children's Festival with a large number visiting the Environment Tent. The Environment Tent was one of the fun activity centres that made the Children's Festival a huge success.

For more information: **Christina Ruiu** (306) 780-7365.



Lisa Kooy helps the kids make origami animals out of old EC reports during the International Children's Festival in Regina.

PACIFIC AND YUKON REGION

# Waste naught, want naught

The 5th International Association of Water Quality (IAWQ) Symposium on Forest Industry Wastewaters was held in Vancouver, June 10 to 13. It attracted more than 150 participants from North America, Europe, Australia and Asia.

One of the highlights was the Environmental Effects Monitoring (EEM) Workshop organized by Environment Canada's Al Colodey (Industrial Program, Pollution Abatement, Pacific Region). There were five sessions organized over three days.

The EEM program involves some 130 pulp and paper mills across Canada. The goal is to assess how well the Pulp and

Paper Effluent Regulations protect fish, the fish habitat and the use of fisheries resources.

In three-year cycles, each mill assesses the chronic toxicity of their effluent and its effect on the environment. They then compare their results against reference sites (they use water and sediment quality measurements, an adult fish survey, and a benthic invertebrates survey). The first reports were received in April; most of the mills met their deadline, many with good-news stories to report.

Connie MacDonald (ECS, Ottawa) presented a paper on Canada's first-cycle EEM program. She touched on

participants' spirit of cooperation, relationships between industry and government, the remarkable flexibility in program implementation, and the large amount of valuable data collected.

The Symposium program featured a wide variety of Canadian and international papers and presentations. Several outlined various aspects of the EEM experience in B.C. and in Canada. International presenters came from as far afield as Alaska, the U.S., New Zealand, Australia and Finland. Selected papers will be published in a future issue of *Water Science Technology*.

For more information:  
**Al Colodey** (604) 666-2883.



# War on Aliens Heats Up

Of course, these aliens haven't landed from a planet—or a galaxy—far, far away. Instead, they've simply set up housekeeping in a new (for them) part of this one!

It's a phenomenon that is causing global concern. At a recent UN-sponsored conference on Alien Sciences, held in Norway, delegates confirmed the impact that invasive species of plants and animals are having on natural biodiversity. In fact, invasive alien species are now considered to be the second most important threat to global biodiversity conservation. Island nations are particularly vulnerable.

Stories from around the world were traded at the conference, as delegates shared experiences and (a few) success stories. Many of the problems stem from the lack of proper ballast water treatment. (A simultaneous multi-nation meeting on ballast water treatment was being held in London, England).

Global trade initiatives pose an additional threat; as new trade routes open, movement of alien species will likely increase proportionately.

Among the tactics discussed at the conference:

- a global database of harmful species, outlining invasive characteristics and known controls;
- a common approach to ballast water management; and
- increased public awareness.

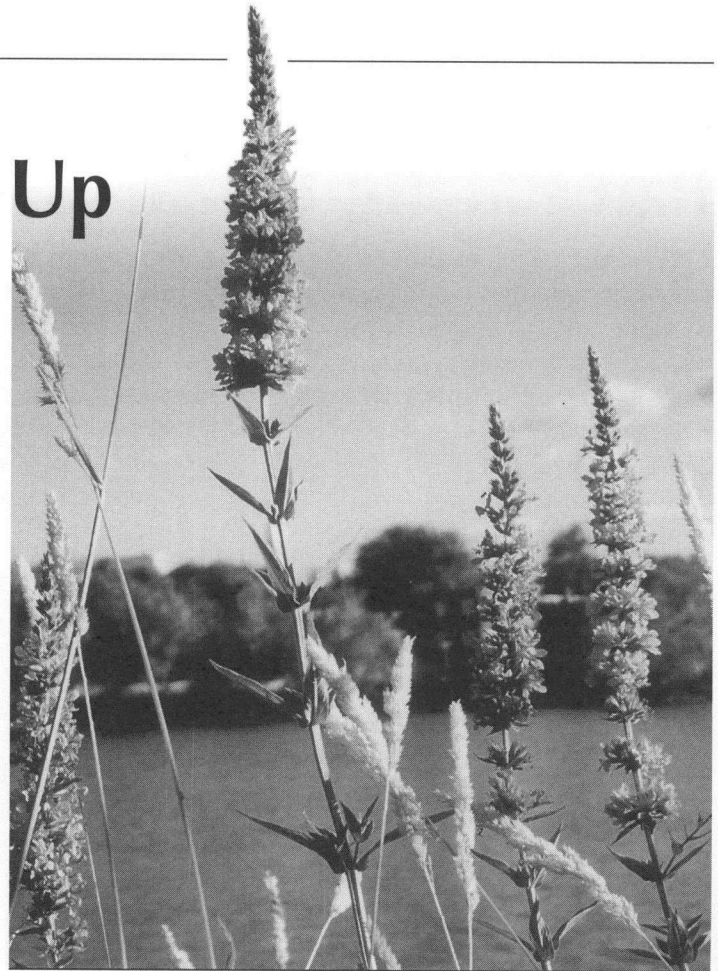


Photo by Martin Boddington

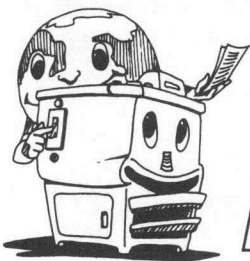
*Landed Immigrants. Purple loosestrife—a major Canadian invader, threatens other indigenous species.*

Trading nations and others must recognize that they may be importing *and* exporting problem species, and reflect this new awareness in legislation and regulations.

A further call to arms was made in Montreal in October, when work on strategies and solutions continued.

For more information: **Gerry Lee** (819) 953-1434.

## A Green Tip from Environment Canada

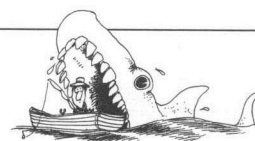
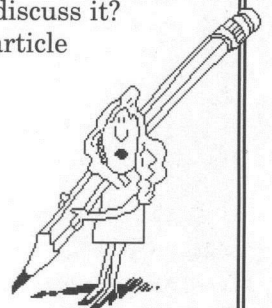


**W**hen scheduling your next meeting, let people know of others attending from their building or part of town. Ride sharing saves money and pollution.

## Got a good idea for a story?

Why not call the editor and we'll discuss it? If you want, we'll even write the article and arrange for any photos. Call Janet Fewster at (819) 997-2037.

**Deadline:**  
**January/February:**  
**December 15**



# Pan Pacific Hazards '96

Scientists predict that Vancouver is long overdue for a major earthquake, rivaling the one experienced by residents of Kobe, Japan. Dealing with such a disaster and others, like volcanic eruptions and tsunamis, was the focus of the recent five-day conference held in Vancouver.

Among such participants as B.C. Gas, B.C. Tel and a variety of private companies selling everything from prepackaged emergency food and water to personal strobe lights, Environment Canada demonstrated the role they would play in the event of a natural disaster. The major display illustrated the department's capability in responding to hazardous material incidents, providing emergency weather services and playing a communications role.

Employees in the Emergencies section of Environment Canada are fully trained in dealing with hazardous materials. With so many industries using hazardous materials in their processes and people using natural gas in their homes an earthquake would create many problems, including oil spills, natural gas leaks and chemical spills.

"Environment Canada would play a major role in providing support to deal with [hazardous material] incidents. We anticipate that some of the major industries would not be able to carry out their normal response

actions," said Ken Wile, Head, Emergencies Section, Pacific & Yukon Region.

However, it would not be up to Environment Canada to take the lead in responding to such a disaster. In such an event, it would be up to the Provincial government to take the lead. Should the province decide it needs assistance, Emergency Preparedness Canada would be contacted. It is under Emergency Preparedness

Canada that Environment Canada would lend its support.

There is one area where Environment Canada would take charge: Weather Services. With extensive weather equipment and fully qualified employees, Environment Canada would play an important part in predicting weather after a natural disaster.

In the case of oil spills or chemical leaks, Weather Services can deploy an emergency weather station in the area. The station would be able to monitor weather conditions and help predict how the chemical would disperse. The station can be operated remotely and would provide information to the proper response agencies.

Lastly, Environment Canada's Pacific & Yukon Region, has the potential to help out in the vital role of communications. Should an earthquake happen, most telephone communication systems,

**Vancouver is long overdue for a major earthquake rivaling the one in Kobe, Japan.**



The Mobile Command Centre and Pacific & Yukon region employees—ready for action at the Pan Pacific Conference '96.





ENVIRONMENTAL CONSERVATION SERVICE

## The Canadian Breeding Bird Survey

including cellular phone systems, would likely fail, making it virtually impossible for emergency teams to stay in touch.

The Mobile Command Centre (MCC), a mobile home complete with various communications systems, is used by the Emergencies section in the event of major oil or chemical spills. It allows them to travel to the site and still stay in touch with the office and other response teams.

"It's expected that we would play a communications role using the MCC because it has a full range of telephone and radio communications systems with all kinds of backups if certain systems fail," said Wile. These systems include UHF radio, VHF radio, CB, Cellular, Autotel, MSAT (satellite phone) and modem setups for computers. The MCC would be offered to the Provincial Emergencies Program, and Municipal responders would be deployed in the most useful location.

Hundreds of people visited the Conference on public day and most felt reassured that Environment Canada was prepared to aid and assist in responding to any major natural disasters in British Columbia.

For more information:  
**Ken Wile** (604) 666-6496.

In the chilly, pre-dawn darkness of a June morning birders all across North America are stumbling out of bed, fumbling for their coffee thermos and heading to their cars. It is the start of the annual North American Breeding Bird Survey.

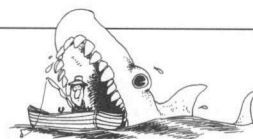
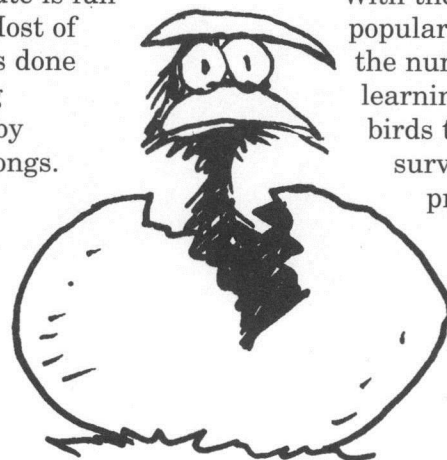
For thirty years thousands of volunteers in Canada and the United States have been participating in the Breeding Bird Survey or BBS. The instructions are precise. Each volunteer is assigned a route which they run once every year. Routes are 40 km long with 50 stops spaced every 0.8 km. The survey begins exactly half an hour before dawn and must be completed in about 4 to 4.5 hours. Volunteers drive the route with an assistant and stop for exactly 3 minutes at each of their 50 stops. During the 3 minutes they identify and count all the birds they hear or see. Their assistants meanwhile are busy recording the data, reading the map and making sure there is enough coffee to go around. Running a BBS route is fun but challenging. Most of the identification is done by ear—identifying individual species by listening to their songs. The 500 Canadian volunteers are all expert birders who can identify birds quickly by both sight and by song.

The BBS is designed to monitor changes in the populations of North American birds. There is much concern about the status of birds in North America and the BBS provides data that are used to monitor bird populations. In Canada, data from the BBS helps to monitor the populations of some 260 species of birds. The data are used to determine which groups of birds or individual species are showing population changes and to focus research and conservation efforts on those species most in trouble. Scientists examine the data to look for historical patterns, determine which changes are natural fluctuations in population and which are a response to human-induced environmental conditions.

Data from the BBS becomes more and more valuable the longer the survey runs. Participation in the survey has increased steadily since its beginning in 1966. There are now about 500 Canadian volunteers and some 2 500 U.S. volunteers.

With the increasing popularity of birding and the number of birders learning the songs of birds the future for the survey looks very promising.

For more information:  
**Connie Downes**  
(819) 953-1425.



# Environmental Technology Centre hosts Russian visitors

In the eyes of many countries, Canada ranks as number one in the area of environmental protection and is an international leader in environmental initiatives and training. So, thanks to a Canadian/Russian bilateral agreement promoting cooperation on common environmental concerns, and an on-going liaison between a local scientist and his homeland colleagues, environmental specialists from Russia and Belarus visited Canada in June. They came to learn about Canadian technology and methods of handling PCB and metallurgical wastes.

The two-week training program was coordinated by Environmental Technology Centre's Dr. Konstantin Volchek (who works under contract with

the Emergencies Engineering Division—EED), Dr. Dave Thornton, Centre Director, and Brian Mansfield, EED's Technology Coordinator. Volchek's old Mendeleev Institute (Moscow) colleague Dr. Valeri Tarasov, a leading PCB expert in Russia, accompanied the visitors and spoke on PCBs in Russia. The stay was dominated by extensive training sessions that included background on Canadian environmental regulations and technologies and site visits to Hamilton, Toronto and Montreal.

The visitors found enormous value in the experience and expressed it in a thank-you letter from Gennady Junin of the Russian Metallurgprom Concern: "No doubt our joint work will bring a lot of useful solutions to ecological problems," and "We

**Thanks to a Canadian/Russian bilateral agreement promoting cooperation on common environmental concerns, and an on-going liaison between a local scientist and his homeland colleagues, environmental specialists from Russia and Belarus visited Canada in June.**

hope our business relations will continue." Because of the success of this venture, a letter has been received from the Deputy Minister of the Russian Department of Environmental Protection and Natural Resources, requesting the start of a much larger project under the bilateral agreement. The proposal would allow for increased technology transfer and would include the formation of a centre of excellence in Russia to deal with environmental technologies.

There are indications that systems in Russia are gearing up to be fully self-supporting for enterprises of this kind, so it is important to note, says Volchek, that the group paid all of their own expenses, including presentations by consultants. The visitors invested more than \$40 000 into the Canadian economy, and enhanced contacts with environmental counterparts in government and private industry, opening the way for future commerce. They intend



Russian visitors to ETC in Ottawa enjoyed the Canadian experience while exchanging valuable information and making important contacts.



to establish formal contacts with two major engineering firms they visited, and substantial interest has been expressed by the Canadian firms.

"I would like to thank everyone involved in this visit and the training sessions," says Volchek, "especially all the speakers and presenters, especially Anita Wong, Ontario Region, Toronto, for coordinating the site visits in Ontario; Nicole Jasmin, International Affairs Branch, for arranging the visas; and translator, Elena Listopad."

For more information:  
**Konstantin Volchek**  
 (613) 990-7147 or e-mail:  
 kvolchek@rr.etc.ncr.doe.ca.

### Training sessions dominate visit

An extensive training program was set up for the Russian environmentalists.

### Week one, Ottawa presentations by:

- Environment Canada
- Canada Centre for Mineral and Energy Technology, Natural Resources Canada
- LBA Environmental Consulting
- Hatch Associates

### Week two, industrial visits to:

- Stelco and Philip Environmental, Hamilton, Ontario
- Continuous Colour Coaters, Toronto, Ontario
- SNC-Lavalin, Montreal, Quebec

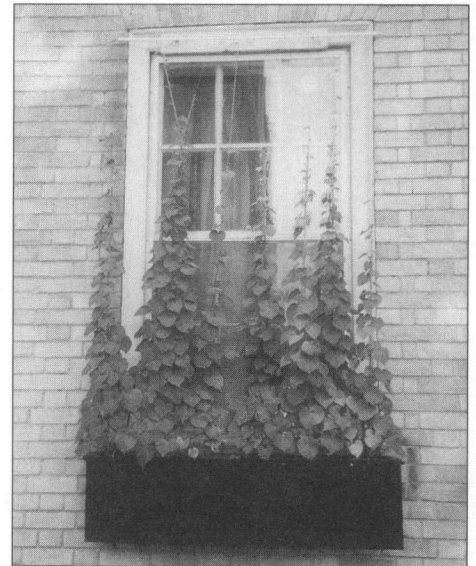
## ATMOSPHERIC ENVIRONMENT SERVICE

# Travel Agents Were Right About the Palm Trees...

**T**hey're wonderfully effective in cooling the stressed-out vacationer ensconced beneath its swaying fronds, pocketbook and frosty drink in hand. Unfortunately, they only work on tropical islands.

However, researchers are investigating the effectiveness of vegetation—vines and climbing plants mounted as screens over windows and exterior cladding—to mitigate another kind of island heat, this time generated by the urban heat island effect. (Urban heat islands occur when concrete, blacktop and asphalt replace vegetation in large cities, changing the thermal properties of the ground surface. It's a problem that will likely get worse with global warming).

Brad Bass, Environmental Adaptation Research Group, and Roger Hansell, Associate Director of the Institute of Environmental Studies at the University of Toronto, conducted an experiment at the University of Toronto last summer. They attached scarlet runner bean, sunflower and morning glory screens to various exterior surfaces. Then, they used an infrared gun to register outgoing long wave radiation (OLR) emitted by the vegetation. Plants are more effective than other types of shade because they convert a large amount of incoming



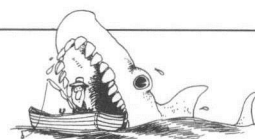
*A new look in draperies? This curtain of Morning Glories is designed to keep indoor temperatures down.*

radiation into latent heat, reducing the ambient temperature.

Results are promising, and several additional partners have been recruited to expand this research during the next few years. They'll be looking at urban forestry, proposing design options, and simulating the energy demands of a multi-story building, with and without external vegetation.

Now, just imagine the effectiveness of those swaying fronds in regulating a Canadian winter.

For more information:  
**Brad Bass** (416) 978-6285.



# Report Takes Positive Approach to Compliance and Enforcement

Environment Canada recently released a Compliance and Enforcement Report prepared by a team of enforcement and program staff from headquarters and the regions.

The project, led by the Enforcement Branch, describes enforcement and compliance promotion activities. It depicts, in graphic form, the compliance rates for six key regulations administered by Environment Canada under the *Canadian Environmental Protection Act* and the *Fisheries Act*.

The selected regulations cover ocean dumping, effluent from pulp and paper mills, dioxins and furans emissions from pulp and paper mills, PCB storage, import and export of hazardous wastes, as well as ozone-depleting substances.

The Compliance and Enforcement Report has two parts—a context setting introduction, and six chapters that follow a set format:

- background statement,
- explanation of regulatory/permit provisions,
- statement on compliance promotion,
- statement on compliance and enforcement status,
- summary statement, and
- graph.

The Report was prepared using information collected and received by Environment Canada's enforcement and program staff between 1992 and 1994. The data is helpful in establishing departmental priorities for compliance promotion and enforcement.

The information presented in this form meets the expectations of the public, the regulated community and program managers. Future reports will use a similar format. The graphs and concise description, along with summaries, provide readers with a basic understanding of each regulation and its compliance status.

This report is only available on the Internet. You may access it through Environment Canada's home page at <http://www.doe.ca/>, under Environmental Law and Enforcement in the Issues and Topics menu.

For more information:  
**George Pilpe** (819) 997-4712.

## The six regulations were chosen based on the following criteria:

- availability of appropriate data and information;
  - geographical and international scope;
- relevance to a large number of regulatees; and
  - general public interest.

## Guilty!!

**Corner Brook Pulp and Paper Limited**, of Newfoundland, was recently fined in the amount of \$750 000 for failing to complete construction of a new effluent treatment system. As one of the largest fines to date levied in Canada for pollution violations under the *Fisheries Act*, the penalty is a significant step towards Environment Canada's increased initiative in the areas of enforcement and compliance.



The \$750 000 judgement included a fine of \$250 000 which was distributed in the following manner:

- \$50 000 to the Corner Brook Stream Development Corporation for the purposes of implementing projects relating to the environmental improvement of the Corner Brook Stream area.
- \$75 000 to the scholarship fund of the Corner Brook Westviking College, for students attending its Resources Technology Program.
- \$125 000 to the scholarship fund of Sir Wilfred Grenfell College, Memorial University, in Corner





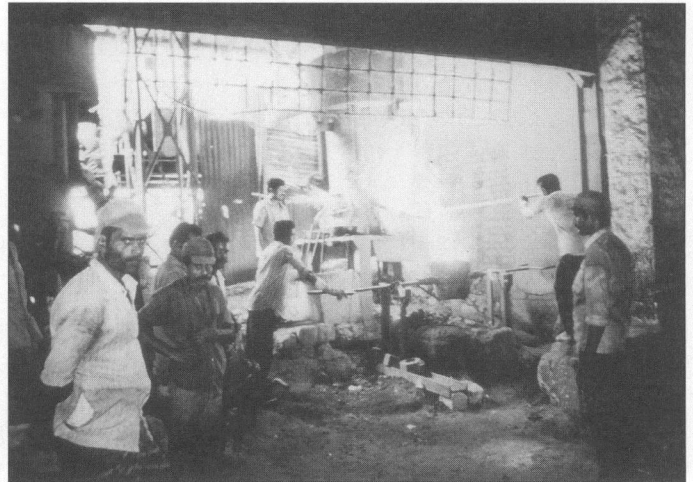
## Expanding Canada's (Business) Horizons

Its population is likely to surpass China's by the second quarter of the 21st century. Steady economic growth—and market-oriented changes in its economic policies and regulations—is already attracting considerable international competition. To sustain this growth, it will need more than \$3 billion US in environmental infrastructure by the year 2000. Which country is this? India...

Where does Environment Canada fit in? Canadian businesses are poised to provide the needed technologies and specialized services, and they're getting help from Prairie and Northern Region.

The Region, via the International Environmental Management Initiative, is helping to fund an exploratory mission to the heavily industrialized southern states of India, where government agencies and industries have expressed a strong interest for an ordered process to test and demonstrate promising new methods for cleaner production technologies and pollution prevention. Indian government and industry representatives and Canadian experts will participate in a technology/information exchange forum which will include site visits to industries where these technologies are most urgently needed. Canadian companies may be asked to field-test environmental technologies—including waste management systems and energy-efficient manufacturing processes—as early as 1997/98.

For more information: **Bryan Armstrong**  
(403) 951-8741 or e-mail [armstrongb@edm.ab.doe.ca](mailto:armstrongb@edm.ab.doe.ca).



Smelting in a foundry in Tamil Nadu, India.



Leather tannery in the town of Ranispet, Tamil Nadu, India. Leather tanning is not only a major industry in India, but also one of the major sources of pollution.

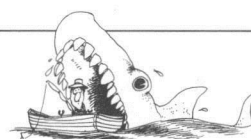
Brook, for students admitted to its Bachelor of Science program Environmental Science.

In addition to the above, Corner Brook Pulp and Paper Ltd. was ordered to complete the construction of the effluent treatment plant and to have it fully operational on or before July 1st, 1996. Included in the order was a provision that if the plant was not completed by this date, \$100 000 of a \$500 000 security would be forfeited after application by the Crown. If the plant was still not completed by August 1st, 1996, \$200 000 would be forfeited followed by an additional \$200 000 if the plant

remains incomplete by September 1st, 1996. At time of writing, the plant remains incomplete.

**Imperial Oil** of Sarnia, Ontario was convicted under the *Canadian Environmental Protection Act* for releasing an estimated 2 000 kilograms of vinyl chloride monomer to the atmosphere on July 12, 1993. The *Act* limits the release of vinyl chloride into ambient air. Company procedures were circumvented, allowing a release of approximately three minutes duration.

- Fined \$18 000.



# It Can't Happen To Me...

...but just in case, here's some good news. *Environment Canada's Occupational Safety and Health (OSH) program is being revamped.*

In 1995, the OSH program was audited, with a focus on management practices instead of the more traditional compliance testing. Three regions participated in the audit: Quebec, the National Capital Region, and Prairie and Northern.

The auditors' report recommended several improvements. For the past six months, National

OSH Office staff—and departmental OSH coordinators, committee members and representatives—have been developing an action plan that will incorporate these recommendations into a new management framework.

The action plan has now been finalized and forwarded to senior management. There are four key components for action (see sidebar). Each is directly linked to the overall OSH objective: to prevent workplace accidents, injuries and illnesses.

It's human nature to firmly believe that an accident could never happen to you. That said, it couldn't hurt to familiarize yourself with the action plan, especially the new accountability framework for OSH. It clarifies everyone's roles and responsibilities, including yours! Get your copy of the plan—in electronic form or hard copy—from your local safety and health committee or representative, or contact a departmental OSH coordinator.

For more information:  
**Robin Grabell** (819) 953-2431.

## The Four Components of the OSH Action Plan

COMPONENTS	PURPOSE
A. Implement an Accountability Framework for the OSH Program	<ul style="list-style-type: none"> <li>• to define the objectives and goals of the OSH Program</li> <li>• to instill a permanent OSH culture across the department that demonstrates a positive and pro-active commitment to Program objectives and goals</li> <li>• to define accountability for the OSH Program</li> <li>• to clarify roles and responsibilities</li> </ul>
B. Develop a Due Dilligence Framework for Managers and Local Action Plans to Implement the Framework	<ul style="list-style-type: none"> <li>• to ensure that managers practice due diligence and demonstrate responsible care when planning and carrying out their operations</li> <li>• to provide a framework to managers that will enable them to develop local action plans in accordance with Program objectives and goals</li> </ul>
C. Identify and obtain core skill sets	<ul style="list-style-type: none"> <li>• to ensure the department is capable of achieving Program objectives and goals</li> </ul>
D. Initiate an OSH communications strategy	<ul style="list-style-type: none"> <li>• to enable senior management to promote the goals and objectives of the Program</li> <li>• to facilitate upward feedback and the sharing of information</li> <li>• to increase the visibility of the OSH Program</li> </ul>



# Pure and simple video nominated for national award

When British Columbia's Fraser River Action Plan (FRAP) and the BC Ministry of Health commissioned a video to educate rural home owners on how to protect ground water, little did its members suppose that "Septic System Maintenance—Pure and Simple" would be nominated for a national award for Occupational Health and Safety Week and come in second only to a National Film Board production.

The video addresses one of FRAP's goals—reducing the level of pollutants entering the Fraser River Basin—and is part of a larger initiative jointly administered by Fisheries and Oceans and Environment Canada.

Environmental Protection biologist, Bert Kooi, and hydro geologist, Hugh Liebscher, represented Environment Canada in implementing the groundwater protection component of FRAP.

"We had to implement a strategy to reduce pollutants, measure success, put the programs in place working in conjunction with partners—cities, municipalities, small community groups—then once in place and proven, keep them going...." says Kooi.

The video, hosted by local personality John Barton, takes viewers through a septic tour, looks at problems and warning signs, offers "do's and don'ts" for preventive maintenance, and comes with a how-to pamphlet. The package is available for \$10 by calling 1-800-665-7338.

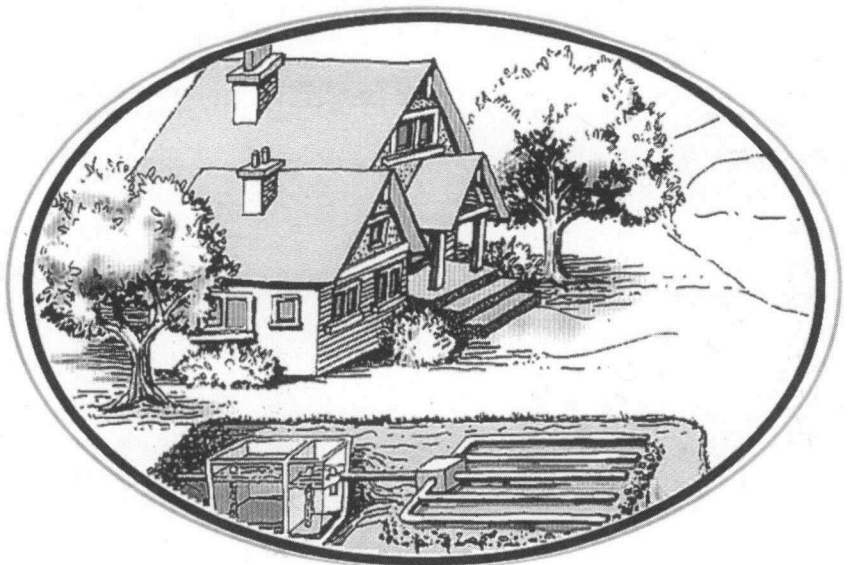
Hopefully, the video will help people develop the best

## Educating new rural home owners

In one survey of 129 septic systems, 70 were not functioning because they were plugged up; the owners were not aware they were on septic systems.

maintenance practices to prevent further contamination of ground and surface water in the Fraser Basin, and clean up some of it.

For more information: **Marielou Verge** (604) 666-2399.

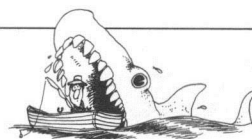


ANTI-septic

FRAP rap

### The \$90 million Fraser River Action Plan,

announced in 1991, has reduced pollution in the Fraser River. Compliance with environmental legislation, by sector, ranges from 73-100%. Dioxin levels are decreasing and almost 1 000 hectares of wildlife habitat have been secured with the help of partners.



## HUMAN RESOURCES

# R<sub>x</sub> for RSI

**P**roblems with lower back pain? Does a specific repetitive task leave you with aching muscles and joints? Does your computer workstation give you eye strain, a sore neck or the symptoms of tendonitis? Take comfort in the knowledge that there may be an ergonomic solution to all of your aches and pains.

## WHAT IS ERGONOMICS?

Ergonomics is a branch of science which studies how people interact both physically and mentally with their work environment in order to work safely and effectively. Fundamental to the practice of ergonomics is the principle that the workplace should be designed to "fit" the worker—rather than the other way around. Ergonomists conceive the workplace as a whole system of interrelated parts, functions and environmental conditions that, when properly designed, maximize the health, well-being and productivity of the worker.

Musculo-skeletal or soft tissue injuries represent the highest number of workplace injuries reported by Environment Canada employees and include everything from mild neck pain to the most debilitating back injuries. Although back injuries account for the largest number of lost days, the department's Occupational Safety and Health (OSH) Coordinators are seeing a greater number of cases of repetitive strain injury (RSI) resulting from the use of computers.

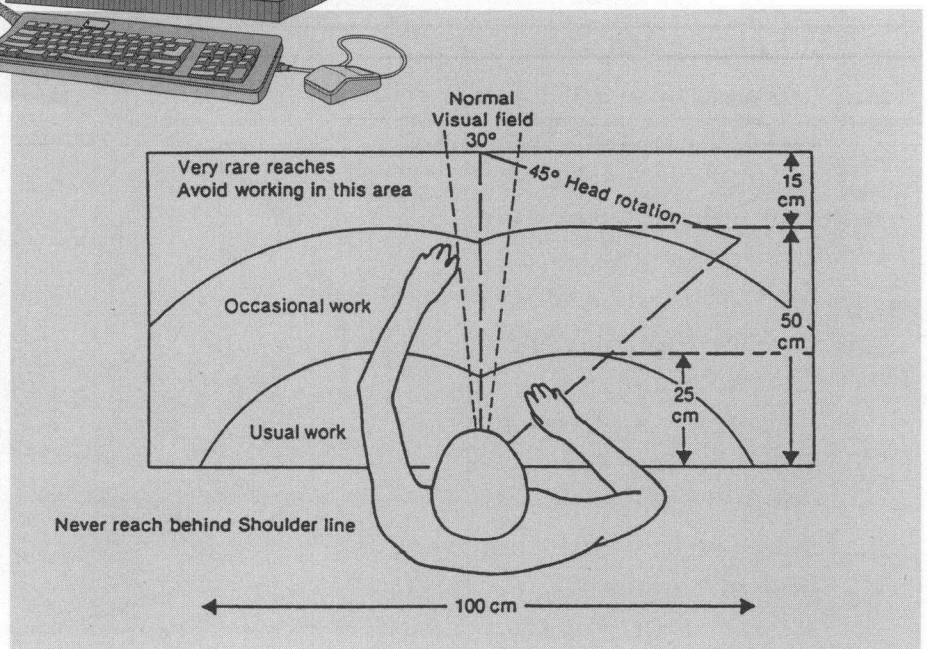
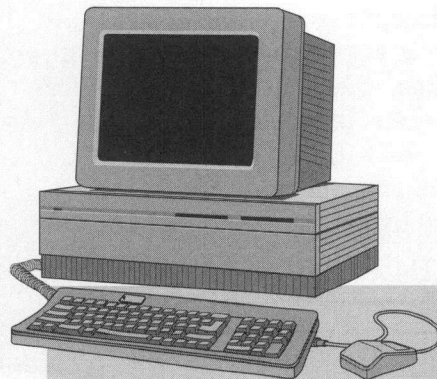
Highest at risk for developing a RSI are computer programmers, data processors or anyone who performs repetitive tasks at a

workstation with a poor ergonomic design. In order to stem the growth in RSIs, the departmental OSH network has initiated a prevention program designed to increase awareness of risk factors for RSI in the workplace.

**Does your computer workstation give you eye strain, a sore neck or the symptoms of tendonitis?**

An information campaign promoting ergonomics in the workplace is part of the RSI prevention program. As part of this awareness campaign, all of the departmental health and safety committees and representatives will soon be provided with a tool kit of information that will enable them to implement prevention programs and awareness campaigns at the local level.

For more information:  
**Robin Grabell (819) 953-0385.**

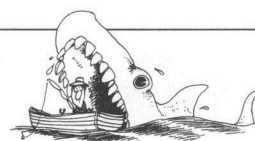




# Awards

## *25<sup>th</sup> Anniversary Awards were presented to the following Individuals*

Don Ambler	Dave Foster	Liz Lefrançois	Ewing Poon
Jeanne Andrews	Richard Fournier	Louis Legal	Austin Reed
Jean-Guy Babineau	Larry Funnell	Jocelyne Louis-Seize	Pamela Reid
Cynthia Barbe	Sandra Gillis	Allan MacAfee	Jack Ricou
Alain Bernier	Lorraine Godard	J. Rod MacDonald	Brian Rooney
Peter Blackall	Laurie Guillon	Debbie MacDonald-McGee	Dr. Robert Schemenauer
Pam Blackstock	Bill Gummer	Keith MacIntosh	Jocelyne Séguin
Charles Brassard	Will Hayward	Trish MacQuarrie	Gary Sergy
George Brealey	Michel Hébert	Fred Mah	Bob Sharples
John Buccini	Larry Heinze	Charles Marriott	Robert W. Slater
André Cantin	Paul Hempel	Vicki Martelock	Rick Smith
Al Carr	Steve Hickey	Kevin McCormick	Allan D. Smith
Dr. Alex Chisholm	Christine Hogan	Eddy McGuire	Jim Steele
Jean Chrétien	Dr. Geoffrey Holroyd	Gerald McKeating	Dr. Ian Stirling
Muriel Constantineau	Harold Humber	Ron Moodie	Bruce Thomson
Hazel Davis	Anthony Keith	Janetta Ouderkirk	David Tilden
France Dionne	Morrie Kirshenblatt	Gerald Parker	Wayne Turpin
Pat Dolan	Manfred Klein	Arthur Petch	Walter Williams
Gaétan Duchesneau	Danielle Labonté	Dave Phillips	Rina Young
Clément Dugas	Dr. Dennis Lawson		
	Gervais Leclair		



# Upcoming Events



December 5-6, 1996

Ottawa, Ontario

**Connexion '96**

Contact: Jim Moyes

(819) 994-5198

Fax: (819) 953-5199

January 6-17, 1997

New York, New York

**Tenth Intergovernmental Negotiating**

**Committee for the Convention to Combat Desertification**

Contact: Guy Rochon, EC

(819) 997-4046

February 2-7, 1997

Long Beach, California

**Eighth Symposium on Global Change Studies**

Contact: Thomas R. Karl

Fax: (704) 271-4328

E-mail: tkarl@ncdc.noaa.gov

February 4-7, 1997

Geneva, Switzerland

**R '97 Congress and Exhibition:**

**Recovery, Recycling, Re-integration**

Contact: Maria Bühler

+41 1 385 29 29 Fax: +41 1 385 26 53

E-mail: lpmmmb@dial.eunet.ch



## Awards

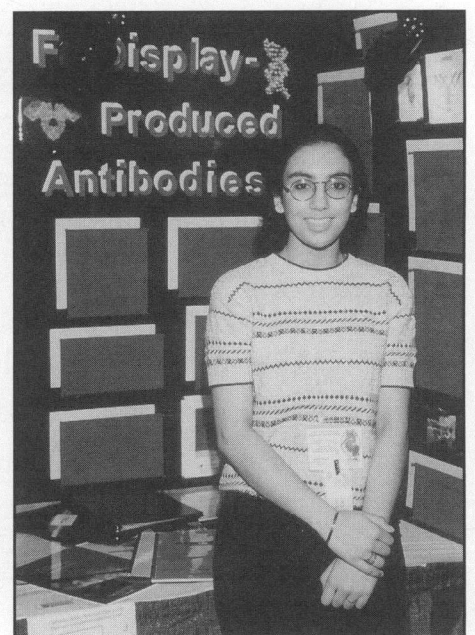
**Dr. Abdel El-Shaarawi** of NWRI has recently been named a Fellow of the American Statistical Association. Abdel specializes in environmetrics, a science which deals with the development of statistical methods for the advancement of environmental sciences. President of The International Environmetrics Society, he has displayed outstanding leadership in the creation and development of The International Environmetrics Society and its journal, and excellence in teaching. His distribution of information on environmental statistics at an international level; promotion of statistical development for individuals from developing countries; and his ability to consult on numerous national and international environmental projects has earned him the admiration and respect of his colleagues.

**Todd Burlingame**, team leader, and the **EC diamond mine review team** were honoured with **Certificates of Appreciation** for

their work, reviewing a precedent-setting application to build a diamond mine in the Northwest Territories. An intensive review of a wide range of air, water, wildlife, spills and other potential issues was needed to respond to the challenge of this unique new industry, proposed for the first time in a Northern environment. The team played a key role in synthesizing a large amount of information from all the branches in the region (Environmental Conservation, Environmental Protection, Atmospheric Environment and Departmental Affairs) into a series of very successful presentations to a Canadian Environmental Assessment Agency panel.

Environment Canada's Action 21 program has supported the Youth Science Fair since 1989. This year's winner is **Lakhbir Sandhu**, a grade 10 student from Centennial Regional High School in Montreal. Her project, **Fd Display - Produced Antibodies**, used genetically-altered viruses, and the antibodies produced from

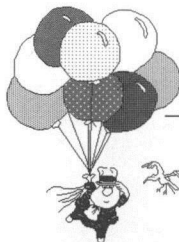
them, to create a quick, simple, and reliable test for detecting even the most minute quantities of herbicides 2,4-D (Dichlorophenoxy) and DNP (Dinitrophenol). Lakhbir received a \$1 000 scholarship, as well as a congratulatory letter and a Canada-Wide Science Fair Award certificate signed by Minister Marchi.



Lakhbir Sandhu



# Going Places



**Burns Coutts** (819) 953-7028 previously Policy Analyst for the Global Air Issues Branch, has accepted the position of Special Advisor to Laura Talbot-Allan, ADM, Corporate Services.

Former Director of National Conservation Programs Branch, **Ann Marie Sahagian** (613) 941-1985 left EC in August and is now working with Treasury Board as Director, Justice and Solicitor General's Division.

**Sherri Watson** (613) 233-2006, is on assignment as Director of the Canadian Office of the Air and Waste Management Association, under a joint EC/Industry Canada 2 year Government Business Interchange Program.

**Allan Kovacs** (613) 957-9685, previously with Science Policy Division, joined Treasury Board in August as a Senior Policy Analyst.

**Kelly Torck** (819) 994-6272 is working in the National Air Issues Secretariat within the Pollution Prevention Directorate (PPD) and will focus on issues related to the Minister's Clean Air Campaign. She comes to the PPD from the Office of Federal Environmental Stewardship.

**Jim Alexander** (819) 994-3634 is the new Director General of Systems and Informatics Directorate. Formerly from AES Downsview, Jim replaces recently retired Mike Magar.

**Trish MacQuarrie** (819) 997-9011, became the Director of Strategic Operations, RAPID, EPS, in October. Trish came from Stratospheric Ozone Division where she held the position of Manager.

**Lucie Lambert** (819) 994-6037 is on assignment with "Let's Talk Green" as Communications Administrator. Lucie was formerly Coordinator, Greening Government Operations, with the Office of Federal Environmental Stewardship.



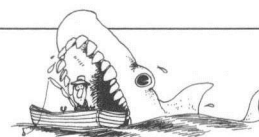
## Retirements

**Mike Magar**, former Director General, Systems and Informatics Directorate, served in the departments of Forestry, Fisheries and Environment since his career began in 1965. As DG, Mike played a fundamental role in the department's first major step to coordinate information technology (IT) through the introduction of DOTS (Departmental Office Technology System). DOTS was a major factor in changing the culture of EC, and has received recognition from other departments, the private sector and international agencies.

Mike has also had a variety of successes through various committees. Examples include committees for the integration of IT, and EC's major office technology migration project which he initiated. The ACT (Adaptive Computer Technology) Centre, also created during Mike's tenure, brought international recognition to the department for its contribution to technology and accommodation issues for people with disabilities.

## Recovering the Irving Whale—centerspread

1. A forward view of the cargo bin of the Irving Whale just after emerging from its 26 year resting place.
2. Irving Whale being towed into Halifax Harbour aboard the BOA 10 on August 7, 1996. Environment Canada's DC-3 remote sensing aircraft flies over the convoy.
3. From left, Hugh Hall, Project Manager (EC), and Project Co-Directors Bill Dancer (Department of Fisheries and Oceans) and Ken Hamilton (EC) on the bridge of the Command Vessel CCGS "Sir William Alexander".
4. Hugh Hall, Project Manager, examines a radar screen on the bridge of the CCGS "Sir William Alexander".
5. Regional Director General, Garth Bangay (left) and naval architect Will Vickery (Transport Canada) on the BOA BARGE 9.
6. Peter Hennigar, EC Emergency Science Advisor, strives to hear over ambient noise using a satellite phone on the lift vessel "BOA BARGE 9".
7. From left, Roger White, Communications Advisor, Ken Hamilton, EC Project Co-Director, EC Minister Sergio Marchi, and Peter Hennigar, EC Emergency Science Advisor, talk shop in front of the chemistry lab trailer on board the "BOA BARGE 9".
8. Rita Mroz, EC Inspector, is dwarfed by the Irving Whale aboard the BOA 10 prior to float off in Halifax Harbour.



# Recovering the Irving Whale • Récupérer l'Irving Whale



Photo: Hugh Hall

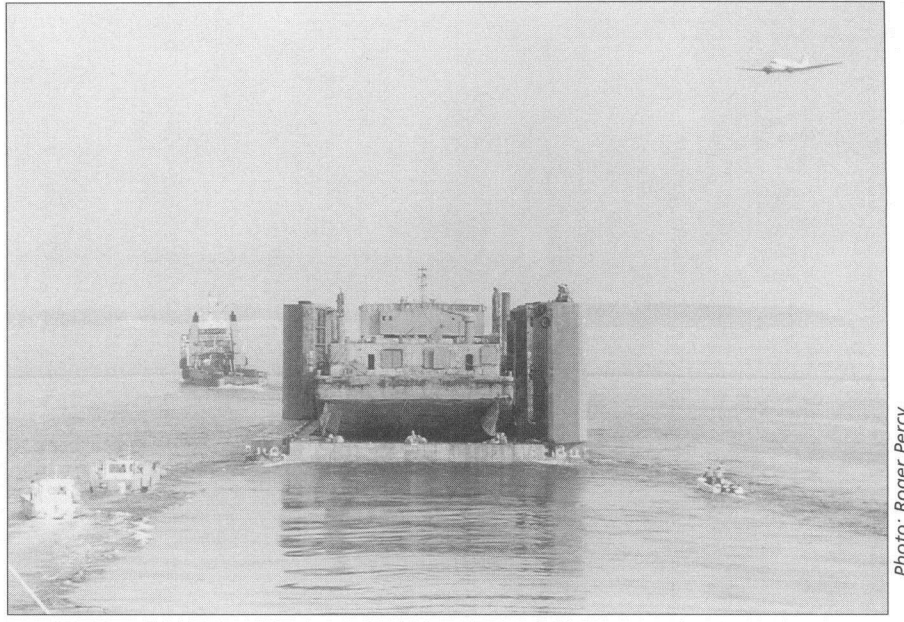


Photo: Roger Percy



Photo: Roger Percy

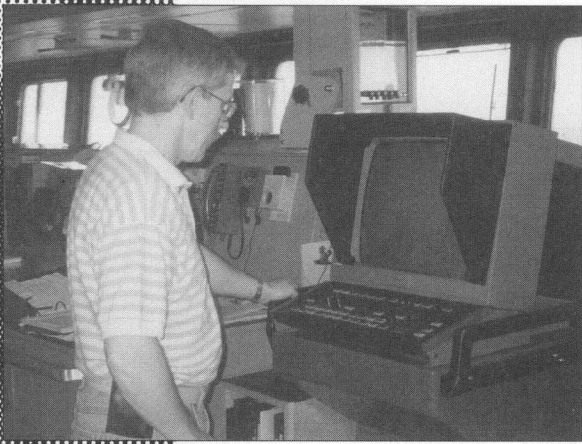


Photo: Roger Percy

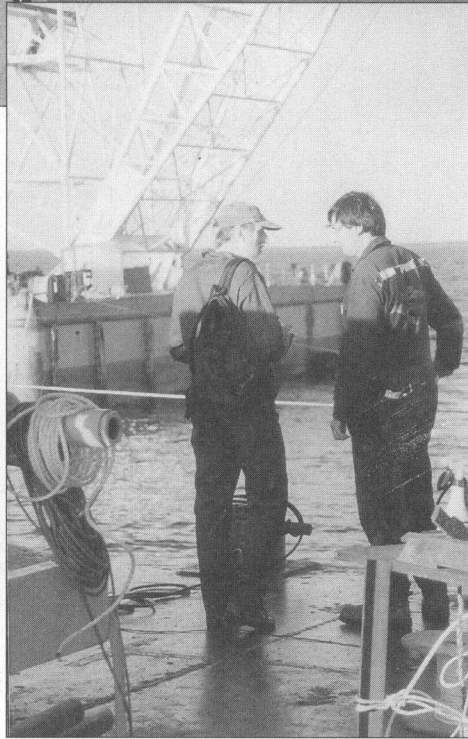


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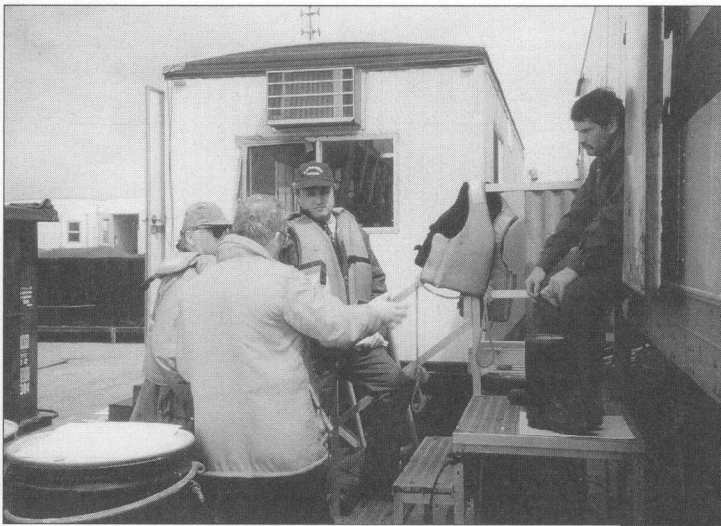


Photo: Hugh Hall



Photo: Roger Percy