Environment Canada Environnement Canada

The Effects Monitor

Environmental for the Atlantic

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EEM Studies at Atlantic Region Pulp Mills

The environmental effects monitoring (EEM) program required under the Pulp and Paper Effluent Regulations is proceeding well in the Atlantic Region. All regional mills have submitted pre-design reports and field study design proposals to Environment Canada for approval. Environmental effects monitoring field studies at the twenty pulp and paper mills in the Atlantic Region have been completed. Environment Canada staff conducted random spot checks on the field work being conducted at seven mills to ensure that approved procedures were being followed. All mills are required to submit their EEM interpretative reports by April, 1996.

On a national level, the following guidance documents have been completed and provided to all pulp and paper mills and their consultants. They are available in English or French from any Environment Canada regional office:

- Further Guidance for the Adult Fish Survey for Aquatic Environmental Effects Monitoring Related to the Federal Fisheries Act Requirements;
- Further Guidance for the Invertebrate Community Survey for the Aquatic Environmental Effects Monitoring Related to Federal Fisheries Act Requirements.

The electronic data reporting system for the EEM program has been finalized and is available to all mills in both official languages and in either a DOS or Windows format. An interpretative guidance document for the sub-lethal toxicity tests was completed in October, 1995 and is ready for distribution to all mills.

For further information, contact:
Roy Parker (902) 426-8564

Monitoring Wildlife Exposure To Pollution At ACAP Sites

The Canadian Wildlife Service coordinates two projects which monitor the exposure of wildlife to toxic chemical pollution at several Atlantic Coastal Action Program (ACAP) sites .

Tree Swallow Nesting Studies

At six ACAP sites, the St. Croix Estuary, Saint John Harbour, L'Etang Estuary and the Miramichi River in New Brunswick, along with the industrial Cape Breton area and Pictou Harbour in Nova Scotia, aquatic pollution and bioaccumulation of toxic contaminants in wildlife are being monitored using Tree Swallows. The Canadian Wildlife Service

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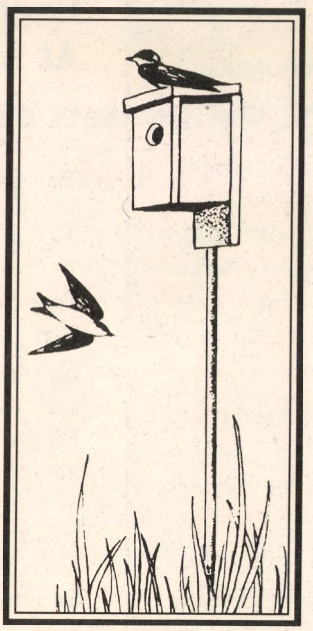
has installed wooden Tree Swallow nest boxes close to water where deposition of sediments potentially containing toxic chemicals from local sources are likely to occur. The swallows readily nest in the boxes and feed on flying insects whose larval stages emerge from sediments on the bottom of nearby rivers and estuaries. The growing chicks are fed this prey and they can accumulate any persistent toxic chemicals in their tissues and organs. Because the adult swallows forage in the vicinity of the nest, the degree of contamination in swallow chicks provides an indication of wildlife exposure to pollutants in the nearby aquatic environment.

Local volunteers monitor the boxes and collect two chicks from each nest of four to six young for toxic chemical analyses. One chick is analyzed for organochlorine compounds, for example PCBs, dioxins and DDE, and the second chick is be analyzed for heavy metals such as mercury, lead and cadmium. Volunteers collected chicks in the summers of 1994 and 1995. The samples are now at the Canadian Wildlife Service's toxicology laboratory at the National Wildlife Research Centre in Hull, Quebec. Chemical analyses will be completed over the winter and Canadian Wildlife Service staff in Sackville, N.B. will interpret the results for the local ACAP committees and survey participants.



Waterbird Surveys

A study to determine which species of aquatic birds may be most at risk from chronic exposure to toxic chemical pollution is also underway at four ACAP sites. Once each month in Saint John Harbour, the St. Croix Estuary, the Miramichi River and the industrial Cape Breton area, volunteers conduct waterbird surveys of local marshes, shorelines and mudflats. The volunteers count the number of birds of each species that they see, map the precise location of bird groups, and indicate whether the birds are feeding, resting, breeding or travelling through the area. Initial training and coordination of volunteers at each site was provided by the Canadian Wildlife Service.

The surveys have been designed so that they are easy and enjoyable for volunteers to participate in. Taking part requires only a few hours per month and since the surveys must be done when visibility is good and birds are easily seen, volunteers do not need to survey in rain, snow or fog. Survey locations are easy to access by car or on foot and volunteers can choose a site that is easy for them to monitor on a regular basis, for example an area that is close to where they live or work. The number of survey locations that are monitored at each ACAP site depends partly on the number of interested local volunteers.

In Saint John, sixteen committed volunteers have been collecting survey data since February 1994. A preliminary analysis of this data demonstrates a number of interesting features about the seasonal distribution of aquatic birds in Saint John Harbour. Overwintering sea ducks (such as Harlequin Ducks, Common Eider and various species of Scoter) and diving ducks (like Common Goldeneye, Bufflehead and Greater Scaup) find open water, shelter and food in Saint John Harbour. Shorebird species such as Semipalmated Sandpipers, Semipalmated Plovers and both Greater and Lesser Yellowlegs stop off on their fall migration to feed on the mudflats of the harbour. Fish-eating species such as Common Loon, Double-crested Cormorant, Osprey and Red-breasted Merganser are found throughout the harbour in the spring and summer.

The survey data collected by the volunteers are passed on to the Canadian Wildlife Service, where they are entered into the Geographic Information Systems (GIS) that are being compiled for each ACAP site. The GIS will be used to produce maps and seasonal summaries of waterbird distribution and abundance at each ACAP site. The survey data will help detect unique locations or habitats within an ACAP site that are in need of protection or clean-up because of their value to wildlife and will also help identify which wildlife species may be most at risk from exposure to toxic contaminants. Any high-risk species could be selected as bioindicators for more intensive study such as tissue sampling and analysis for toxic chemicals.

For more information, contact:
Kate Bredin or Neil Burgess (506) 364-5044.

Drugs, Ships and Beaches

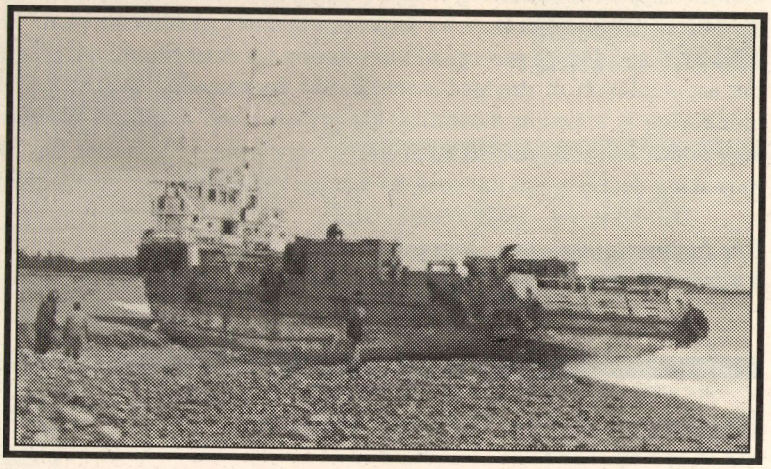
Capelin Cove is located on the Atlantic coast of Cape Breton Island in a secluded area of Richmond County, Nova Scotia. The cove consists of a spectacular crescent sand beach backed by marram grass covered sand dunes. Further inland is a large lagoon, which opens to the ocean during periods of high rainfall or when the ocean overwashes the dunes. The sides of the cove are lined with eroding high cliffs with occasional rock outcroppings.

This tranquil cove became the focus of a great deal of activity on September 15, 1995, when the M/V Chiloli, a 75 meter offshore supply vessel, was found abandoned and aground on the beach. The RCMP immediately took control of the vessel as it had been

used to transport contraband drugs. Once the criminal investigation was complete, the vessel was turned over to the Canadian Coast Guard for salvage.

Inspections by environmental emergency personnel from Coast Guard and Environment Canada revealed that the vessel still contained approximately 225,000 litres of diesel fuel and lubricating oil. In addition, it also contained other oily wastes and garbage. The grounded vessel acted as a breakwater which caused erosion of sand from an adjacent area of the beach. Options for dealing with the vessel included doing nothing, pumping off the oil and leaving the vessel, and removing both the vessel and it's contents in one operation.

The Regional Environmental Emergency Team members preferred the latter option and the Coast Guard agreed and quickly mounted a salvage operation. The diesel oil was offloaded to temporary storage tanks on shore from which it could be trucked out an old logging road to the highway and a recycling facility. At high tide on the evening of October 9, the vessel was refloated and towed to Halifax, N.S., where it will be offered for sale.



Throughout the salvage operations, Environment Canada staff monitored the activities at Capelin Cove and provided advice on the protection of the susceptible beach ecosystem. Sand dunes and their marram grass cover are very sensitive to vehicle and machinery traffic. Destabilization of the backshore can result in erosion and increase beach overwashing during storms. To prevent such damage, access to the site was strictly controlled during the operation and machinery traffic was confined, as much as possible, to the beach foreshore. The area, which eroded behind the vessel, was quickly infilled by wave action once the vessel was removed. Staff of Natural Resources Canada conducted a detailed assessment of the damage that had occurred to the beach and dunes and recommended remedial measures that could be employed to stabilize the beach area. Backshore areas, which were damaged, will be leveled and revegetated, as required. Follow up surveys will be conducted to evaluate the recovery of the beach and dune areas and to assess the need for additional remedial action.

Once the remedial work is completed this fall and visitor traffic returns to normal levels, Capelin Cove will once again be an ideal area for a secluded walk.

For further information, contact:
Sinclair Dewis (902)426-6318

Environment Canada Monitoring At Ocean Disposal Sites

In 1992, an action plan was initiated to augment disposal site monitoring in Canada and verify the effectiveness of disposal permits and regulations. Routine disposal site monitoring is an integral part of the control of ocean disposal and monitoring data is used to assess permit decisions, review the adequacy of controls and identify research and development needs. The Ocean Disposal Program recently published an inventory of ocean disposal sites used in Canada between 1987 and 1991. Of the 469 sites used, 82% were located in the Atlantic region, 6% in Quebec, 10% in the Pacific and 2% in the Arctic. The majority of these sites (64%) received only dredged materials and as such, most monitoring undertaken has centered on dredged material disposal sites.

In 1993, Environment Canada visited seven disposal sites receiving dredged material. This number was raised to nine in 1994 and monitoring will be conducted at eleven dredged material disposal sites in 1995. Environment Canada has also initiated monitoring of scrap metal disposal sites in the Arctic, both on land (Lougheed Island) and at sea (Cambridge Bay and Eastern Coast of Baffin Island). Plans for 1995 include monitoring at a scuttled ship site, at two fish processing waste disposal sites and at the DRAKE 76 closed drilling site where a steel well head was left on-site in accordance with an ocean disposal permit. Data analysis is still in progress for most sites visited in 1994 and results are expected by the end of 1995.. The available data was summarized and recently published in the first annual "National compendium of monitoring at ocean disposal sites".

For further information or to obtain copies of the 1995 Compendium or 1987-91 Inventory, contact:
Andrée Chevrier (819) 953-7254

Monitoring Guidelines For Ocean Disposal

Environment Canada is in the process of developing and implementing guidelines for monitoring at ocean disposal sites. These guidelines apply to dredged material only and will be expanded to include other material types in the future. Disposal site monitoring is an integral part of the control of ocean disposal which includes a consideration of waste management options, a scientifically-sound characterization of the waste and the selection of an appropriate disposal site should the waste be deemed acceptable for disposal at sea. Monitoring data is used to: assess permit decisions, review the overall adequacy of controls and identify research and development needs.

Impact hypotheses derived during the permit application review constitute the logical foundation for any subsequent monitoring plan. Monitoring plans are also tailored to site-specific and permit-specific information. A core monitoring program is outlined in the guidelines for inclusion in every monitoring plan. Physical monitoring at these disposal sites includes the collection of relevant geological information for determining the area of deposition, delineating the site boundaries, studying the accumulation of dredged material and documenting evidence of sediment transport from the disposal site. Chemical monitoring is aimed at measuring the presence and trends of chemicals in sediments. Biological monitoring includes any assessment involving the study of living organisms, either in the field or in the laboratory. Some monitoring results are used in making decisions on the need for further monitoring at a given disposal site.

For further information, contact:
Andrée Chevrier (819) 953-7254

Update on the Irving Whale

Although the attempt to recover the sunken oil barge, Irving Whale, was aborted in late August due to poor weather conditions and a court action by an environmental group, monitoring at the site of the sunken barge has continued. In mid-October, staff of Environment Canada, the Canadian Coast Guard, Natural Resources Canada and the Department of National Defense conducted a survey at the site of the sunken oil barge. HMCS Cormorant and CCGS Simon Fraser rendezvoused at the site on October 18, 1995 and the submersible Pisces was deployed to examine the condition of the barge and the presence of any oil seepage. During the three hour dive, a visual inspection of the barge was completed and a sample of sediment was collected from the ocean bottom adjacent to the barge. Nineteen other sediment samples were collected using equipment deployed from the Coast Guard ship. A Global Positioning System using real time Differential corrections was used to accurately define the location of the barge and of all of the sediment samples. These sediment samples are currently being analyzed for chlorobenzenes and PCB by the Environment Canada laboratory in Dartmouth.

For further information, contact:
Sinclair Dewis (902)426-6318

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The Effects Monitor will be published quarterly by Environment Canada, Atlantic Region. Anyone interested in receiving a copy of the newsletter, submitting an article for the newsletter or making any comments or suggestions, should contact:

W. Roy Parker
Environmental Protection Branch,
Environment Canada,
Atlantic Region, 45 Alderney Drive,
Dartmouth, Nova Scotia, B2Y 2N6
Telephone:(902) 426-8564
Facsimile: (902) 426-6745
E-mail: parkerr@cpdar.am.doe.ca

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