

The effects monitor : environmental effects monitoring newsletter for the Atlantic Region
Vol: 1 No: 1 Date: 951218

3403271B
CIRC # 1

NSDE

Monitor



Premiere Issue

Environmental Effects Monitoring Newsletter for the Atlantic Region

Volume 1 Number 1

Dartmouth Env. Can. Lib./Bib.



39 062 435

April 1994

Introducing The Effects Monitor

In the past few years, there has been increased activity in the area of environmental effects monitoring, commonly known as EEM. EEM is a program of observations or measurements used to determine whether human activity has adversely affected the physical, chemical or biological nature of an ecosystem. Due to the wide scope of activities covered by this definition, many types of studies fall under the umbrella of EEM.

EEM programs are used to measure the effectiveness of environmental regulatory programs and mitigative measures to actually protect the environment; to compare the actual effects of a project with those predicted by an environmental impact assessment; and to identify problem areas and set priorities for stricter environmental controls or enforcement action.

The number and types of environmental effects monitoring programs are expanding and Environment Canada believes there is a need to keep people better informed about EEM activities in the Atlantic Provinces. To that end, The Effects Monitor will be published quarterly and will be distributed to interested parties in the region. Please pass a copy of this newsletter on to any colleagues who may be interested. Anyone wishing to be added to the mailing list should contact the newsletter editor.

This first issue of The Effects Monitor covers a broad spectrum of environmental effects monitoring activities in the Atlantic Region. The newsletter focuses primarily on Environmental Protection Branch activities but news items from other branches of Environment Canada, as well as from people outside of the department, are most welcome. If you are involved in an EEM activity and would like to let others know about your work, please submit a brief (100-200 word) overview to the editor.

Textile Plant Effluents Studied

The report on the first in-depth study of the nature and environmental effects of untreated effluent discharges from textile mills in Atlantic Canada was released in June 1993 by Environmental Protection Branch of Environment Canada.

The study found that untreated textile mill effluents are toxic to a wide variety of aquatic organisms including fish, invertebrates, water fleas, algae and bacteria. The

continued on next page

inside...

EEM Program	2
Status of EEM	3
Studies	
Update on	3
Cohasset-Panuke	
Bioassays used to	4
assess disposal sites	

effluents were also found to have mutagenic properties and the results suggested that more than one mutagen was present in textile waste waters. Field investigations revealed a significant decrease in numbers and kinds of freshwater invertebrates downstream from one mill, clearly indicating that some untreated textile discharges are causing harmful effects to the aquatic environment in Atlantic Canada.

The report recommended that untreated textile effluents should not be discharged directly to a watercourse or to a municipal sewer system where there is no wastewater treatment. The development and implementation of more stringent federal regulations regarding textile effluent discharges supported by comprehensive monitoring programs was also recommended. Further, this report identified significant information gaps which needed further studies: evaluation of the toxicity and environmental impact of treated effluent discharges on freshwater environments; examination of the fate and effects of dyes in the aquatic environment downstream from textile mills; and identification of mutagenic compounds in textile waste waters and determination of whether they remain in the receiving environment or whether they quickly degrade.

This study further reinforces the need to produce a federal strategy for controlling the release of toxic substances from Canada's textile industries.

*For further information contact:
Les Rutherford (902) 426-2295.*

EEM Program Underway for Pulp and Paper Mills

In May, 1992, the federal government passed the revised Pulp and Paper Effluent Regulations. These regulations required that all pulp and paper mills in Canada meet new, more stringent requirements for their liquid discharges to the environment. In addition, for the first time in

Canada, pulp mills were required to conduct effects monitoring in the receiving waters of their operations. These EEM studies are to be conducted on a three year cycle with the first reports due in April, 1996.

The specific requirements for the monitoring program are set out in Aquatic Environmental Effects Monitoring Requirements, EPS 1/RM/18 and in the Annex to this document. Mills are required to file a pre-design study report outlining the mill history, effluent characterization, effluent plume dispersion patterns, descriptions of fish habitat, fishery resources and receiving water quality in the area of the plant's discharges. Based on this historic data, an EEM study is designed to assess adult fish populations, benthic invertebrate community structure, water and sediment quality and the sub-lethal toxicity of the effluent. In addition, mills which use or have used chlorine for bleaching must analyze fish tissue for the presence of chlorinated dioxins and furans.

The federal government has published a Technical Guidance Document to describe how the EEM studies should be conducted. Three interpretative guidance documents are being prepared. The documents for the adult fish survey and the invertebrate community survey are expected to be released in April, 1994. An interpretative guidance document for the aquatic sub-lethal toxicity tests will be completed by early summer, 1994.

In each region of Environment Canada, a Regional Authorization Officer has been appointed to oversee the implementation of the Pulp and Paper Effluent Regulation EEM program and each Regional Authorization Officer is assisted by a Technical Advisory Panel made up of Environment Canada staff along with representatives from the Department of Fisheries and Oceans and provincial environment departments. In the Atlantic Region, the duties of the Technical Advisory Panel have been further divided by appointing Sub-Panels, one for each of the provinces having pulp and paper mills. The Environmental Protection Branch Provincial

Managers for each province will serve as chairpersons of the sub-Panels. The roles of these sub-Panels are to review the pre-design study reports, the proposals for the EEM studies and the EEM study reports and advise the Regional Authorization Officer about the regulatory and technical acceptability of these submissions from the mills. The sub-Panels are also available to meet one-on-one with the pulp mills and their consultants to discuss any technical issues for a particular mill.

*For further information, contact:
John Clarke (902) 426-6135 or
Roy Parker (902) 426-8564*

Status of EEM Studies at Atlantic Region Pulp Mills

At present, there are 19 individual operations in the Atlantic Region that come under the jurisdiction of the Pulp and Paper Effluent Regulations. To date, five pre-design reports and EEM study designs have been received by the Regional Authorization Officer:

- Nova Scotia Department of Supply and Services for the Boat Harbour Waste Water Treatment Facility in Pictou County, N.S.;
- Minas Basin Pulp and Power and CKF Inc. in Hantsport, N.S. for a joint study;
- Miramichi Pulp And Paper, Newcastle and Nelson, N.B. for a joint study for the two plants.
- Lake Utopia Paper in St. George. N.B.
- Bowater Mersey Paper Company in Liverpool, N.S.

Several other mills are working on their submissions and pre-design reports and EEM study designs are expected to be submitted to Environment Canada in the next few months.

Although the Pulp and Paper Effluent Regulation allows the Regional Authorization Officer

180 days to review the pre-design report and the EEM design before granting approval, Environment Canada is making every attempt to review these documents in much less time, and to advise the mills of their approval to proceed with their studies on a timely basis. The sub-Panels are attempting to complete the review of the submissions within 60 days.

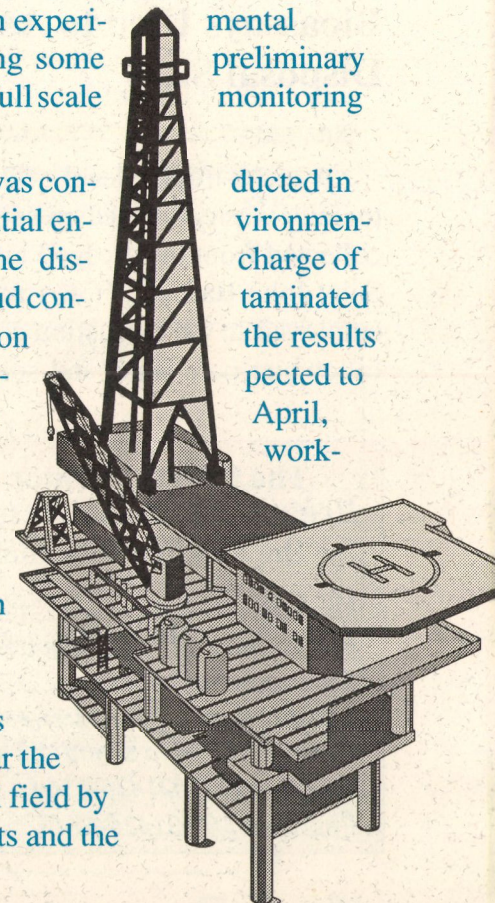
*For further information, contact:
John Clarke (902) 426-6135*

Update on Cohasset-Panuke and Hibernia Oil Fields

The Canada-Nova Scotia Offshore Petroleum Board required LASMO (Nova Scotia) Ltd. to conduct an EEM program as part of the decision to accept the LASMO Development Plan.

LASMO convened a Committee of experts to advise them of an appropriate approach. These experts suggested an experimental approach; conducting some preliminary monitoring experiments before full scale work was undertaken.

An EEM study was conducted in 1993 to assess potential environmental impacts from the dis- oil-based drilling mud con- cuttings and a report on of this study is ex- be completed in 1994. A one day shop was held at the Bedford Insti- tute of Oceanogra- phy in Dartmouth on March 1, 1994 the review all of the monitoring activities being conducted near the Panuke-Cohasset oil field by government scientists and the oil industry.



The Canada-Newfoundland Offshore Petroleum Board (Newfoundland Board) required the Hibernia Management and Development Co. (HMDC) to conduct an EEM program to determine whether discharges of produced water from the development may have a significant impact on the environment. Should significant impact be detected, HMDC may be required to cease discharge. HMDC has been an active participant in the Panel for Energy Research and Development and Environment Canada workshops on design of the required EEM programs.

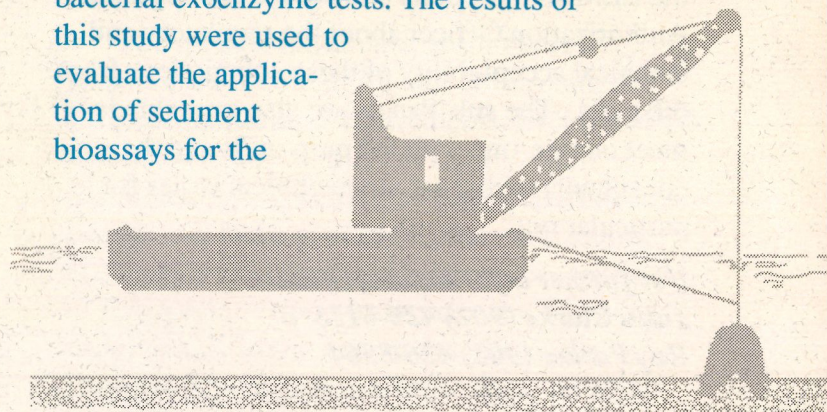
HMDC has submitted draft proposals for the EEM program to the government regulatory agencies for review. A workshop, involving both the public and technical experts will be held on March 15 and 16, 1994 in St. John's to discuss the proposed EEM program design.

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

Bioassays Used to Assess Ocean Disposal Sites

A multi-trophic level evaluation of sediment toxicity was conducted on sediment samples collected from the dredged material dump site in Saint John Harbour, New Brunswick. The assays employed in the evaluation consisted of the following: pore water and solid phase Microtox®

tests (*Photobacterium phosphoreum*); Amphipod (*Amphiporeia virginiana*, *Rhepoxynius abronius*) solid phase and pore water survival tests; Sea Urchin (*Lytechinus pictus*) fertilization test; and bacterial exoenzyme tests. The results of this study were used to evaluate the application of sediment bioassays for the



assessment of the environmental impact of dredged spoil disposal at ocean disposal sites.

The relative sensitivities of the five toxicity tests to the sediments used in this study were ranked as follows: Microtox® solid phase = bacterial exoenzyme (MCA Leucine) > *L. pictus* > *A. virginiana* = *R. abronius* > Microtox® pore water. A similar ranking was reported for sediments from Halifax Harbour, Nova Scotia by Tay et al. 1992.

*For further information, contact:
Adrian MacDonald (902) 426-8305*



ISSN#1198-4031(E)
ISSN#1198-404X(F)

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*

