

Pulp and Paper Mill References

February 26, 1989

Robert Holmberg
Sciences, Athabasca University
Athabasca, Alberta
T0G 2R0

This is an annotated list of books and other materials related to the development and operation of pulp and paper mills in the Athabasca River basin. The purpose of the list is to encourage members of the public to learn about these industries so that they can ask informed questions, and better understand the answers given, at Environmental Impact Assessments (EIAs) and other meetings that will be held when new or expanded mills are proposed. The materials are grouped into various categories including: **Air Pollution, Chemistry, Economics, Environmental Impact Assessments, Forestry, Human Health, Legal, Logging, Monitoring, Planning, Pulp and Paper Mills, Water Pollution, Water: Rivers and Lakes, Waste Management.**

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This list was made from computer searches of the SCITECH DATABASE (based on the holdings of three Alberta Government Libraries: Alberta Environment, Alberta Agriculture and Alberta Research Council) as well as holdings of Athabasca University Library and the University of Alberta libraries. Most material was published since 1980. The list is incomplete but will continue to be expanded as interest in these topics continues and as time allows. Please inform me, at the above address, of other books and materials that might be added to the list.

Most of the materials listed below are available from Athabasca University Library in Athabasca, Cameron Library of the University of Alberta in Edmonton, and the Alberta Environment Library in Edmonton. Book titles are followed by their Library of Congress call numbers and an indication of which libraries have copies.

AU = Athabasca University Library

U of A = Cameron Library, University of Alberta

AE = Alberta Environment Library

Government publications are often available on microfiche (photographs of articles condensed onto film that are read on a special viewer) and are indicated with their MICROLOG numbers. These numbers are the same in every library that has these microfiche.

Athabasca University has set up some "vertical files" on pulp mills. These files contain short articles and newspaper clippings on this issue.

Members of the public may become members of Athabasca University Library without charge and may borrow most of these materials from the library between 8:30 am and 4:30 pm, Monday to Friday and up to 8:00 pm Tuesdays. If you are not familiar with the library, just contact someone at the Information Desk (675-6254) and he or she inform you how you may become an external borrower, show you how to find the materials, and show you how to sign them out. The usual sign-out period is three weeks, but as several people may want to read the same document during a short period of time please return materials as soon as possible. A small charge is made for photocopying materials.

(continued inside back cover)

Air Pollution (see also Waste Management)

Bell, R.W. *Ambient Air Quality Survey in the Vicinity of Great Lakes Forest Products Limited, Dryden, Ontario.*

MICROLOG 87-02538, 2 fiche

Racette, D.J. *Dustfall and Snow Sampling in the Vicinity of James River-Marathon Limited.* Ontario: Marathon, 1985-86.

MICROLOG 87-06350, 1 fiche

Chemistry (see also Waste Management)

Crone, Hugh D. *Chemicals and Society: A Guide to the New Chemical Age.* New York: Cambridge Univ., 1986.

AU call number: TD 195 .C45 C947

A compact introduction to chemistry for the layperson.

Sittig, Marshall. *Handbook of Toxic and Hazardous Chemicals.* Park Ridge, New Jersey: Noyes Publications, 1981.

AU call number: Reference RA 1193 .S623

Gives information on chemical name, formula, synonyms, exposure limits (unfortunately for the USA), harmful effects and symptoms, etc. for thousands of compounds.

Windholz, Martha, Susan Budavari, Lorraine Y. Stroumstos, and Margret Noether Fertig, ed. *The Merck Index. An Encyclopedia of Chemicals and Drugs, 9th edition.* Rathway, New Jersey: Merck and Co., 1976.

AU call number: Reference RS 356 .M524

The chemist's "Bible" for finding out basic information on chemicals.

Economics

Carroll-Hatch International Limited. *Market Assessment for Forest products.* Prepared for Governments of Canada, Alberta, British Columbia.

MICROLOG 84-0790, 6 fiche

Environmental Impact Assessments (EIAs) **(see also Legal)**

A.A. Aquatic Research Limited. *An Environmental Review of the Daishowa Rail Spur*. ? : A.A. Aquatic Research Ltd., 1988. Prepared for Alberta Railway Corporation.
AU call number: being catalogued

An EIA for the rail line to the Daishowa mill in the Peace River area.

Alberta Environment. *Environmental Impact Assessment Guidelines*. Edmonton: Alberta Environment, Environmental Assessment Division, 1985.
AU call number: being catalogued

Guidelines on planning, preparation, review, and decisions on EIAs. Notes on various acts.

Alberta Newsprint Company. *Environmental Impact Assessment*. Edmonton: Alberta Newsprint Company. Prepared by Nystrom, Lee, Kobayashi and Associates.
Vol. 1 with Supplemental
AU call number: TD 195 .W6 E611 Two copies available.

An example of an EIA.

Champion Forest Products Ltd. *Hinton Modernization and Expansion Project: Environment Impact Assessment*. Hinton: Stanley Associates for Champion Forest Products Ltd., 1987.
AU call number: HT 395 .A333 H666 vol. 1-4

An example of an EIA. Note that Champion recently changed their name to Weldwood. A former name was St. Regis Pulp Mill.

Daishowa Canada Company Ltd. *Environmental Assessment Report. Daishowa Canada Co. Ltd. Peace River Kraft Pulp Mill*. Vancouver: H.A. Simons Ltd., Consulting Engineers, 1987-1988.
AU call number: being catalogued

An EIA in five volumes: the report itself (December 1987), two addenda on their Public Consultation Program Documentation

(November and December 1987), a Supplemental Information to the Environmental Assessment Report (April 1988), and An Environmental Review of the Daishowa Rail Spur (June 1988).

Millar Western Pulp Ltd. *Environmental Impact Assessment of the Proposed Whitecourt Pulp Mill*. Vancouver: H.A. Simons Ltd., Consulting Engineers, 1986.

AU call number: TD 195 .W6 E61 Two copies are available.

Another EIA.

Tingley, Donna. *Alberta Environmental Impact Assessment Process*. Edmonton: Environmental Law Centre, 1987.

AU call number: being catalogued

A short guide (23 pages) for the public on the EIA process.

Forestry (see also Logging)

Alberta Forest Service. *Timber Quota Policy*.

MICROLOG 85-2002, 1 fiche

Amyot, Jean-Pierre. *Forest Management in Canada*. Ottawa: Science and Technology Division, Research Branch, Library of Canada, 1988. Cat. No. YM32-1-87-1-1987-1E.

AU call number: being catalogued

A ten page overview of the importance of forests and federal government activity in forestry. A good speech with much data.

Canadian Council of Forest Ministers. *A National Forest Sector Strategy for Canada*. Developed at the Canadian Forestry Forum on a National Forest Sector Strategy at Saint John, New Brunswick. Ottawa: Canadian Council of Forest Ministers, 1987.

AU call number: SD 145 .N277

Set of recommendations.

Environment Council of Alberta. *The Environmental Effects of Forestry Operations in Alberta. Report and Recommendations*. Edmonton: Environment Council of Alberta, 1979. ECA79-13/RR.

AU call number: being catalogued

The Council put forward 140 recommendations, most of which are now implemented or being implemented. However there are some still outstanding concerns such as public participation in Forestry Management Agreements (Recommendation 38), closed system pulp mills (57), and affects of forestry on fish and wildlife (65-71).

Gillis, R. Peter and Thomas R. Roach. *Lost Initiatives: Canada's Forest Industries, Forest Policy and Forest Conservation*. Contributions in Economics and Economic History, Number 69. New York: Greenwood, 1986.
AU call number: HD 9764 .C3 G481

Historical perspectives of forestry in Canada.

Revel, Richard D., T. David Dougherty, and David J. Downing. *Forestry Growth and Revegetation Along Seismic Lines*. Calgary: Univ. of Calgary, 1984.
AU call number: SD 396 .R449

Gives information of possible use in revegetation of logged areas.

Wardrop, W. L. and Associates Ltd. *Poplar Chemical Process Development and Demonstration Facility*. ?: W.L. Wardrop and Associates Ltd., Engineering Consultants, 1982. Prepared for Alberta Energy and Natural Resources.
AU call number: TP 248 .B55 P828

A proposal to use poplar trees as a resource to produce various chemicals. Perhaps some of the byproducts of pulp mills could be used for manufacture of useful chemicals?

Human Health

Hawks, M.P.G. *Health Effects from Kraft (Sulphate) Pulp Mill Operations*. Edmonton: Environment Conservation Authority (now Environment Council of Alberta), 1976.
AU call number: TD 195 .W65 H392

Old study of literature.

Legal (see also EIA)

Bankes, N.D. *Crown Timber Rights in Alberta*. The Canadian Institute of Resources Law Working Paper 10. Calgary: Faculty of Law, University of Calgary, 1986.

AU call number: KEA 345 .B362

Legal aspects of selling the forests of Alberta: Forest Management Agreements, Pulpwood Agreements, quotas, and licenses.

Barton, Barry and Barbara Roulston. *A Guide to Appearing Before the Surface Rights Board of Alberta*. The Canadian Institute of Resources Law Working Paper 11. Calgary: Faculty of Law, University of Calgary, 1986.

AU call number: KEA 349 .B293

Information on hearings and compensation.

Duncan, Linda F. *Cradle to Grave. Regulation of Toxic Substances in the Prairie Provinces. A Legal Overview*. Edmonton: Environmental Law Centre, 1985.

AU call number: KE 1840 .D911

Includes: importation, manufacture, storage, transportation, pollution, emergencies.

Elder, P.S. *Environmental Impact Assessment in Alberta*. Alberta Law Review, 1985 Vol. 23 (No. 2): pages 286-309.

A legal critique of the EIA process that points out several areas that could be improved.

Flett, Jullian, ed. *Law and Policy Related to the Management of Hazardous Waste in the province of Alberta*. Edmonton: Environmental Law Centre, 1983.

AU call number: KEA 431.5 .W37 L415

Proceedings of round table discussions on: siting hazardous waste disposal sites, obtaining compliance, plant closure activities, victim compensation, emergency spill response, avoidance and recycling of hazardous wastes.

Environment Council of Alberta. *Alberta's Clean Water Act. Conclusions and Recommendations of the Review of the Clean Water Act*. Edmonton: Environment Council of Alberta, 1985. ECA86-St/2.

AU call number: KEA 422 .W3 E61

Gives 12 recommendations to improve the the implementation and administration of the act.

Review Panel for Environmental Law Enforcement. *An Action Plan for Environmental Law Enforcement in Alberta*. Edmonton: Alberta Environment, 1988.

AU call number: being catalogued

Recommendations on standards setting, air and water quality standards, licensing procedures and requirements, monitoring compliance, non-compliance, prosecution, offenses and penalties, and Environment Enforcement Unit.

Vomberg, Mac. *Bibliography of Legal Materials on Transportation of Hazardous Substances*. Edmonton: Environmental Law Centre, 1982.

AU call number: being catalogued

Seven pages of cases, articles and acts.

Logging (see also Forestry)

Curtis, David S. *Woodlot Owner Organizations in Eastern Canada: Historic Development, Legislation, Structure, Financing and Services*. Fredericton, New Brunswick: Canadian Forestry Services - Maritimes, 1987. Information Report M-X-162.

MICROLOG 87-03020, 2 fiche

AU call number: on order

In Nova Scotia, Prince Edward Island, New Brunswick, Quebec and Ontario land owners who sell trees for pulp and lumber have formed various organizations to help market their products and share resources for forest management activities.

Forest Service. *Forest Landscape Management Guidelines for Alberta*. Edmonton: Alberta Forestry, Lands and Wildlife, 1986.

AU call number: SD 387 .M25 F716

The department's recommendations to reduce the visual impacts of logging. These recommendations may also help

wildlife.

Monitoring

Fransen, M.A.H., R.T. Franson, and A.R. Lucas. *Environmental Standards: a Comparative Study of Canadian Standards, Standard Setting Processes and Enforcement*. Edmonton: Environment Council of Alberta, 1982. ECA83-SP/1.
AU call number: TD 171.5 .C3 F73

Outlines how standards, such as effluent limitations, are decided. Many of the standards given are out dated.

McLeod, C. 1987. *The Effects of Methoxychlor Exposure on Early Life Stages of the Native Fish in the Athabasca River*. Edmonton: Alberta Environment.
AU and AE call numbers: QH 545 .P4 M165

A very short term study, but gives an idea of the problems involved in fish bioassays.

Alberta Environment Centre. *Acute and Subacute Toxicity of Different Fractions of Athabasca Bitumen to Fish*. Vegreville: Alberta Environment Centre, 1986.
AE call number: TN 858 W1 A189

Some procedures on how to conduct fish toxicity studies.

Planning

Alberta Energy and Natural Resources, Resource Evaluation and Planning Division (now Environment Alberta, Planning Division). *Resource Development Opportunities in Northern Alberta*. ENR Technical Report Number T/88. Edmonton: Alberta Energy and Natural Resources, 1985.

AU call number: being catalogued

An overview of statistics on socio-economics, transportation, forest resources, agriculture, petroleum and natural gas, oil sands, coal, fish and wildlife, water, and recreation for the northern half of the province.

Alberta Energy and Natural Resources, Resource Evaluation and Planning Division (now Environment Alberta, Planning

Division). *Big Bend Sub-Regional Integrated Resource Plan*.
Edmonton: Alberta Energy and Natural Resources, 1985.
AU call number: HD 319 .A42 B592

Agriculture, recreation, tourism, logging, hunting and mining plans for provincial lands located between Athabasca and Slave Lake.

Alberta, Government of. *A Policy for Resource Management of the Eastern Slopes*. Edmonton: Government of Alberta, revised 1984. ENR number T/38, ISBN 0-86499-067-7.
AU call number: being catalogued

Land use plans for the upper Athabasca River, around Hinton, are described.

Cashman, John R. *Hazardous Materials Emergencies: Response and Control*. Lancaster, PA.: Technomic, 1986.
AU call number: On order.

Planning and preparation for transportation and plant accidents.

DePol, Dennis R. *Emergency Response to Hazardous Materials Incidents*. Lancaster, PA.: Technomic, 1984.
AU call number: On order

Includes chlorine emergency procedures.

HAZTECH Canada Conference Planning Committee. *Dangerous Goods and Hazardous Waste Management Conference, Proceedings*. Mississauga, Ontario: Canadian Exhibition Management Inc. and Conference Planning Committee, 1988.
AU call number: being catalogued

A mixture of papers on hazardous materials including: spills, emergency response, transportation, detection, risk assessment, and education. Be careful, some of them were trying to sell certain technologies.

Pulp and Paper Mills (see also Air Pollution and Water Pollution)

Canadian Forestry Service, Maritimes. *Can Pulpmill Wood Waste be Used for Land Reclamation*. Technical Note No. 170.
MICROLOG 87-04443, 1 fiche

Eddie, Howard. *Environmental Control for Pulp and Paper Mills*. Park Ridge, N.J.: Noyes, 1984.
AU call number: TD 195 .P37 E33

Good overview for air and water pollution but references are old.

Gravelsins, R. *Fine Grinding of Wood Chips and Wood Wastes with the Szego Mill*.
MICROLOG 87-03752, 2 fiche

Nghia, Hoc. *Deposit control technology for kraft recovery units*. Industrial Programs Branch, 1984.
AU call number: On order.

McCubbin, Neil. *State-of-the-art of the Pulp and Paper Industry and its Environmental Practices*. 1984.
AU call number: On order.

McCubbin, Neil. *The Basic Technology of the Pulp and Paper Industry and Its Environmental Protection Practices*. Training Manual. Environmental Protection Programs Directorate, 1983.
AU call number: On order.

Post's Pulp and Paper Directory. 1987. Miller Freeman Publications.
AU call number: On order.

Sandwell and Co. *Deadload reduction in the kraft pulping process*. Industrial Programs Branch, 1986.
AU call number: On order.

Thomas, Randy. *Pulp and Poison*. Monday Magazine, Vol. 15, No. 3, cover, pages 6 - 9, 12-18 January 1989.
AU vertical file

This article focuses on the environmental problems of a pulp mill in Crofton, British Columbia. It also covers the frustrations

of ordinary people trying to deal with the pulp industry.

Waste Management

Freeman, Harry M., ed. *Innovative Thermal Processes for Treating Hazardous Wastes*. Lancaster, PA.: Technomic, 1986.

AU call number: on order

Freeman, Harry M., ed. *Incinerating Hazardous Wastes*. Lancaster, PA.: Technomic, 1988.

AU call number: On order

Some pulp processes use heat to re-claim chemicals used in bleaching.

Freeman, Harry M., ed. *Standard Handbook of Hazardous Waste Treatment and Disposal*. Montreal: McGraw-Hill, 1988.

AU call number: TD 1032 .S785

Good overview of many topics, including: dioxins, various thermal processes, aerobic and anaerobic decomposition, landfill, and sampling.

Reed, Sherwood C., E. Joe Middlebrooks, and Ronald W. Crites.

Natural Systems for Waste Management and Treatment. Toronto: McGrae-Hill, 1988.

AU call number: TD 645 .R326

Mathematical factors for designing waste water treatment facilities, such as sludge ponds.

Water: Rivers and Lakes

Environment Canada. *Detailed Surface Water Quality Data. Alberta, Manitoba, Northwest Territories and Saskatchewan 1983*. Regina, Saskatchewan: Inland Waters Directorate. Western and Northern Region Water Quality Branch, 1985.

AU call number: TD 227 .M3 D479

Pages 55 to 62 give results of 51 tests (some done in the field and some in the laboratory) for each month in three locations, two in Jasper National Park and one at Athabasca.

Hamilton, H.R., M.V. Thompson and L. Corkum. 1984. *Water Quality Overview of Athabasca River Basin*. Cochrane, Alberta: Nanuk Engineering and Development Ltd., 1985. Prepared for Alberta Environment Planning Division.

AU call number: TD 227 A3 H218

Summarizes chemical data from Jasper, Athabasca and Fort McMurray (1970-1984) and six other surveys (1984-1985).

Peace-Athabasca Delta Implementation Committee, Canada, Alberta, Saskatchewan. *Peace-Athabasca Delta Water Management Works Evaluation. Final Report*. The committee, 1987.

AU call number: GB 1230 .P4 P355 v.1

The Committee worked towards partially restoring water levels adversely affected by the W.A.C. Bennett Dam in British Columbia. Pollution of the Athabasca River may affect this delta, which is a part of Wood Buffalo National Park.

Peace-Athabasca Delta Implementation Committee, Canada, Alberta, Saskatchewan. *Peace-Athabasca Delta Water Management Works Evaluation. Appendix B, Biological Assessment*. The committee, 1987.

AU call number: GB 1230 .P4 P355 v.3

Presents data on vegetation, fish, birds and mammals.

Scarpino, Philip V. *Great River: An environmental history of the upper Mississippi, 1890-1950*. Columbia: Univ. of Missouri, 1985.

AU call number: TC 425 .M6 S286

Perhaps someone may wish to do a similar study of the Athabasca River?

Task Force on Water Quality Guidelines of the Canadian Council of Resource and Environment Ministers. *Canadian Water Quality Guidelines*. Ottawa: ??, 1987.

AU call number: TD 226 .C125

Latest standards on water quality.

Water Pollution

Alberta Environment Centre. *Toxicity and Environmental Chemistry of Wastewater from a Kraft Pulp and Paper Mill: Fish Toxicity Studies.* /f1 Vegreville, Alberta: Alberta Environmental Centre, 1987. AECV87-R4.

AU call number: being catalogued

A study on the effluent discharged into the Wapiti River by the Procter and Gamble Cellulose Ltd. kraft mill of Grande Prairie. The fish contained contaminants from the mill as well as pesticides such as DDT and DDE.

Bonsor, Norman, Neil McCubbin and John B. Sprague. *Kraft Mill Effluents in Ontario.* Toronto?: Ontario Ministry of the Environment, 1988. Prepared for the Technical Advisory Committee, Pulp and Paper Sector of MISA (Municipal/Industrial Strategy for Abatement) and Ontario Ministry of the Environment by the Expert Committee on Kraft Mill Toxicity.

AU call number: On order but some copies available locally.

The best overview on the kinds and sources of wastes produced by kraft types of pulp mills.

Cherwinsky, Christina and Don Murray. *Preliminary Investigation of Trace Contaminants in Pulp and Paper Mill Effluents.* Toronto?: Queen's Printer for Ontario, 1986.

AU call number: on order

U of A call number: TD 899 W65 C52

MICROLOG 87-01079, 2 fiche

Gives long lists of chemicals and groups of chemicals found in pulp mill effluents. Such chemicals cause, or are suspected of causing: toxicity to aquatic organisms, mutations, cancers, fish tainting, or taste and odour problems for drinking water.

Haufe, W.O. *Control of Black Flies in the Athabasca River. Evaluation and Recommendations for Chemical Control of Simulium arcticum Malloch.* Edmonton: Alberta Environment, Pollution Control Division, 1980.

AU call number: QL 537 .S55 A3331

AE call number: SF 810 A4 F5 C764

Addition of pesticides to the Athabasca River has many

similarities to the addition of toxic effluents. This summary paper has a number of useful references.

Haufe, W.O. and G.C.R. Croome, ed. *Control of Black Flies in the Athabasca River. Technical report. An Interdisciplinary Study for the Chemical Control of Simulium arcticum Malloch in Relation to the Bionomics of Biting Flies in the Protection of Human, Animal, and Industrial Resources and its Impact on the Aquatic Environment.* Edmonton: Alberta Environment, Pollution Control Division, 1980.

AU call number: QL 537 .S55 A333

AE call number: SF 810 A4 F5 C764

Twenty-one papers related to application of methoxychlor to the Athabasca River. As stated above the behaviour of pesticides is similar to many toxic wastes.

Industrial Programs Branch, Environmental Protection Programs. *Status Report on Abatement on Water Pollution from the Canadian Pulp and Paper Industry (1982).* 1984.

AU call number: On order.

McLeay, D. and Associates Ltd. *Aquatic Toxicity of Pulp and Paper Effluent: a Review.* Report EPS 4/PF/1. Ottawa: Environment Canada, 1987. Prepared for Environment Canada, Fisheries and Oceans Canada, Canadian Pulp and paper Association, Ontario Ministry of the Environment.

AU call number: on order

U of A call number: TD 899 W65 A656

MICROLOG 87-05110, 3 fiche

Excellent overview of chemicals, laboratory procedures, ecological effects, bioaccumulation, and bioassays.

Moore, J.W., S. Ramamoorthy and A. Sharma. *Mercury Residues in Fish from Twenty-Four Lakes and Rivers in Alberta.* Vegreville, Alberta: Alberta Environmental Centre, 1986. AECV86-R4.

AU call number: being catalogued

Nine species of fish were collected from five locations on the Athabasca River. Mercury concentrations averaged from 45 to 321 micrograms per kilogram [$\mu\text{g}/\text{Kg}$] (= .045 to .321 milligrams per kilogram [mg/Kg] or parts per million [ppm]) of

fish.

Sachinath, Mitra. *Mercury in the Ecosystem*. Lancaster, PA.: Technomic, 1986.

AU call number: TD 196 .M3 M684

Some pulp mills use mercury to produce chlorine for bleaching. Though the mercury is supposed to be in a closed system, some escapes. Mercury was formerly used in pulp mills as a slimicide.

Van Strum, Carol and Paul Merrell. *No Margin of Safety: A Preliminary Report on Dioxin Pollution and the Need for Emergency Action in the Pulp and Paper Industry*. Greenpeace, 1987.

AU call number: TD 196 .D5 V219

A review of the status of dioxins produced by the kraft process.

Members of the public also may consult these materials in the Cameron Library at the University of Alberta. Their hours are 7:45 am to 11:30 pm, Monday to Thursday; 7:45 am to 9:30 pm, Friday; 10:00 am to 9:30 pm, Saturday; and 10:00 am to 11:30 pm, Sunday. The public may borrow materials only upon payment of a annual fee. For further information, contact the Cameron Library Circulation Desk 8:30 am to 4:30 pm, Monday to Friday, or phone 492-4174. Photocopying machines are readily available.

The Alberta Environment Library is open to the public 8:15 am to 4:30 pm, Monday to Friday. The library is located on the 14th floor of Oxbridge Place, 9820-106 Street, Edmonton, Alberta, T5K 2J6; telephone, 427-5870. The public may not borrow materials from this library directly, but they can use the interlibrary loan services of the Edmonton Public Library.

I thank the many people who contributed materials, time and cooperation to make this information available to the public.