



**Convention on Environmental Impact Assessment in a Transboundary Context
United Nations Economic Commission for Europe**

**ENVIRONMENTAL IMPACT CHECKLIST
Introduction & References**

Introduction

The Convention on Environmental Impact Assessment in a Transboundary Context, elaborated under the auspices of the United Nations Economic Commission for Europe (ECE), was adopted at Espoo (Finland) on 25 February 1991.

If a planned activity is listed in Appendix I to the Convention and it is likely to cause a significant adverse transboundary impact, the EIA procedure as indicated in the Convention will have to be implemented. This procedure starts with a notification by the Party of origin to any Party that it considers to be an affected Party as early as possible and no later than when informing its own public about the proposed activity.

Appendix I to the Convention covers 17 groups of activities to which the Convention applies, such as nuclear and thermal power stations, road and railway construction, chemical installations, waste disposal facilities, oil refineries, oil and gas pipelines, mining, steel production, pulp and paper manufacturing and the construction of dams and reservoirs.

The Convention describes an "impact" as any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or physical structures or the interaction among these factors, it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors. It seems that some countries lack experience with the latter part of this definition, as these types of effects have only recently been introduced in relevant legislation. The definition of "transboundary impact" explicitly excludes impacts of a global nature and therefore concentrates on impacts of a local or sub-regional character in the ECE region.

The consideration of "significance" of an adverse transboundary impact will always be part of the decision to apply the Convention. Criteria on the significance of any impact should be set in a general decision-making framework. In some cases, it may be possible to establish generally acceptable criteria on significance. In most cases, however, the conclusion that an adverse transboundary impact is likely to be significant would be based on a comprehensive consideration of the characteristics of the activity and its possible impact.

On November 2-5 1993 in Geneva, the third meeting of the signatories to the Convention was held. Item 15 of the report "Specific Methodological Issues of Environmental Impact Assessment in a Transboundary Context" (ENVWA/WG.3/R.13) suggests completing a questionnaire (Annex II) to serve in identifying the likely adverse impacts of a proposed activity.

To provide guidance in completing this questionnaire, major types of emissions and other causes of adverse impacts should be known (Annex III). Annex III is the start of an environmental checklist that indicates possible pollutants and their adverse impacts on the transboundary environment. The purpose of this report is to expand upon the examples found in Annex III, and to produce a list of possible impacts and pollutants linked to each of the activities in Appendix I of the Convention.

An Environmental Assessment Checklist has been developed for each activity. Each checklist comprises three columns entitled: Category; Factors; and Comments. The checklist is to be used as a tool to aid in the completion of the EIA.

The items found under the column Categories are defined in Article 1 (vii) of the Convention.

The eleven points listed in this column consist of areas of the environment where a proposed activity may have an undesirable effect. Pollutants generally enter the environment through the mediums of air and water. As they are the means for pollutants to enter into the environment, they are the first two items listed. The remaining nine items consist of areas that may be impacted as a direct result of the activity (such as landscape), or as a result of emissions to air and water (such as climate change, flora). Not all items are applicable to each specific activity; as a result some have been omitted from individual checklists.

The second column in the checklist, entitled Factors, lists pollutants and impacts to consider under each Category. Under the Categories of air and water, the corresponding Factors consist mainly of pollutants. Factors for the other Categories consist of potential changes to existing conditions directly related to the proposed activity or due to the pollutants introduced to the environment as a result of the activity. The items found under the column Factors have been restricted to those which are likely to have adverse transboundary impacts.

The pollutants listed under the categories of air and water have been listed giving consideration to various external variables. Major categories of pollutants (such as organohalogens, heavy metals, inorganic compounds, persistent organic pollutants) are listed in the checklist. Specific pollutants are listed if they are commonly occurring pollutants in specific activities, or if they have been adopted by the ECE to be priority pollutants.

Five reports are referenced in the checklist. These reports include listings of priority pollutants adopted by the ECE. The five reports are: Proceedings of the EMEP Workshop on Emission Inventory Techniques, Regensburg, Germany, 2-5 July, 1991, EMEP/CCC-Report 1/91 (reference 1); Economic Commission for Europe Convention of Long-range Transboundary Air Pollution Task Force on Heavy Metal Emissions June 1994 (reference 2); Economic Commission for Europe, Convention on the Transboundary Effects of Industrial Accidents (reference 3); Economic Commission for Europe, State of Knowledge Report of the UN ECE Task Force on Persistent Organic Pollutants (reference 4); and Recommendations to ECE Governments on the Prevention of Water Pollution from Hazardous Substances (reference 5).

Other specific pollutants have been listed if they are considered to be long-range transboundary pollutants in a specific activity. These limits were placed on the listing of specific pollutants,

otherwise the checklists would have been exhaustive.

The items listed under the nine other Categories are those that result due to the interaction between air and water emissions and other Categories, or those that occur as a direct impact of the proposed activity. The factors considered have been included keeping in mind impacts which will likely be of a transboundary nature. Site location, surface water, geography, geology and climate will be of major consideration when determining deleterious transboundary impacts.

The third and final column, Comments, has been included for the purpose of this report only. Interactions among Impacts are listed, as well as other comments considered pertinent to the EIA. This column has been completed with information available to the writer and is by no means a complete listing of all interactions, nor are there comments on each item. For an Environmental Assessment Checklist, this column could be used to indicate which Factors are to be considered for the specific activity.

If a specific project were to have known adverse effects on the transboundary environment and the pollutant is not found in the checklist, it would be up to the integrity of the persons performing the EIA to include this in their study.

The checklist is to be used as a guideline to assist in the completion of the final EIA. During the process of the EIA, the proponent will review the checklist, and the items that may be of concern in a transboundary context will be highlighted. Further investigation into the items highlighted will be performed during the process of completing the EIA.

The checklist is designed to be a generic checklist of possible adverse transboundary effects to consider for each of the given activities. Pollutants or impacts may be added or deleted during the exercise as the actual impacts may vary for each proposed project due to such things as technology used, site location and raw materials.

During the process of the EIA, the checklists contained herein will serve as an aid in the completion of requirements for the EIA. The method of using a checklist for a proposed activity is to review it, compile the factors that may result in adverse transboundary impacts, and to add or delete items if required. Once impacts are determined, the proponent should complete further investigations to fulfil the requirements of Appendix I of the Convention.

References

- Aboveground Storage Tank Guide, Thompson Publishing Group, Salisbury, MD, U.S.A., 1991
- Aboveground Storage Tank Management a Practical Guide, Government Institute, Rockville, MD, U.S.A., 1990
- Air Pollution from Coal Mining and Related Developments New South Wales, Australia, The Commission 1983.
- Andreae, H., Ecological Impacts of some Heavy Metals related to Long-Range Atmospheric Transport, United Nations, Geneva, GE. 93-31695 April 1993
- An Overview of Potential Forest Harvesting Impacts of Fish and Fish Habitat in the Northern Boreal Forests of Canada's Prairie Provinces, Edmonton, Alberta, D. A. Westworth & Associates Ltd. 1992.
- Basil Allen, Rossi, Portia Aguirre Nayve, Recycling and Non-waste Technology 1979, Rossi-Nayve Consultancy Services, Inc. 1979
- Bipole III Transmission Complex Site Selection and Environmental Assessment, Manitoba Hydro, Winnipeg, Manitoba, Canada 1989
- Conclusions and Recommendations from the Workshop on Emissions and Modelling of Atmospheric Transport of Persistent Organic Pollutants and Heavy Metals, Executive Body for the Convention on long-range transboundary air pollution, Geneva, June 1993
- Chapter D12, The Dangerous Goods Handling and Transportation Act, Queen's Printer, Manitoba, Canada 1987
- Chapter E125, The Environment Act, Queen's Printer, Manitoba, Canada 1987
- Chapter O80, The Ozone Depleting Substances Act, Queen's Printer, Manitoba, Canada, February, 1990
- Chapter R10, The High-level Radioactive Waste Act, Queen's Printer, Manitoba, Canada, July 1987
- Chapter W40, The Waste Reduction and Prevention Act, Queen's Printer, Manitoba, Canada, March 1990
- Cheremisinoff, Paul N., Underground Storage Tanks Guidebook, Pudvan Publishing Co., Northbrook, Illinois, U.S.A., 1987
- Chlorinated Dioxins and Dibenzofurans in Perspective, Lewis Publishers, Chelsea, Michigan, U.S.A., 1986
- Clepp, Richard., deFur, Peter., Silbergeld, Ellen., Washburn, Peter., EPA on the Right Track, Environmental Science and Technology, Vol. 29, no. 1, 1995
- Convention of the Transboundary Effects of Industrial Accidents, United Nations, Helsinki, March 1992
- Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, Finland Feb 1991
- Conway, Richard A., Ross, Richard D., Handbook of Industrial Waste Disposal, Van Nostrand Reinhold Environmental Engineering Services, Van Nostrand Reinhold Co. 1980
- Dallons, Victor J., Multimedia Assessment of Pollution Potentials of Non-Sulfur Chemical Pulping Technology, Environmental Protection Agency, Office of Research and Development, Industrial Environmental Research Laboratory, Cincinnati, Ohio, 1979
- Digest of Environmental Protection and Water Statistics, Department of the Environment, United Kingdom, 1992

- Dobson, S. Persistent Organic Pollutants: Distribution between Media, Bioaccumulation, Degradation and Effects on Organisms in the Environment, United Nations, May 1993
- Durning, Alan Thein., Saving the Forests - What Will it Take?, Washington, D.C., Worldwatch Institute, 1993.
- Eacott, J.G., Air Pollution Control Systems on International Copper and Nickel Smelters Toronto, Ontario, Environment Canada 1982
- Economic Commission for Europe, Air Pollution Studies 10, Effects and Control of Long-range Transboundary Air Pollution, ECE/EB.AIR/39, United Nations, New York, 1994
- Economic Commission for Europe, Convention on Environmental Impact Assessment in a Transboundary Context, United Nations, New York and Geneva, 1994
- Economic Commission for Europe, Convention on the Transboundary Effects of Industrial Accidents, United Nations, New York and Geneva, 1994
- Economic Commission for Europe, Convention of Long-range Transboundary Air pollution, Task Force on Heavy Metals Emissions, United Nations, New York and Geneva, 1994
- Economic Commission for Europe, Recommendations to the ECE Governments of the Prevention of Water Pollution from Hazardous Substances, United Nations, Geneva 1994
- Economic Commission for Europe, State of Knowledge Report of the UN ECE Task Force on Persistent Organic Pollutants, For the Economic Commission for Europe (ECE) Convention on Long-range Transboundary Air Pollution, June 1994
- Economic Commission for Europe, Water Series No. 1, Protection of Water Resources and Aquatic Ecosystems, ECE/ENVWA/31, United Nations, New York, 1993
- Environment Canada, Toxic Contaminants in the Environment, Persistent Organochlorines, Environment Canada Environmental Indicator Bulletin, SOE Bulletin No. 93-1, 1993
- The Environment and Our Future - the Japanese Chemical Industry Experience, Chemical Daily Co., Tokyo, Japan 1991
- Environmental Assessment of Surface Mining Methods Head-of-Hollow Fill and Mountaintop Removal, U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory, Cincinnati, Ohio, 1979
- Environmental Aspects of Nickel Production, Sulphide Pyrometallurgy and Nickel Refining, Environment Canada, Ottawa, Ontario, Canada 1987
- Environmental Code of Practice for Underground Storage Tank Systems Containing Petroleum Products and Allied Petroleum Products, The Council, Ottawa, Ontario Canada, 1993
- Environmental Impact Assessment Theory and Practice, London, Unwin Hyman 1988.
- Environmental Indicators, Organisation for Economic Co-operation and Development, OECD 1994
- Environmental Overview - Conawapa/Transmission Lines Project: Report to Manitoba Hydro: Conawapa Hydro-Electric Generating Station; Heday-Riel 500 kV D.C. Transmission Line, Riel-U.S.A. 500 kV A.C./D.C. Transmission Line, Winnipeg, Manitoba, MacLaren Plansearch Inc. 1986 .
- Environmental Protection Regulation and the Non-Ferrous Metals Industry, Economic Council of Canada, Brian E. Felske and Associates Ltd., Ottawa, Canada 1979

Environmental Resources Limited, Prediction in EIA. A summary report of a research project to identify methods of prediction for use in Environmental Impact Assessment, Environmental Resources Limited, March 1984

Environmental Risk Analysis for Chemicals, Van Nostrand Reinhold, New York, New York, 1982

1993 Environmental Scan. Evaluating our Progress towards Sustainable Development, Prep for CCME, Peat Warwick Stevenson and Kellogg, Vancouver Canada, Oct 1993

Exchanger. Your Source for Waste Minimization Information, Volume 1, Issue 4 July 1994, Manitoba Waste Exchange

EPA's Dioxin Reassessment. Highlights from EPA's three-year effort to document sources, exposures, and impact on health, Environmental Science and Technology, Vol. 29, No. 1? 1995

Final Guidelines for the Preparation of an Environmental Impact Statement on the Proposed Conawapa Project, Winnipeg, Manitoba, Manitoba Hydro 1994.

Freeman, Harry, Harten, Teresa, Springer, Johnny, Randall, Paul, Curran, Mary Ann., Stone, Kenneth, Industrial Pollution Prevention: A Critical Review, Air and Waste Management Association, 1992

French, H.F., Green Revolutions: Environmental Reconstruction in Eastern Europe and the Soviet Union, Worldwatch Paper 99, November 1990

From Cradle to Grave. A management approach to chemicals, Task Force on the Management of Chemicals, Environment Canada, Ottawa, 1986

Guidelines for Preparation of an Environmental Impact Statement for the Dempster Lateral Pipeline Yukon Territory and Northwest Territories - Canada, Federal Environmental Assessment Review Office, Ottawa, Canada, 1978

Guidelines to Prepare an Environmental Impact Statement on the Proposed Reconstruction of the Haines Road - Alaska Highway, Environmental Assessment Review, Canada 1976

Global Climate Change and Sustainable Development. Critical Review Discussion Papers, Air and Waste, September 1993, Vol 43

A Guide to the Canadian Environmental Assessment Act, The Agency, Hull, Quebec, 1993

Guidelines for the Completion of the Environmental Assessment for the Arctic Pilot Project, Ottawa, Ontario, Environmental Assessment Panel 1994

Gunton, Thomas, Economic Evaluation of Environmental Policy, Victoria, British Columbia, British Columbia Round Table on the Environment and the Economy 1991

Haffner, G.D., Water Quality Branch Strategy for Assessments of Aquatic Environmental Quality, Inland Waters Directorate, Water Quality Branch, 1986

Heavy Metals in Air. Flin Flon, Manitoba Department of Environment, Environmental Management Services Branch, Winnipeg, Manitoba, Canada 1989

Heavy Metal in Soils, Blackie, Glasgow Scotland 1990

Heavy Metals Emissions State of the Art Report. Economic Commission for Europe, Executive Body for the Convention on Long-range Transboundary Air Pollution Working Group on Technology, Prague, June 1994

- Hengeveld, Henry, Understanding Atmospheric Change - A Survey of the Background Science and Implication of Climate Change and Ozone Depletion (Ottawa, Environment Canada 1991).
- Humphrey, B., The Fate and Persistence of Stranded Crude Oil - A nine-year overview from the BIOS project, Baffin Island, NWT, Environment Canada, 1982
- Hunter, J.M., Rey, L., Chu, K.U., Edekolu-John, E.O., Mott, K.E., Parasitic Diseases in Water Resources Development, the Need for Intersectoral Negotiation, World Health Organization, Geneva, 1993
- Identification of Pollution Indicator Bacteria Isolated from some Lakes, Rivers and Pulp and Paper Wastewater in Southern Ontario, Microbiology Section, Laboratory Services Branch, Ontario Ministry of the Environment, 1979
- Installation of Underground Petroleum Storage Systems, API, Washington, DC 1987
- International Standard Industrial Classification of all Economic Activities, Third Revision, Statistical Papers, Series M No. 4, Rev. 3, United Nations new York, 1990
- Issues in Underground Storage Tank Management Tank Closure and Financial Assurance, Lewis Publishers, Boca Raton, Florida 1993
- Jacobs, Peter, Sustainable Development and Environmental Assessment Perspectives on Planning for a Common Future, Canadian Environmental Assessment Research Council, Hull, Quebec, 1990
- Johnson, Jeff, Diosin Risk: Are We Sure Yet?, Environment Science and Technology, Vol. 29, No. 1, 1995
- Kelly, Martyn, Mining and the Freshwater Environment, London, Elsevier Applied Science 1988
- Kemmer, Frank, N. ed., The NALCO Water Handbook, McGraw-Hill Book Co., U.S.A., 1979
- Kirkpatrick, Neil., Environmental Issues in the Pulp and Paper Industries a Literature Review, PIRA International, Leatherhead, Surrey, United Kingdom, 1991
- Kruus, Peeter., Chemicals in the Environment, Polyscience Publications, Morin Heights, Quebec Canada, 1991
- Lapedes, Daniel N., ed in chief, McGraw Hill Dictionary of Scientific and Technical Terms 2nd edition, McGraw Hill Book Co, 1978
- Lees, David, The Man Who Cries Wolf, will David Suzuki warn us about the environment once too often?, Harrowsmith pgs 34-44
- MacLeod, Colin Graydon, The Practice of Environmental Impact Assessment, Winnipeg, Manitoba, Natural Resources Institute 1990.
- Management of Underground Petroleum Storage Systems at Marketing and Distribution Facilities, American Petroleum Institute, Publisher: API, Washington, DC 1987
- Manitoba Environment, Annual Report 1992-1993, Queens Printer, Manitoba, Canada 1994
- Manitoba Regulation 103/94, Ozone Depleting Substances Regulation, The Ozone Depleting Substances Act (CCSM c. 080) Queen's Printer, Manitoba, Canada, May 1994
- Manitoba Regulation 163/88, Classes of Development Regulation, The Environment Act (CCSM c. E125), Queen's Printer, Manitoba, Canada, March 1988

- Manitoba Regulation 163/88, Licensing Procedures Regulation, The Environment Act (CCSM c. E125), Queen's Printer, Manitoba, Canada, March 1988
- Manitoba Regulation 282/87, Classification Criteria for Products, Substances and Organisms Regulation, The Dangerous Goods Handling and Transportation Act (CCSM c. D12), Queen's Printer, Manitoba, Canada, July 1987
- Marshall, I.B., Mining, Land Use and the Environment, Lands Directorate, Environment Canada, 1982-1983
- Mintzer, Irving M., A Matter of Degrees: The Potential for Controlling the Greenhouse Effect, World Resources Institute, Research Report No. 5, 1987
- Mohr, Merilyn, Down the Road, the Future of Energy-Efficient Housing, Harrowsmith pgs 96-97
- More about Leaking Underground Storage Tanks a Background Booklet for the Chemical Advisory, The Division, Washington, DC, U.S.A. 1984
- Morgan, Nancy, Environmental Impact Assessment and Competitiveness, National Round Table on the Environment and the Economy (Canada), 1992
- Natusch, David, Environmental Effects of Western Coal Combustion, Environmental Research Laboratory, U.S. Environmental Protection Agency, 1980
- National Acid Precipitation Assessment Program, 1992 Report to Congress, United States of America 1992
- North Central Transmission Line Project, Report of the Federal-Provincial Environmental Assessment Panel, Ottawa, Canada, October, 1993
- Our Planet "Overheating the Earth, The Greenhouse Effect Feeds on Itself, UNEP Vol 3, Number 1, 1991
- OECD Guidelines for Testing of Chemicals, Organisation for Economic Co-operation and Development, OECD Paris, 1987
- Ozberk, Engin, Review of Impact Studies of Reducing SO2 Emissions from Major non-ferrous Smelters in Canada, Environment Canada, Hull, Quebec, 1981
- Pacyna, J.M., Emission Inventories for Heavy Metals in the ECE Region, Norwegian Institute for Air Research, 1993
- Pacyna J.M., and Joerss, K.E., Proceedings of the EMEP Workshop on Emission Inventory Techniques, Eggenburg, Germany, 2-5 July, 1991, Norwegian Institute for Air Research, July 1991
- Persistent Organic Pollutants, Executive Body for the convention on Long-range transboundary air pollution, Geneva, June 1994
- Petts, Judith., Environmental Impact Assessment for Waste Treatment and Disposal Facilities Chichester, Wiley 1994.
- Prediction in Environmental Impact Assessment, A Summary Report of a research project to identify methods of prediction for use in environmental impact assessment, Environmental Resources Limited, London, England, March 1984
- Proceeding Workshop on Reconstruction of Forest Soils in Reclamation, Edmonton, Alberta, Alberta Conservation and Reclamation Council 1980

- Prugh, Richard W., Guidelines for Vapor Release Mitigation, The Institute, New York, New York, 1988
- Raymond, Lyle S., Chemical Hazards in our Groundwater, Center for Environmental Research, Cornell University, Ithaca, New York, 1986
- Recommendations to ECE Governments on the Prevention of Water Pollution from Hazardous Substances, United Nations Economic and Social Council, ECE/CEP/2, June 1994
- Recommended Practices for Installation of Aboveground Storage for Motor Vehicle Fueling, Petroleum Equipment Institute, Tulsa, Oklahoma, U.S.A., 1992
- Resource and Environmental Profile Analysis of Foam Polystyrene and Bleached Paperboard Containers, Franklin Associates, Ltd., Prairie Vilaga, Kansas, U.S.A., 1990
- Review and Evaluation of Adaptive Environmental Assessment and Management, Environment Canada, Vancouver, British Columbia, Canada, 1982
- Revkin, Andrew, Global Warming - Understanding the Forecast, New York, Abbeville Press Publishers 1992.
- Rossi, Basil Allen, Nayve, Portia Aguirre., Recycling and Non-waste Technology 1979, Rossi-Nayve Consultancy Services, Inc: 1979
- Roth, Eike, Can Technical Catastrophes be Avoided?, Environmental Policy and Law, 1915 (1989)
- Sheffield, Arthur., Polychlorinated dibenzo-p-dioxins (PCDD's) and Polychlorinated dibenzofurans (PCDF's) Sources and Releases, Environment Canada, Environmental Protection Service, Ottawa, Canada, 1985
- Southern Indian Lake and Hydro Development, Winnipeg, Manitoba, Manitoba Environmental Council 1984.
- Specific Methodological Issues of Environmental Impact Assessment in a Transboundary Context, Economic Commission for Europe, Geneva 1993
- Salisbury, M.D., Aboveground Storage Tank Guide, Thompson Publishing Group, 1991.
- Sittig, Marshal., Fertilizer Industry, Processes, Pollution Control and Energy Conservation, Noyes Data Corporation, Park Ridge, New Jersey, U.S.A. 1979
- Sittig, Marshal., Handbook of Toxic and Hazardous Chemicals and Carcinogens (second edition), Noyes Publications, Park Ridge, New Jersey, U.S.A.1985
- Smook, G.A., Handbook for Pulp and Paper Technologists, 2nd ed. Angus Wilde Publications, Vancouver, British Columbia, Canada, 1992
- Southern Indian Lake and Hydro Development, Manitoba Environmental Council, Winnipeg, Manitoba Canada, 1984
- Straight Talk on Tanks - a Summary of Leak Detection Methods for Petroleum Underground Storage Tank System, United States Environmental Protection Agency, 1990
- Sulphure Emission control Technology and Waste Management, United States Environmental Protection Agency, Office of Energy, Minerals and Industry, Washington, U.S.A., 1979
- The Greenhouse Gases, United Nations Environmental Protection, Nairobi 1987
- Thérien, Normand PhD., Simulating the Environmental Impact of a Large Hydroelectric Project, Proceedings Series,

Vol 9, The Society for Computer Simulation (Simulation Councils Inc.), La Jolla, California, U.S.A., 1981

The North Central Project Route/Site Selection and Environmental Assessment, Winnipeg, Manitoba, Manitoba Hydro.

Tingley, Donna, Underground Storage Tanks - a Legal Review, Environmental Law Centre, Edmonton, Alberta, Canada 1991

Titus, James G., ed., Effects of Changes in Stratospheric Ozone and Global Climate, Volume 3: Climate Change, United Nations Environmental Protection and United States Environmental Protection Agency, Oct. 1986

Underground Motor Fuel Storage Tanks a National Survey, United States Environmental Protection Agency, Office of Toxic Substances, 1986

United Nations Environment Programme, Environmental Aspects of Nickel Production Part I. Sulphide Pyrometallurgy and Nickel Refining, UNEP Industry and Environment Technical Review Series, April 1987

Vladimirov, V.A., Application of the Ecosystems Approach to Water Management: The Ivankovskoye Reservoir. Case study transmitted by the Government of the Union of Soviet Socialist Republics, United Nations, Geneva 1991

Wiersma, G.B. Ed. Environmental Monitoring and Assessment An International Journal, Vol 33, No. 1, October 1994 Kluwer Academic Publishers, Dordrecht

Wiersma, G.B. Ed. Environmental Monitoring and Assessment An International Journal, Vol 32, No. 3, September 1994 Kluwer Academic Publishers, Dordrecht

Windholz, Marcha, ed Merck Index The (ninth edition), Merck & Co., Inc. Rahway, N.J. U.S.A. 1976

Workshop on Reconstruction of Forest Soils in Reclamation, Alberta Conservation and Reclamation Council, Edmonton, Alberta, Canada, 1980

Young, John E., Mining the Earth, Worldwatch Institute, Washington, D.C., 1992

Zeiss, Chris, Impact Screening of Solid Waste Management Facilities with Stepmatrix - reverse network Method, Environment Impact Assessment Review 1994, 14:11-35

Zwelling, Marc, Futurama, Harrowsmith pgs 55-58