

Environmental Guideline for Waste Antifreeze



Department of Environment
Government of Nunavut

GUIDELINE: WASTE ANTIFREEZE

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This Guideline has been prepared by the Department of Environment's Environmental Protection Division and approved by the Minister of Environment under the authority of Section 2.2 of the *Environmental Protection Act*.

This Guideline is not an official statement of the law and is provided for guidance only. Its intent is to increase the awareness and understanding of the risks, hazards and best management practices associated with waste antifreeze. This Guideline does not replace the need for the owner or person in charge, management or control of the waste to comply with all applicable legislation and to consult with Nunavut's Department of Environment, other regulatory authorities and qualified persons with expertise in the management of waste antifreeze.

Copies of this Guideline are available upon request from:

Department of Environment
Government of Nunavut

P.O. Box 1000, Station 1360, Iqaluit, NU, X0A 0H0

Electronic version of the Guideline is available at <http://env.gov.nu.ca/programareas/environmentprotection>

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Introduction

Most coolants and heat transfer fluids rely on glycol to lower the freezing point of the solution. Although commonly referred to as antifreeze, glycols also allow for higher temperatures to be achieved without the liquid boiling and therefore, also act as an anti-boiling agent. The most common types of antifreeze are ethylene glycol and propylene glycol. Both are used in automotive and heavy-duty engine coolants, glycol-based heat transfer fluids in building heating systems and aircraft and runway de-icing solutions at airports. Most antifreeze applications use a mixture of glycol and water with corrosion inhibitors and other chemicals added to improve performance. During use, antifreeze can become contaminated with metal particles from engine and pipe wear, grit and traces of oil which can inhibit its performance and shorten its effective operating life.

Methyl hydrate solutions are also effective in inhibiting the formation of ice in fuel systems. These solutions are not included within the scope of the *Environmental Guideline for Waste Antifreeze*.

The Guideline provides information on the characteristics and potential environmental and human health effects of waste antifreeze and guidance on its proper storage, transportation and disposal. It is not an official statement of the law. For further information and guidance, the owner or person in charge, management or control of waste antifreeze is encouraged to review all applicable legislation and consult the Department of Environment, other regulatory agencies or qualified persons with expertise in the management of waste antifreeze.

The *Environmental Protection Act* enables the Government of Nunavut to implement measures to preserve, protect and enhance the quality of the natural environment. Section 2.2 of the *Act* provides the Minister with authority to develop, coordinate, and administer the Guideline.

1.1 Definitions

<i>Antifreeze</i>	A substance added to a liquid to lower its freezing point.
<i>Commissioner's Land</i>	Lands that have been transferred by Order-in-Council to the Government of Nunavut. This includes roadways and land subject to block land transfers. Most Commissioner's Land is located within municipalities.
<i>Contaminant</i>	Any noise, heat, vibration or substance and includes such other substance as the Minister may prescribe that, where discharged into the environment, (a) endangers the health, safety or welfare of persons, (b) interferes or is likely to interfere with normal enjoyment of life or property, (c) endangers the health of animal life, or (d) causes or is likely to cause damage to plant life or to property.
<i>Dangerous Good</i>	Any product, substance or organism included by its nature or by the <i>Transportation of Dangerous Goods Regulations</i> in any of the classes listed in the schedule provided in the <i>Transportation of Dangerous Goods Act</i> .

<i>Environment</i>	The components of the Earth and includes (a) air, land and water, (b) all layers of the atmosphere, (c) all organic and inorganic matter and living organisms, and (d) the interacting natural systems that include components referred to in paragraphs (a) to (c) above.
<i>Minister</i>	The Minister of Environment of the Government of Nunavut.
<i>Qualified Person</i>	A person who has an appropriate level of knowledge and experience in all relevant aspects of waste management.
<i>Responsible Party</i>	The owner or person in charge, management or control of the waste.
<i>Transport Authority</i>	The statute and regulations controlling the management of hazardous waste under that mode of transport. These include (a) Road and Rail - <i>Transportation of Dangerous Goods Act (Canada) and Regulations; Interprovincial Movement of Hazardous Waste Regulations and Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations.</i> (b) Air – <i>International Air Transport Association (IATA) Dangerous Goods Regulations and International Civil Aviation Organization (ICAO) Technical Instructions;</i> and (c) Marine – <i>International Maritime Dangerous Goods Code (IMDG).</i>
<i>Waste Antifreeze</i>	Antifreeze that is no longer wanted or is unusable for its intended purpose and is intended for storage, treatment or disposal.

1.2 Roles and Responsibilities

1.2.1 Department of Environment

The Environmental Protection Division is the key environmental agency responsible for ensuring parties properly manage waste antifreeze and will provide advice and guidance on its management. Authority is derived from the *Environmental Protection Act*, which prohibits the discharge of contaminants to the environment and enables the Minister to undertake actions to ensure appropriate management measures are in place. Although programs and services are applied primarily to activities taking place on Commissioner's and municipal lands and to Government of Nunavut undertakings, the *Environmental Protection Act* may be applied to the whole of the territory where other controlling legislation, standards and guidelines do not exist. A complete listing of relevant legislation and guidelines can be obtained by contacting the Department of Environment or by visiting the web site at <http://env.gov.nu.ca/programareas/environmentprotection>.

1.2.2 Generators of Waste Antifreeze

The owner or person in charge, management or control of waste antifreeze is known as the responsible party. In general, the responsible party must ensure antifreeze is properly and safely managed from the time it is produced to its final disposal. This is referred to as managing the waste from cradle-to-grave. Information on the general management of hazardous waste in Nunavut, including generator, carrier and receiver responsibilities, can be obtained by referring to the *Environmental Guideline for the General Management of Hazardous Waste*.

Contractors may manage unwanted or waste antifreeze on behalf of the responsible party. However, the responsible party remains liable for ensuring the method of management complies with all applicable statutes, regulations, standards, guidelines and local by-laws. If the contractor does not comply with the requirements of the *Environmental Protection Act* and is charged with a violation while managing the waste, the responsible party may also be charged.

1.2.3 Other Regulatory Agencies

Other regulatory agencies may have to be consulted regarding the management of waste antifreeze as there may be other environmental or public and worker health and safety issues to consider.

Workers' Safety and Compensation Commission

The Workers' Safety and Compensation Commission is responsible for promoting and regulating worker and workplace health and safety in Nunavut. The Commission derives its authority from the *Workers' Compensation Act* and *Safety Act* which require an employer to maintain a safe workplace and ensure the safety and well being of workers.

Department of Community and Government Services

The Department of Community and Government Services is responsible under the *Commissioners' Lands Act* for the issuance of land leases, reserves, licenses and permits on Commissioner's Lands. The Department, in cooperation with communities, is also responsible for the planning and funding of municipal solid waste and sewage disposal facilities in most Nunavut communities.

Department of Health and Social Services

Activities related to the handling and management of waste antifreeze may have an impact on public health. The Office of the Chief Medical Officer of Health and Regional Environmental Health Officers should be consulted regarding legislated requirements under the *Public Health Act*.

Department of Economic Development and Transportation

The Motor Vehicles Division of the Department of Economic Development and Transportation is responsible for the safe transport of hazardous waste and other dangerous goods by road through administration of the *Transportation of Dangerous Goods Act*. The Department is also responsible under the *Motor Vehicles Act* for driver licensing and various other vehicle and road safety matters.

Environment Canada

Environment Canada is responsible for administering the *Canadian Environmental Protection Act* (CEPA) and has adopted the *Glycol Guidelines (1994)*, which apply to aircraft and runway de-icing activities at federal airports. The Department regulates the interprovincial and international movement of hazardous waste under the *Interprovincial Movement of Hazardous Waste Regulations* and *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*. Environment Canada is also responsible for administering the pollution prevention provisions of the federal *Fisheries Act* and owns the EcoLogo initiative, which is designed to help consumers and industry make more environmentally conscious purchasing decisions.

Indian and Northern Affairs Canada

Indian and Northern Affairs Canada is responsible under the *Territorial Lands Act* and *Nunavut Waters and Nunavut Surface Rights Tribunal Act* for the management of federal lands and waters, including the impact waste antifreeze may have on the quality of these lands and waters.

Local Municipal Governments

The role of municipal governments is important in the proper local management of waste antifreeze. Under the Nunavut Land Claims Agreement, municipalities are entitled to control their own municipal disposal sites. Unwanted waste may be deposited into municipal landfill sites and sewage lagoons only with the consent of the local government. The local fire department may also be called upon if a fire or other public safety issue involving antifreeze is identified.

Co-management Boards and Agencies

Co-management boards and agencies established under the Nunavut Land Claims Agreement have broad authority for land use planning, impact assessment and the administration of land and water. Activities involving the management and disposal of waste antifreeze may be controlled through the setting of terms and conditions in plans, permits and licenses issued by the Nunavut Water Board and other co-management boards and agencies.

Characteristics and Potential Effects of Antifreeze

2.1 Characteristics

Most antifreeze is made up of either ethylene glycol or propylene glycol mixed with water. While ethylene and propylene glycol are chemically similar, they have different characteristics and properties.

Ethylene glycol has been the standard for antifreeze and de-icing solutions for many years because of its low cost. It is an odourless, colourless, slightly viscous liquid with a freezing point of -13°C (minus 13) and a boiling point of 198°C . It is capable of lowering the freezing point of water to about -60°C (minus 60), depending upon dilution. Ethylene glycol is toxic if swallowed and has a sweet taste, which makes it attractive to small children and animals. It is stable under ordinary conditions of use and storage and is highly soluble in water.

The use of propylene glycol as a heat transfer solution in buildings and as a de-icing solution at airports has significantly increased in recent years because, unlike ethylene glycol, it is essentially non-toxic. Propylene glycol is also an odourless, colourless, slightly viscous liquid at room temperature. Unlike ethylene glycol, propylene glycol does not have a true freezing point but becomes glasslike at -51°C (minus 51), and can lower the freezing point of water to about -60°C (minus 60). Its boiling point of 188°C is slightly lower than ethylene glycol, and it also has a sweet taste, is stable under ordinary conditions of use and storage and is highly soluble in water.

2.2 Potential Effects on Environment and Human Health

Although propylene glycol is less toxic than ethylene glycol to aquatic and other wildlife, neither of these liquids should be released to the environment. If antifreeze is allowed to mix with surface water, its rapid natural degradation will cause oxygen to be consumed, effectively smothering plant and animal life in the pond, lake or stream and also cause a foul odour. If antifreeze is poured down a drain and is allowed to enter a sewage lagoon in sufficient quantities, it may poison the bacteria and other organisms in the lagoon that make treatment possible. The local melting of permafrost could result

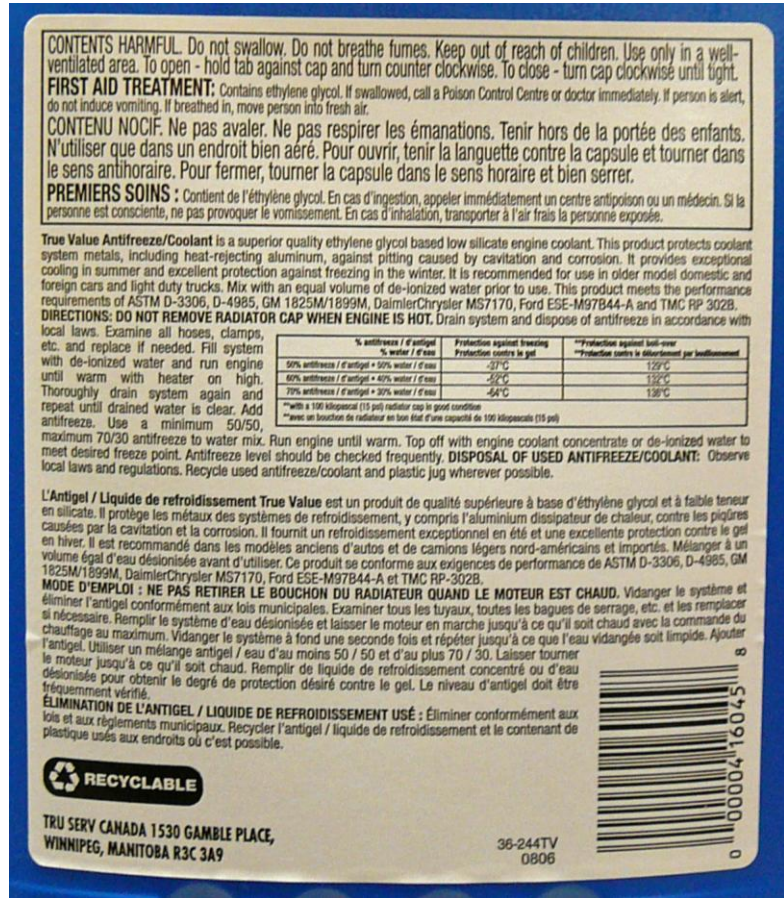


Figure 1 – Typical Ethylene Glycol Container Warning Label
Source: E. Paquin

from large quantities of antifreeze being repeatedly released on the ground, which could destabilize building foundations, roads and other structures that rely on the presence of permafrost. Metal particles from engine and pipe wear that is found in antifreeze could also be released to the environment.

Ethylene glycol is toxic to humans and ingestion should be avoided. In adults, swallowing quantities as small as 100 millilitres, or 3-4 ounces, can result in vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, collapse and unconsciousness with convulsions. The lethal dose for children is even smaller. Breathing hot ethylene glycol fumes repeatedly can result in nausea, vomiting, dizziness and drowsiness while contact with the liquid can result in skin and eye irritation.

Propylene glycol is relatively non-toxic although ingestion of sizable quantities (i.e. more than 100 millilitres or 3-4 ounces) may cause temporary stomach upset and lack of coordination. These effects appear more severe in individuals with pre-existing kidney conditions. Like ethylene glycol, repeated contact can result in skin and eye irritation.

Waste Management

Minimizing or avoiding the creation of pollutants and wastes can be more effective in protecting the environment than treating or cleaning them up after they have been created.¹

3.1 Pollution Prevention

Pollution prevention is a term used to describe methods and practices that minimize or eliminate the generation of waste. Waste antifreeze is antifreeze that is no longer usable for its intended purpose because of the loss of original properties or the presence of impurities. Waste antifreeze can also result from over purchasing. Purchasing the right type of antifreeze and purchasing only the amount needed to complete the job is the best way to practice pollution prevention.

Other pollution prevention opportunities for waste antifreeze include:

- Reduce*
- Use non-toxic or less toxic substitutes by choosing Ecologo certified products. A complete listing of environmentally-preferable products is available for downloading at <http://www.ecologo.org/en/index.asp>.
 - Select antifreeze products that provide for maximum operating life.
 - Develop effective inventory controls and ensure quantities of inventoried antifreeze are completely used before purchasing additional supplies.
 - Establish and maintain equipment maintenance schedules that are consistent with the manufacturers' suggested schedule.
- Reuse*
- Donate any excess unused antifreeze to others for use.
 - Collect antifreeze using a closed-loop system and return it directly to the cooling or heating equipment once the necessary repair and maintenance has been completed.
 - Make an agreement with your supplier to return un-opened containers of antifreeze.
- Recycle*
- Purchase and install an antifreeze recycling system – refer to section 3.2 *Recycling*.
 - Commercial and industrial users should participate in national, provincial, territorial and local waste exchange programs or establish exchange accounts with approved antifreeze recyclers.

The *Workplace Hazardous Materials Information System* (WHMIS) is Canada's national hazard communication standard. WHMIS is administered in Nunavut by the Workers' Safety and Compensation Commission. Key elements of WHMIS are the provision of material safety data sheets (MSDS), container labeling and worker education and training programs. A MSDS is available from the chemical manufacturer and contains information on the properties of ethylene and propylene glycol, along with instructions on its safe use and handling. Refer to the MSDS before using antifreeze for the first time.

¹ Source – Canadian Council of Ministers of the Environment.

3.2 Recycling

Generators can recycle unwanted or waste antifreeze using any of several commercially available on-site recycling systems. These systems typically involve two steps: (1) removing contaminants using filtration, distillation or ion exchange and (2) restoring critical antifreeze properties with additives.



Figure 2 – Typical Antifreeze Recycling System

Distillation and ion exchange systems restore antifreeze to a high level of purity. While mechanical filtration systems can remove undissolved solids, they will not remove contaminants that have been dissolved in the antifreeze. Mechanical filtration systems combined with other technologies, such as chemical filtration which precipitates heavy metals out of used antifreeze, can be very effective in restoring used antifreeze. Filters used in mechanical filtration systems are normally considered to be a hazardous waste and must be managed as a 'process residual' under the *Environmental Guideline for Industrial Waste Discharges*.

Before recycled antifreeze can be used, its original properties must be restored using additives. These additives typically contain chemicals that act as rust and corrosion inhibitors, acid neutralizers, anti-clogging and anti-foaming agents, and pH buffers.

The names of antifreeze recycling equipment suppliers can be obtained by contacting waste exchanges and associations listed in Appendix 10 of the *Environmental Guideline for the General Management of Hazardous waste*.

3.3 Storage

Storage refers to the maintenance of waste antifreeze while awaiting its reuse, recycling, transport or disposal. Storage is not acceptable for the long-term management of waste antifreeze except under extraordinary circumstances and should be considered as a temporary measure only.

Excessive, unwanted or waste antifreeze should be stored in the following manner:

- Never mix waste antifreeze with another waste (i.e. solvent, used oil, waste fuel).
- Store antifreeze in its original container or another container certified by the Canadian Standards Association (CSA) for this purpose. Containers should be tightly sealed, except when emptying or filling, to avoid spills.
- Bulk antifreeze should be stored in good quality 16 gauge or lower steel or plastic drums.
- Small quantities should never be stored in used food containers (i.e. bottles and cans).
- Containers should be sound, sealable and not damaged or leaking. If the container is leaking, carefully transfer the antifreeze to another sound and sealable container or place the leaking container inside a larger leak-proof container.

- Each container must be clearly labeled to identify its contents – either “Waste Antifreeze” or “Reconditioned Antifreeze”. If antifreeze is being stored in an institutional, commercial or industrial location, the containers must also be labeled in accordance with the *Workplace Hazardous Materials Information System (WHMIS)*.
- Place all labeled containers in a secure and clearly marked area which is separate from other waste to prevent its disposal with normal garbage. The area should be equipped with spill and leakage containment.
- Containers should be located so as to be protected from the sun, weather and physical damage.
- Workers should be trained in the safe use, handling and shipping of waste antifreeze, have access to material safety data sheets and be provided with personal protective equipment. Only trained personnel should have access to the designated storage area.
- Store antifreeze out of reach of children and pets. Children and other family members should be made aware of the hazards associated with antifreeze.

If a commercial facility is used to store hazardous waste for periods of 180 days or more or the quantity of waste antifreeze and other waste on-site at any one time exceeds the criteria set out in the *Environmental Guideline for the General Management of Hazardous Waste*², the facility must be registered with the Department of Environment as a hazardous waste management facility. Copies of registration forms are available at <http://env.gov.nu.ca/programareas/environmentprotection/forms-applications> or by contacting Nunavut’s Department of Environment. Refer to the *Environmental Guideline for the General Management of Hazardous Waste* for additional information on the registration process.

3.4 Transportation

New and unused antifreeze is not classified as a dangerous good under the *Transportation of Dangerous Goods Act*. Section 3.3 *Transportation* does not apply to these products.

Antifreeze that has been used as a coolant or heat transfer fluid may be a dangerous good and hazardous waste for the purpose of transportation. If metal wear particles and oils exceed the concentration as set out in Schedule 5 of the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*, then the antifreeze must be transported as a hazardous waste³. Under these regulations and the federal *Interprovincial Movement of Hazardous Waste Regulations*, no person may transport hazardous waste in Canada for purposes of disposal or recycling in a quantity greater than five litres or five kilograms unless it is accompanied by a completed manifest. Manifest forms are available from Nunavut’s Department of Environment and completion instructions are included on the reverse side of each manifest. Further information on manifesting can be obtained by referring to the *Environmental Guideline for the General Management of Hazardous Waste* or Environment Canada’s *User’s Guide for the Hazardous Waste Manifest*.

If you are uncertain whether waste antifreeze exceeds the criteria as set out in Schedule 5 of the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*, you then have two choices:

² The criterion for Class 9 Miscellaneous Waste is 1000 litres or kilograms and the total aggregate quantity is 5000 litres or kilograms.

³ In response to the 2007 federal government direction on streamlining regulation in Canada, the alignment of requirements under the *Interprovincial Movement of Hazardous Waste Regulations* and *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* is being undertaken by Environment Canada.

- Have a sample of the waste antifreeze analyzed by an accredited laboratory to determine whether the criteria are exceeded, or
- Assume the criteria are exceeded and transport the waste antifreeze as a hazardous waste.

Where waste antifreeze is determined to be a hazardous waste, its classification, packaging, labeling and placarding must conform to the federal and territorial *Transportation of Dangerous Goods Act and Regulations*. Schedule I of the *Regulations* classifies waste antifreeze as follows:

Shipping Name: WASTE Environmentally Hazardous Substance, Liquid, N.O.S.
Classification: 9
Product Identification Number: UN3082
Packing Group: III
Special Provision: 16

Where waste antifreeze is determined to be a hazardous waste, its transport by air must conform to the *International Air Transport Association (IATA) Dangerous Goods Regulations* and *International Civil Aviation Organization (ICAO) Technical Instructions*, while transport by marine must conform to the *International Marine Dangerous Goods Code*. Further information on transporting these wastes can be obtained by contacting Transport Canada or by referring to the appropriate Transport Authority.

Hazardous waste generators, carriers and receivers must be registered with the Nunavut Department of Environment. A unique registration number is assigned to each registrant through the registration process, which enables completion of the manifest document. Copies of registration forms are available at <http://env.gov.nu.ca/programareas/environmentprotection/forms-applications> or by contacting Nunavut's Department of Environment. Refer to the *Environmental Guideline for the General Management of Hazardous Waste* for additional information on the registration process.

A listing of hazardous waste carriers, receivers and management facilities registered to operate in Nunavut is available by contacting Nunavut's Department of Environment.

3.5 Disposal

Unwanted or waste antifreeze must never be disposed of by pouring it onto the ground, down the drain or discarding it into a landfill or sewage lagoon.

Recycling waste antifreeze using filtration, distillation, reverse osmosis or ion exchange is the safest, most environmentally responsible and cost effective option for managing unwanted antifreeze. Businesses that routinely generate waste antifreeze (i.e. automotive service garages, building operators, heating contractors) should implement this option. Generators of small quantities (i.e. homeowners, do-it-yourselfers) should donate waste antifreeze to local businesses that operate recycling equipment, where the businesses accept such wastes.

Where local antifreeze recycling is not available, waste antifreeze that is generated by commercial, industrial, institutional or government operations should be safely stored until it can be transported to a commercial recycler or registered hazardous waste receiver. Names of Canadian recyclers and disposal companies are available by contacting the waste management exchanges and associations listed in Appendix 10 of the *Environmental Guideline for the General Management of Hazardous Waste*.

Some municipalities in Nunavut are implementing programs aimed at collecting and safely storing household hazardous waste as part of their garbage collection programs. Residents wishing to locally dispose of waste solvent should contact their municipality for other disposal options.

Antifreeze containers that have been emptied to the greatest extent possible may be disposed of in a landfill. The emptied containers should be rendered unusable by puncturing or crushing prior to disposal to prevent their reuse. This is especially important for containers that could be reused for water or food storage.

Consideration will be given by Nunavut's Department of Environment to management methods that differ from instructions provided in the Guideline where it can be demonstrated that the proposal would result in an equivalent level of environmental protection.

Conclusion

Antifreeze is a substance that, when added to a liquid, lowers the freezing point of the liquid. The most common types of antifreeze used in Nunavut are ethylene glycol and propylene glycol solutions, although others may be found in smaller quantities including methyl hydrate. Glycols are commonly used in automotive and heavy-duty engine coolants, building heating system heat transfer fluids and as aircraft and runway de-icers at airports. Corrosion inhibitors and other chemicals are added to improve the performance of the antifreeze and extend its operational life. The *Environmental Guideline for Waste Antifreeze* is an introduction to the management of ethylene glycol and propylene glycol antifreeze. It provides information on the characteristics of antifreeze, possible effects on the environment and human health and guidance on proper storage, transportation and disposal.

Familiarity with the Guideline does not replace the need for the owner or person in charge, management or control of waste antifreeze to comply with all applicable federal and territorial legislation and municipal by-laws. The management of antifreeze may also be controlled through permits and licenses issued by Nunavut's co-management boards, Indian and Northern Affairs Canada and other regulatory agencies. These permits and licenses must be complied with at all times.

For additional information on the management of waste antifreeze, or to obtain a listing of available guidelines, go to the Department of Environment web site or contact the Department at:

Environmental Protection Division
Department of Environment
Government of Nunavut
Inuksugait Plaza, P.O. Box 1000, Station 1360
Iqaluit, Nunavut X0A 0H0

Telephone: (867) 975-7729

Fax: (867) 975-7739

Email: EnvironmentalProtection@gov.nu.ca

Website: <http://env.gov.nu.ca/programareas/environmentprotection>

References

Environment Canada. *Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations*, (2005).

<http://www.ec.gc.ca/lcpe-cepa/eng/regulations/detailReg.cfm?intReg=84>

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Government of Nunavut, Department of Environment. Environmental Guideline for the General Management of Hazardous Waste, (2010).

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J. T. Baker. Material Safety Data Sheet - Ethylene Glycol.

<http://www.jtbaker.com/msds/englishhtml/E5125.htm>

J. T. Baker. Material Safety Data Sheet - Propylene Glycol

<http://www.jtbaker.com/msds/englishhtml/p6928.htm>

APPENDICES

APPENDIX 1 - ENVIRONMENTAL PROTECTION ACT

The following are excerpts from the *Environmental Protection Act*

1. "Contaminant" means any noise, heat, vibration or substance and includes such other substance as the Minister may prescribe that, where discharged into the environment,
 - (a) endangers the health, safety or welfare of persons,
 - (b) interferes or is likely to interfere with normal enjoyment of life or property,
 - (c) endangers the health of animal life, or
 - (d) causes or is likely to cause damage to plant life or to property;

"Discharge" includes, but not so as to limit the meaning, any pumping, pouring, throwing, dumping, emitting, burning, spraying, spreading, leaking, spilling, or escaping;

"Environment" means the components of the Earth and includes

- (a) air, land and water,
- (b) all layers of the atmosphere,
- (c) all organic and inorganic matter and living organisms, and
- (d) the interacting natural systems that include components referred to in paragraphs (a) to (c).

"Inspector" means a person appointed under subsection 3(2) and includes the Chief Environmental Protection Officer.

- 2.2 The Minister may
 - (a) establish, operate and maintain stations to monitor the quality of the environment in the Territories;
 - (b) conduct research studies, conferences and training programs relating to contaminants and to the preservation, protection or enhancement of the environment;
 - (c) develop, co-ordinate and administer policies, standards, guidelines and codes of practice relating to the preservation, protection or enhancement of the environment;
 - (d) collect, publish and distribute information relating to contaminants and to the preservation, protection or enhancement of the environment:
3.
 - (1) The Minister shall appoint a Chief Environmental Protection Officer who shall administer and enforce this Act and the regulations.
 - (2) The Chief Environmental Protection Officer may appoint inspectors and shall specify in the appointment the powers that may be exercised and the duties that may be performed by the inspector under this Act and regulations.
5.
 - (1) Subject to subsection (3), no person shall discharge or permit the discharge of a contaminant into the environment.
 - (3) Subsection (1) does not apply where the person who discharged the contaminant or permitted the discharge of the contaminant establishes that
 - (a) the discharge is authorized by this Act or the regulations or by an order issued under this Act or the regulations;
 - (b) the contaminant has been used solely for domestic purposes and was discharged from within a dwelling house;
 - (c) the contaminant was discharged from the exhaust system of a vehicle;

- (d) the discharge of the contaminant resulted from the burning of leaves, foliage, wood, crops or stubble for domestic or agricultural purposes;
- (e) the discharge of the contaminant resulted from burning for land clearing or land grading;
- (f) the discharge of the contaminant resulted from a fire set by a public official for habitat management of silviculture purposes;
- (g) the contaminant was discharged for the purposes of combating a forest fire;
- (h) the contaminant is a soil particle or grit discharged in the course of agriculture or horticulture; or
- (i) the contaminant is a pesticide classified and labelled as "domestic" under the *Pest Control Products Regulations* (Canada).

(4) The exceptions set out in subsection (3) do not apply where a person discharges a contaminant that the inspector has reasonable grounds to believe is not usually associated with a discharge from the excepted activity.

- 5.1. Where a discharge of a contaminant into the environment in contravention of this Act or the regulations or the provisions of a permit or license issued under this Act or the regulations occurs or a reasonable likelihood of such a discharge exists, every person causing or contributing to the discharge or increasing the likelihood of such a discharge, and the owner or the person in charge, management or control of the contaminant before its discharge or likely discharge, shall immediately:
- (a) subject to any regulations, report the discharge or likely discharge to the person or office designated by the regulations;
 - (b) take all reasonable measures consistent with public safety to stop the discharge, repair any damage caused by the discharge and prevent or eliminate any danger to life, health, property or the environment that results or may be reasonably expected to result from the discharge or likely discharge; and
 - (c) make a reasonable effort to notify every member of the public who may be adversely affected by the discharge or likely discharge.
6. (1) Where an inspector believes on reasonable grounds that a discharge of a contaminant in contravention of this Act or the regulations or a provision of a permit or license issued under this Act or the regulations has occurred or is occurring, the inspector may issue an order requiring any person causing or contributing to the discharge or the owner or the person in charge, management or control of the contaminant to stop the discharge by the date named in the order.
7. (1) Notwithstanding section 6, where a person discharges or permits the discharge of a contaminant into the environment, an inspector may order that person to repair or remedy any injury or damage to the environment that results from the discharge.
- (2) Where a person fails or neglects to repair or remedy any injury or damage to the environment in accordance with an order made under subsection (1) or where immediate remedial measures are required to protect the environment, the Chief Environmental Protection Officer may cause to be carried out the measures that he or she considers necessary to repair or remedy an injury or damage to the environment that results from any discharge.

APPENDIX 2 – GOVERNMENT AND INDUSTRY CONTACTS

Government of Nunavut

Environmental Protection Division
Department of Environment
Inuksugait Plaza
P.O. Box 1000, Station 1360
Iqaluit, Nunavut X0A 0H0
Telephone: (867) 975-7729 Fax: (867) 975-7739

Motor Vehicles Division
Department of Economic Development and
Transportation
P.O. Box 10
Gjoa Haven, Nunavut X0B 1J0
Telephone: (867) 360-4615 Fax: (867) 360-4619

Workers' Safety and Compensation Commission
P.O. Box 669
Baron Building/1091
Iqaluit, Nunavut X0A 0H0
Telephone: 1-877-404-4407 (toll free)
Fax: 1-866-979-8501

Department of Community and Government
Services (all Divisions)
P.O. Box 1000, Station 700
4th Floor, W.G. Brown Building
Iqaluit, Nunavut X0A 0H0
Telephone: (867) 975-5400 Fax: (867) 975-5305

Office of Chief Medical Health Officer of Health
Department of Health and Social Services
P.O. Box 1000, Station 1000
Iqaluit, Nunavut X0A 0H0
Telephone: (867) 975-5774 Fax: (867) 975-5755

Government of Canada

Indian and Northern Affairs – Nunavut Region
P.O. Box 2200
Iqaluit, Nunavut X0A 0H0
Telephone: (867) 975-4500 Fax: (867) 975-4560

Environment Canada (NWT and Nunavut)
5019 52nd Street
Yellowknife, Northwest Territories X1A 1T5
Telephone: (867) 669-4730 Fax: (867) 873-8185

Department of Transport – Road, Rail, Marine, Air
P.O. Box 8550
344 Edmonton Street
Winnipeg, Manitoba R3C 1P6
Telephone: 1-888-463-0521 (toll free)
Fax: (204) 983-8992 Road, Rail and Marine
Fax: (204) 983-1734 Air

Industry

Antifreeze Recyclers Association of America
303 Cheryl Avenue
Durham, North Carolina USA 27712
Telephone: (919) 477-5544 Fax: (919) 479-5681