

Guideline for Ozone Depleting Substances (ODSs)

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1 Introduction

The stratospheric ozone layer helps filter the sun's harmful ultraviolet (UV) radiation from the earth. Increased UV radiation harms human health and damages animal and plant life. Evidence shows that the main causes of ozone depletion are the releases of manufactured chlorofluorocarbons (CFC's), halons and a few other chemicals into the atmosphere. Hence, these materials are known as ozone depleting substances (ODSs). As one of 134 nations ratifying the Montreal Protocol, an international agreement to protect the ozone layer, Canada is committed to eliminating releases of ODSs.

The intent of this guideline is to assist in the management of ozone depleting substances in the Northwest Territories (NWT). This guideline provides requirements and direction regarding the release, servicing, training, record keeping, labelling and disposal of equipment containing ODSs. For the purposes of this guideline, ODSs include certain air conditioning and refrigerant agents as well as substances contained in certain fire extinguishing equipment. The guideline targets commercial applications which account for 78% of the total sum of stored, leaked and consumed ODSs in the NWT. The total quantity of ODSs in the NWT amounts to over 65 tonnes.

The Guideline for Ozone Depleting Substances does not cover the production, importing or exporting of new, unused ODSs. These activities are controlled under federal regulations by Environment Canada.

This publication is a general guideline affecting the use of ODSs in the NWT. Section 2.2 of the *Environmental Protection Act* (EPA) gives the Minister of Resources, Wildlife and Economic Development the authority to develop, coordinate and administer guidelines. This guideline complements existing acts and regulations that should be consulted for interpretation and application.

1.1 Definitions

<i>Air conditioning or Refrigeration equipment</i>	Heat pump, air conditioning, or refrigeration equipment including any motor vehicle air conditioners which contain an ozone depleting substance.
<i>Certified service technician</i>	A technician who is otherwise qualified to service ODS containing equipment and has successfully completed an environmental awareness course for ODSs certified by Environment Canada.
<i>Code of Practice</i>	The Environment Canada publication entitled <u>Code of Practice for the Reduction of Chlorofluorocarbon Emissions from Refrigeration and Air Conditioning Systems</u> (EPS/1/RA/1 March 1991, original date) and subsequent updates.

<i>Fire extinguishing equipment</i>	A portable or fixed unit or system used to extinguish fire, that contains an ozone depleting substance.
<i>Motor vehicle air conditioner</i>	An air conditioning system on a motor vehicle which is a mechanical vapour compression refrigerant system that provides cooling for the passenger compartment of the vehicle and contains an ozone depleting substance as a refrigerant.
<i>Ozone depleting substance</i>	A chlorofluorocarbon, halon or any other substance (ODS) listed in Appendix A of this guideline that has the potential to destroy ozone in the stratosphere.
<i>Portable fire extinguisher</i>	A hand-held or wheeled fire extinguisher containing an ozone depleting substance.
<i>Recover</i>	Collecting an ozone depleting substance in a container which is not regularly a component of the system from which the ODS was removed.
<i>Recycle</i>	Restoring a recovered ozone depleting substance to acceptable purity levels by filtering, drying or distilling.
<i>Servicing</i>	The act of repairing, maintaining or adjusting a component of fire extinguishing, air conditioning, or refrigeration equipment, where the component contains an ozone depleting substance.

2 Roles & Responsibilities

2.1 Department of Resources, Wildlife and Economic Development, Environmental Protection Service

The Department of Resources, Wildlife and Economic Development, Environmental Protection Service (EPS) is responsible for initiatives which control the discharge of contaminants and reduce the impact on the natural environment. EPS is responsible for ensuring that waste management procedures, emission levels and environmentally acceptable disposal methods are maintained. Contact EPS for a listing of relevant regulations and guidelines.

A waste manifest form must accompany ODSs recovered from commercial equipment if moved off site for storage, recycling or disposal. For further information on hazardous waste manifesting please refer to the [Guideline for the General Management of Hazardous Waste in the NWT](#) or contact EPS. Registration numbers and waste manifest forms are available by contacting EPS.

2.2 Other Regulatory Agencies

Environment Canada under the Canadian Environmental Protection Act's *Chlorofluorocarbon Regulations* (SOR/90-127), *Ozone-depleting Substances Regulations* (SOR/94-408) and

Ozone-depleting Substances Products Regulations (SOR/90-584) control the import, manufacture, use, sale and export of bulk chlorofluorocarbons, hydrobromofluorocarbons, halons, carbon tetrachloride and methyl chloroform. These regulations reflect Canada's international commitments under the Montreal Protocol to eliminate production and consumption of ODSs.

The Northwest Territories' Department of Municipal and Community Affairs, through the Office of the Fire Marshal is involved with ODSs because several types of fire extinguishing equipment contain halons.

2.3 Owners

Building/facility owners may be affected by phase-outs of ODSs. ODSs are most often found in air conditioning or refrigeration equipment or as halons in fire extinguishing systems. Owners have the responsibility to prevent releases of ODS from equipment.

Automobile owners must not ignore leaky air conditioning equipment containing ODS.

Owners of fire extinguishing equipment containing a halon should be aware of the presence of an ODS in the equipment. Replacement halons are no longer being manufactured or imported into Canada. As a result, these owners should consider plans to phase out the use of halon containing fire extinguishing equipment.

2.4 Service Technicians

Certified service technicians should be hired to repair leaks or damages to equipment containing the ODS as quickly as possible. Service technicians should not fill leaking equipment. Technicians must use proper recovery/recycling equipment and methods to prevent the release of the ODS into the environment. Section 3.5 of this guideline provides additional information on servicing. The technician should inform the building owner when they become aware of leaking equipment.

Automobile service technicians have similar responsibilities to those described above. Only certified technicians should repair leaks to automobile air conditioning equipment.

2.5 Vendors of ODSs

Vendors who sell ODSs other than as part of equipment also have a role in the management of these materials. Vendors are responsible for selling ODSs to only certified technicians. Vendors are encouraged to ensure industry stewardship of ODS refrigerants and fire extinguishing equipment.

3 Standards

The following sections outline the requirements for managing ODSs substances in the NWT.

3.1 Release of ODS

ODS releases should not be allowed. The following are the major sources of ODSs in the NWT:

- P refrigeration equipment, including some indoor ice making equipment;
- P air conditioning equipment;
- P motor vehicle air conditioners;
- P fire extinguishing equipment;
- P equipment used in the recovery, recycling or storage of an ODS.

Careful attention should be paid when handling these pieces of equipment. Any leaks in equipment should be repaired before adding an ODS. When servicing, testing or discarding fire extinguishing, air conditioning or refrigeration equipment the certified technician should recover the ODS for reuse or recycling.

Small communities where certified service technicians are not generally available may contact EPS for assistance on developing a plan to properly handle ODS containing equipment including discarded refrigerators and freezers.

3.1.1 Reported Release

The following release limits are in accordance with the *Environmental Protection Act's Spill Contingency Planning and Reporting Regulations*.

Any release of an ODS listed in Appendix A of this guideline, and classified as a class 2 (compressed gas), under *Transportation of Dangerous Goods Regulations* (TDGR) from containers with a capacity greater than 100 L, must be reported immediately to the 24 Hour Spill Report Line by calling (403) 920-8130.

Similarly, a release of 5L or greater of an ODS listed in Appendix A of this guideline, and classified as a class 6 (poisonous substance), under TDGR, must be reported immediately to the 24 Hour Spill Report Line by calling (403) 920-8130.

3.2 Servicing Certification

Only certified technicians should service air conditioning, fire extinguishing, refrigeration or motor vehicle air conditioner equipment. To become certified, a service technician shall successfully complete an environmental awareness course for ODSs certified by Environment Canada¹. Only a certified technician may purchase or possess an ozone depleting substance

¹ For environmental awareness certification in the NWT contact Aurora College, Thebacha campus. Contact the Environmental Protection Service for a listing of courses elsewhere.

for the purpose of servicing equipment containing an ODS. Companies employing service technicians will maintain records indicating which employees are certified to service ODS containing equipment.

3.3 Sales Record

If a certified technician purchases an ODS other than as a component in another product, the vendor will require the certified technician to sign an acknowledgement of receipt of the ODS. The vendor should keep a sales record indicating the type of ODS, the date of sale, as well as the name and company of the certified technician.

3.4 Record Keeping and Labelling

All persons who service refrigeration, fire extinguishing or air conditioning equipment with an ozone depleting substance should keep an accurate log of the particulars of the event including quantities, date, name of business and certified technician involved. The record should be tabled chronologically and be made available for inspection by an inspector under the *Environmental Protection Act*. All information and records referred to in this guideline should be maintained for a period of two years.

All new equipment imported into, installed or sold in the NWT that contains an ODS should be clearly labelled with the quantity and type of ODS contained in the equipment.

All vendors and service companies who are required to maintain records are requested to initially provide the Environmental Protection Service (EPS) in writing, the name and mailing address of the company as well as a contact name.

3.5 Servicing

Any technician who services refrigeration, fire extinguishing or air conditioning equipment should do so in accordance with the Code of Practice and this guideline. An ozone depleting substance should never be used for the purposes of leak testing refrigeration or air conditioning equipment. Technicians servicing air conditioning or refrigeration equipment should use equipment that can recover and contain an ODS. Recovery and recycling equipment should meet or exceed minimum performance standards set out in Appendix B.

3.6 Disposal of Refrigeration Equipment

Any equipment that contains an ozone depleting substance should be serviced by a certified technician, and the CFCs or HCFCs removed prior to disposal. Technicians should place a notice on the piece of equipment stating; the date of the service, the certified technician and company name as well as an indication that the equipment no longer contains refrigerant.

Household refrigeration equipment delivered to a municipal solid waste landfill is exempt from requiring removal of ODSs providing the landfill has a separate area identified and prepared for storage of this equipment. Municipalities are encouraged to bring in certified technicians to remove ODSs from stored equipment when quantities warrant. Remote, isolated, small communities where certified service technicians are not generally available may contact EPS for assistance on developing a plan to properly manage ODS containing equipment including discarded refrigerators and freezers.

3.7 Motor Vehicle Air Conditioners

Servicing a motor vehicle air conditioner requires the technician to follow the methods set out in the Code of Practice and the Society of Automotive Engineers (SAE) Standard J-1989. A motor vehicle can not be discarded unless the ozone depleting substance used as a refrigerant in the air conditioner is recovered. Any motor vehicle delivered to a municipal solid waste landfill is exempted from requiring removal of ODSs providing the landfill has a separate area identified and prepared for storage of this equipment. Municipalities are encouraged to bring in certified technicians to remove ODSs from stored equipment when quantities warrant.

3.8 Fire Extinguishing Equipment

Fire extinguishing equipment can not be disposed of unless the ODS is recovered. Recovered halons can be used to provide recharge quantities to existing systems. The Underwriters' Laboratories of Canada (ULC) has published two standards that address halon recycling; Servicing of Halon Extinguishing Systems and Halon Recovery and Re-conditioning Equipment.

It is recommended that a person who owns fire extinguishing equipment that contains more than 40 kgs of an ODS should evaluate alternatives. They should prepare a management plan to eliminate the use of halons. Environment Canada's Environmental Code of Practice on Halons can be used as a guide in developing a halon management plan.

The Montreal Protocol required a phase-out of halon production and consumption by January 1, 1994. However, the Montreal Protocol allows the continued trade of recycled halons, i.e. those produced before January 1, 1994.

Owners of portable fire extinguishers, including marine and household systems, containing an ODS are encouraged to be taken out of service and sales stopped by December 31, 1996.

4 Conclusion

This document is intended as a source of basic information about the issues involved in the management of ODSs. It does not replace the existing legislation which is referenced in the guideline. If you have any questions or concerns please contact the appropriate agency before proceeding.

1. Environmental Protection Service
Department of Resources, Wildlife and Economic Development
600, 5102-50 th Avenue
Yellowknife, NT, X1A 3S8
Phone (867) 873-7654; Fax (867) 873-0221
2. Office of the Fire Marshal
Department of Municipal and Community Affairs
600, 5201 - 50th Avenue
Yellowknife, NT, X1A 3S9
Phone (867) 873-7469; Fax (867) 873-0260
3. Environmental Protection Branch
Environment Canada
5204 - 50th Ave., Suite 301
Yellowknife, NT, X1A 1E2
Phone (867) 669-4725; Fax (867) 873-8185
4. Commercial Chemicals Evaluation Branch
Environment Canada
351 St. Joseph Blvd.
Hull, PQ, K1A 0H3
Phone (819) 953-1675; Fax (819) 994-0007
5. The Heating, Refrigerating and Air Institute of Canada (HRAI)
5045 Orbiter Drive, Bldg. 11, Suite 300
Mississauga, ON, L4W 4Y4
Phone: 1-800-267-2231
6. Manitoba Ozone Protection Industry Association Inc. (MOPIA)
2141 - B Henderson Highway
Winnipeg, MB, R2G 1P8
Phone (204) 338-0804; Fax (204) 338-0810

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Government of the Yukon, Ozone Depleting Substances (ODS) Regulations (Draft), Whitehorse, YT, Environmental Protection & Assessment Branch, Department of Renewable Resources, (1994).

Society of Automotive Engineers (SAE), Standard J-1989.

Underwriters Laboratories of Canada (ULC), Halon Recovery and Reconditioning Equipment, ULC/ORD-C1058.5-1993.

Underwriters Laboratories of Canada (ULC), The Servicing of Halon Extinguishing Systems, ULC/ORD-C1058.18-1993.

Appendix A

Ozone Depleting Substances

1. Chlorofluorocarbons (CFC's)

a)	CFC-11	trichlorofluoromethane	Not restricted under TDG
	CFC-12	dichlorofluoromethane	TDG class 2.2 Non-flammable gas
	CFC-113	trichlorotrifluoroethane	Not restricted under TDG
	CFC-114	dichlorotetrafluoroethane	TDG class 2.2 Non-flammable gas
	CFC-115	chloropentafluoroethane	TDG class 2.2 Non-flammable gas

b) All other CFCs . Consult TDGA for classification.

c) All isomers and mixtures containing any of the above.

2. Hydrochlorofluorocarbons (HCFC's)

a)	HCFC-22	chlorodifluoromethane	TDG class 2.2 Non-flammable gas
	HCFC-123	dichlorotrifluoroethane	Not restricted under TDG
	HCFC-124	chlorotetrafluoroethane	TDG class 2.2 Non-flammable gas

b) All other HCFC's not specifically listed. Consult TDGA for classification.

c) All isomers and mixtures containing any if the above.

3. Bromofluorocarbons (Halons)

a)	Halon-1211	bromochlorodifluoromethane	Not restricted under TDG
	Halon-1301	bromotrifluoromethane	TDG class 2.2 Non-flammable gas
	Halon-2402	dibromotetrafluoroethane	Not restricted under TDG

b) All other halons not specifically listed. Consult TDGA for classification.

c) All isomers and mixtures containing any of the above.

4. Chlorocarbons

a)	Trichloroethane or methyl chloroform	TDG class 6.1 Poison
	Carbon tetrachloride	TDG class 6.1 Poison

b) All isomers and mixtures containing any of the above.

Appendix B

Performance Standards for ODS Recycling or Recovery and Recycling Devices

1. Devices for the recovery and recycling of an ozone depleting substance designed to be used with the type of air conditioning or refrigeration equipment listed in Column I of Table 1 must, during normal operation, be capable of ensuring removal of the refrigerant from the equipment being serviced by reducing the system pressure, below atmosphere, to the level listed in Column II of Table 1 opposite the type of equipment.

Table 1

Column I		Column II
	inches of mercury (vacuum)	micrometers of mercury (absolute pressure)
Very high pressure equipment	0	760000
High pressure equipment with a charge of 23 kg or less	10	506000
High pressure equipment with a charge of more than 23 kgs	20	252000
Intermediate pressure equipment	25	125000
Low pressure equipment	29	23000

2. Devices for recovery or recovery and recycling intended for use with small appliances that contain an ozone depleting substance in their cooling system such as household refrigerants, or household freezers must recover a minimum of 90% of the refrigerant in the cooling system of the appliance. Devices for recovery and recycling intended for use with small appliances that do not have an operational compressor must recover a minimum of 80% of the refrigerant in the cooling system of the appliance.