



FACT SHEET

OZONE-DEPLETING SUBSTANCES IN REFRIGERATION AND AIR CONDITIONING APPLICATIONS

INTRODUCTION

Certain chemicals are recognized as ozone-depleting substances (ODS) because they breakdown in the stratosphere and release chlorine or bromine, which destroy the stratospheric ozone layer. Most of these substances are also greenhouse gases. Ozone-depleting substances are used as foam blowing agents, solvents, fire extinguishing agents and refrigerants for air conditioning and refrigeration applications.

The purpose of this fact sheet is to address frequently asked questions and provide information on the phase-out of ODSs, namely chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), in the air conditioning and refrigeration sectors. For information on the phase-out of other ODSs, please consult Environment Canada's Stratospheric Ozone Web Site at: <http://www.ec.gc.ca/ozone>.

CANADA'S OZONE LAYER PROTECTION PROGRAM

In Canada, the federal and provincial/territorial governments share regulatory responsibility for ozone layer protection. The federal government is responsible for implementing controls needed to meet Canada's obligations under the Montreal Protocol, and for regulating federal facilities which are not covered by provincial regulations. The provincial/territorial governments control the use and handling of these substances. A list of the federal and provincial/territorial ODS Regulations is available on Environment Canada's Stratospheric Ozone Web Site at: <http://www.ec.gc.ca/ozone>.

MONTREAL PROTOCOL

In 1987, Canada signed an international multilateral environmental agreement called the *Montreal Protocol on Substances that Deplete the Ozone Layer* (Montreal Protocol). This agreement, which has been signed and ratified

by more than 180 countries, has established a schedule to reduce the production and importation of ozone-depleting substances.

Canada has adopted regulations to meet its Montreal Protocol commitments. Under the *Canadian Environmental Protection Act, 1999*, Environment Canada administers the *Ozone-depleting Substances Regulations, 1998* and its subsequent amendments. These regulations control the import, manufacture, use, sale and export of ODSs. They require gradual reductions of the production and import of these substances according to the following fixed schedule established by the Montreal Protocol:

Substance	Reduction	Date
Halons	100%	January 1, 1994
Carbon tetrachloride	100%	January 1, 1995
CFCs	100%	January 1, 1996
Methyl chloroform	100%	January 1, 1996
HBFCs	100%	January 1, 1996
Methyl bromide	25%	January 1, 1998
	50%	January 1, 2001
	70%	January 1, 2003
	100%	January 1, 2005
HCFCs	35%	January 1, 2004
	65%	January 1, 2010
	90%	January 1, 2015
	99.5%	January 1, 2020
	100%	January 1, 2030

CANADA'S PHASE-OUT STRATEGY

Canada's Strategy to Accelerate the Phase-Out of CFC and Halon Uses and to Dispose of the Surplus Stocks (Phase-Out Strategy) is part of the on-going process to fulfill Canada's commitment to protect the earth's ozone layer. Parties to the Montreal Protocol have agreed to develop life-cycle management strategies for CFCs and Halons. The Phase-Out Strategy consists of specific approaches to phase-out uses of CFCs and Halons and to dispose of the surplus substances. The *Canadian Council of Ministers of the Environment* (CCME) approved the Phase-Out Strategy on May 1, 2001.



There are two separate components of the Phase-Out Strategy. The first is general in nature which provides the “infrastructure” needed to achieve the objectives of the Strategy. The “infrastructure” consists of extended producer responsibility programs, consideration of market force instruments and communication of information to stakeholders.

The second component of the Phase-Out Strategy consists of specific phase-out approaches for individual industry sectors. These phase-out approaches will become regulatory requirements once the federal, provincial and territorial governments adopt regulations to implement the Phase-Out Strategy.

A summary of the sector specific approaches for the air conditioning and refrigeration applications is provided in the following table:

Sector	Approach
Mobile Air Conditioning	Prohibit refill with CFCs as soon as possible.
Mobile Refrigeration	Prohibit refill with CFCs effective 2003.
Household Appliances	Enhance implementation of existing recovery programs; If necessary, add a ban on converting equipment to use CFCs.
Commercial Refrigeration and Air Conditioning	Staged CFC refill ban effective by year: <ul style="list-style-type: none"> • equipment < 5 HP: 2004 • equipment 5 - 30 HP: 2005 • equipment > 30 HP: 2006.
Chillers	Limit releases from low pressure purges to less than 0.1 kg/kg air effective 2003; Require conversion or replacement of CFC-containing chillers at next overhaul effective 2005.

THE NATIONAL ACTION PLAN

Canada has developed and implemented a *National Action Plan for the Environmental Control of Ozone-Depleting Substances and their Halocarbon Alternatives* (NAP) to ensure a national framework for the implementation of Canada’s ozone layer protection program is realized. The NAP identifies tasks necessary to ensure that consistent, progressive actions take place to control all aspects of pollution prevention and all industry sectors using ozone-depleting substances and their halocarbon alternatives (HFCs and PFCs). The NAP has been updated and approved by CCME in May 2001 to reflect the status of previous tasks and identify new tasks for the implementation of the Phase-Out Strategy.

These new tasks include:

- Encourage industry to develop Extended Producer Responsibility programs and participate in their development;
- Develop and implement control measures needed to support the extended producer responsibility programs;
- Develop awareness programs to inform stakeholders of the Phase-Out Strategy;
- Ensure that control measures developed to implement the Phase-Out Strategy form a clear and comprehensive backdrop among jurisdictions; and
- Implement the sector specific control measures and other activities identified in the Phase-Out Strategy.

The Phase-Out Strategy and the National Action Plan are available on Environment Canada’s Stratospheric Ozone Website at <http://www.ec.gc.ca/ozone>.

Requests for further information can be forwarded to the following:

Josée Trudel,
Head, Ozone Protection Programs Section
Ph. (819) 953-6118
E-mail: josee.trudel@ec.gc.ca





FREQUENTLY ASKED QUESTIONS

THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER

1. Does the Montreal Protocol prohibit the use of CFCs for refrigeration and air conditioning applications?

No. However, the phase-out of CFC use in the refrigeration and air conditioning sectors is addressed by *Canada's Strategy to Accelerate the Phase-Out of CFC and Halon Uses and to Dispose of the Surplus Stocks*. This Strategy includes sector specific refill prohibitions for CFC-containing equipment which is presented in this Fact Sheet. Implementation of this Strategy is subject to regulatory adoption by the provincial, territorial and federal governments.

2. Does the HCFC phase-out schedule under the Montreal Protocol mean I cannot use HCFCs in refrigeration and air conditioning applications?

No. The phase-out schedule for HCFCs refers to the phase-out of the production and importation of these substances and not the use.

3. How will the 35% phase-out of HCFC under the Montreal Protocol be managed in Canada?

In order to meet the 35% phase-out of HCFCs under the Montreal Protocol, Canada's regulatory program is to reduce the quantities of virgin HCFCs manufactured and imported effective January 1, 2004.

4. When is it prohibited to use HCFCs for refrigeration and air conditioning applications?

At the present time, there are no restrictions on the use of HCFCs as refrigerants in the refrigeration and air conditioning sectors.

5. When is it prohibited to manufacture or sell a HCFC refrigeration or air conditioning system?

The *Ozone-depleting Substances Regulations, 1998* stipulates that it is prohibited to manufacture or import a refrigeration or air conditioning system that contains or is intended to contain:

- HCFC-141b, HCFC-142b or HCFC-22 on or after January 1, 2010;
- any HCFC on or after January 1, 2020.

Currently, there is no prohibition to sell a refrigeration or air conditioning system that contains HCFCs.

6. Are Hydrofluorocarbons (HFCs) addressed under the Montreal Protocol?

No. However, HFCs are addressed under the Kyoto Protocol because they are greenhouse gases.

7. Will HFCs be subject to use restrictions?

At the moment, there are no use restrictions being considered for HFCs in the air conditioning and refrigeration sectors. However, the responsible use of HFCs in the air conditioning and refrigeration sector will continue to be regulated by the provincial, territorial and federal governments to minimize emissions of these substances.

Since HFCs are greenhouse gases that are covered by the Kyoto Protocol, further measures to address emissions of HFCs may be undertaken in the future.





FREQUENTLY ASKED QUESTIONS

CANADA'S STRATEGY TO ACCELERATE THE PHASE-OUT OF CFC AND HALON USES AND TO DISPOSE OF THE SURPLUS STOCKS

1. Are the activities and sector specific phase-out approaches identified in the Phase-Out Strategy environmental legislation?

The Phase-Out Strategy itself is not legislation, but it is the framework that the various Canadian jurisdictions (federal, provinces and territories) will be basing their regulations. The *Canadian Council of the Ministers of the Environment* (CCME) has approved the Phase-Out Strategy and the provincial, territorial and federal governments will be implementing control measures at which time the activities and sector specific phase-out approaches will be regulatory requirements.

A summary of the status of implementation for the various jurisdictions is available on Environment Canada's Stratospheric Ozone Website at <http://www.ec.gc.ca/ozone>.

2. Does the Phase-Out Strategy implement bans on the use of CFCs?

No. The Phase-Out Strategy consists of refill prohibitions for CFC-containing equipment. The use of CFCs is allowed until the refill phase-out approach for the particular sector becomes effective. Once the refill prohibition is triggered, CFC-containing systems would have to be converted or replaced with an alternative.

3. What does the horsepower rating identified in the phase-out approach for the commercial refrigeration and air conditioning sector refer to?

The horsepower ratings outlined in the commercial refrigeration and air conditioning sector phase-out approach refer to the power rating of the compressor of the system.

4. When is the conversion or replacement of a CFC-containing chiller required?

The phase-out approach for the chiller sector requires that CFC-containing chillers be converted or replaced at the next overhaul of the chiller after January 1, 2005.

5. What is an overhaul of a chiller?

The objective of the CFC refill prohibition effective upon the major overhaul of chillers is to achieve an orderly transition from CFC-containing chillers to alternative substances and technology. The term "overhaul" is intended to apply to significant repairs or maintenance procedures, such as

- the replacement of any internal sealing devices (i.e. gaskets, o-rings);
- the replacement of any internal mechanical moving parts (i.e. impellers, shafts, bearings and hermetic motors); or
- the repair of an evaporator or condenser heat exchanger tube failure.

6. How is the CFC emission limit of 0.1 kg/kg of air achieved for low pressure chiller purges?

To achieve the low pressure chiller purge emission limit of 0.1 kg/kg of air, purge systems and/or add-on devices that meet this efficiency must be installed.

7. Does the Phase-Out Strategy address HCFCs?

No. The Phase-Out Strategy addresses CFCs and Halons only.

8. What should I do with surplus CFC Stocks?

The Heating, Refrigeration and Air Conditioning Institute (HRAI) has established a not-for-profit organization called Refrigerant Management Canada (RMC) to manage the collection, transportation and disposal of surplus CFCs from the stationary refrigeration and air conditioning sector. More information on the RMC Program is available at: <http://www.hrai.ca/rmc/>.

Surplus CFC stocks can be also be disposed of at licensed disposal facilities, such as Sensor Environmental located in Swan Hills, Alberta or a number of facilities located in the United States or abroad.

