

Motor Vehicle Air Conditioning Systems and Ozone Depletion

The Dangers of Ozone Depletion

Ozone is a natural and vital gas of the upper atmosphere that shields the Earth from the Sun's ultraviolet (UV) rays. Harmful chemicals known as ozone depleting substances (ODS) chemically react with ozone and destroy it, causing the ozone layer to become thinner. This results in increased exposure to UV rays, which may contribute to negative effects on all living organisms, including:

- Poor human and animal health (eye cataracts and skin cancer);
- Unfavourable agricultural and forestry conditions, as well as the deterioration of natural ecosystems; and
- Damage to marine habitats and marine life.

Ozone depleting substances, such as chlorofluorocarbons (CFCs) and halons, are used primarily in refrigerators, fire extinguishers, and air conditioners.

Recent Developments

The Canadian Council of Ministers of the Environment (CCME) recently updated the *National Action Plan for the Environmental Control of ODS and their Halocarbon Alternatives* (NAP), and also developed *Canada's Strategy to Accelerate the Phase-Out of CFC and Halon Uses and to Dispose of the Surplus Stocks* (Strategy).

The Strategy describes specific approaches for the phase-out of uses of CFCs and halocarbons in various sectors throughout Canada – including household appliances and mobile air conditioning – with the ultimate objective of avoiding the release of these substances to the environment.

The NAP outlines how to meet national targets for the control, reduction and elimination of emissions of ODS and halocarbon alternatives. It addresses the ultimate management, control, phase-out and disposal of all ODS in Canada and sets out agreed upon objectives and tasks for harmonized federal and provincial actions.

Taken together, these two documents provide a detailed plan to ensure that Canada will meet or exceed its national and international commitments to protect the Earth's ozone layer. The Yukon fully supports these initiatives, and has already amended the *Ozone Depleting Substances and*

Other Halocarbons Regulations to incorporate some of the actions presented in the Strategy and the Plan. In particular, recharging mobile air conditioning systems with ODS is prohibited under our regulations.

Ozone Depleting Substances and Vehicle Air Conditioners

In vehicles manufactured in 1993 or earlier, the air conditioning systems may use CFCs. If the air conditioning system in such a vehicle is faulty or leaking and requires repairs, technicians are now prohibited from recharging that system with ODS. Instead, a conversion kit that uses an alternative refrigerant blend must be used.

What You Can Do

If you own a vehicle with a leaky or malfunctioning air conditioning system, you do not have to replace it, but you cannot have the system recharged with CFCs. If you choose to convert the system to one using an alternate blend of refrigerants, or if you are a technician who will be retrofitting old systems, the following information may be useful to you:

Types of retrofits available

Class One or Original Equipment Manufacture (OEM) retrofit:

This retrofit follows specific procedures and parts usage as recommended by the vehicle manufacturer, to ensure maximum performance that may be required in hot or high-humidity regions. An OEM retrofit kit may cost from about \$1000 to \$1250.

Class Two Generic Retrofit:

This retrofit follows a generic procedure that can be applied to most vehicles. It has been designed to deliver a good level of performance at a reasonable price. A generic retrofit kit may cost from about \$150 to \$500.

What's Involved with a Retrofit

- A/C system performance and leak tests (these can only be performed on a system that is functioning and holding pressure).
- Assessment of the current system's level of performance and condition, to determine what repairs are required, and the costs involved. Keep in mind that this retrofit conversion is not a cure for a system with existing problems.
- Recovery and containment of all R-12 (CFC) from the system.

The Environment Act and Regulations may be viewed online at legislation.yukon.ca/env.html, or at any Yukon Public Library, territorial agent, territorial representative or regional services office. You may purchase copies at the Inquiry Centre, Government of Yukon Administration Building, 2071-2nd Avenue in Whitehorse, or by mail from the Subscriptions Clerk, Government of Yukon Queen's Printer, Box 2703, Whitehorse, Yukon, Y1A 2C6 (phone 867-667-5783 or toll free 1-800-661-0408, ext. 5783).

- Replacement of the A/C drier to ensure the efficiency of the drying agent and R-134a (non-ODS) compatibility.
- Installation of R-134a service ports to accept R-134 service equipment only. Evacuation of all remaining air and moisture from the A/C system.
- Installation of R-134a-compatible synthetic A/C oil.
- Recharging of system with ozone-friendly R-134a.
- Complete performance and leak test of the retrofitted system.

For more information on the *Environment Act*, please contact:

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Environmental Protection and Assessment Branch
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