

A Special Supplement dedicated to:

## Meeting the 1999 Freeze

UNEP IE

OzonAction Programme under the Multilateral Fund

### Overview

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*Director, UNEP Industry and Environment*

Ten years ago – on 16 September 1987 – the Montreal Protocol on Substances that Deplete the Ozone Layer came into effect. At that time few of us foresaw the historic dimensions that this Protocol was to assume: it has become the symbol of success in international cooperation, the living proof that the 6 billion people on this planet can work constructively together to protect and improve their environment. Thanks to the Vienna Convention and the subsequent Montreal Protocol, in ten years we have gone a long way towards solving a major environmental problem by tackling it head on, and by agreeing increasingly strict regulations for the Protocol's Member States.

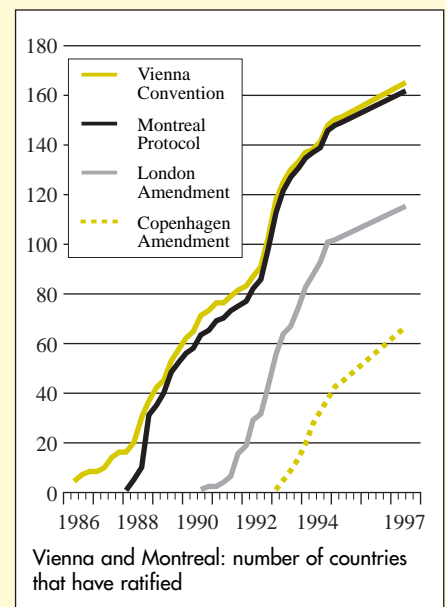
There is no doubt that the Protocol has been of real value: the production of chlorofluorocarbons (CFCs) has already ceased in the developed countries. As a result, emissions of ozone-depleting substances (ODS) into the atmosphere have been falling for several years, and there are now signs that ODS in the stratosphere are at least levelling off if not actually falling. All this is of great significance for the inhabitants of this planet. For example, a recent report by the Institute of Public Health and the Environment in The Netherlands estimates that by 2100 the Montreal

Protocol will be preventing some 1.5 million cases of skin cancer a year in the United States and nearly 550,000 cases in northwest Europe. There will, of course, be equally significant results in other countries and in other areas: ozone depletion causes eye cataracts, kills plankton, alters ecosystems and damages many plastics. While much has been achieved, the biggest steps still lie ahead. On 1 July 1999, developing countries are committed by the Montreal Protocol to freeze their consumption of Annex A CFCs (CFCs-11, -12, -113, -114 and -115) at their average levels of consumption during the period 1995-1997. The date is significant because this will be the first time that developing countries have had to comply with phase-out control measures under the terms of the Protocol.

I am heartened by the fact that several developing countries, through hard work and far-sightedness, have reached this landmark target even ahead of the official schedule. Many others are now finalizing their plans to meet the target on or before time. Even countries that have yet to make a major effort in CFC reduction still have time, with suitable help from the implementing agencies under the Multilateral Fund and the UNEP IE OzonAction Programme, to

honour their commitments. But this is by no means the end of the Programme. Similar restrictions for developing countries on the use of other ODS will soon follow: on halons and methyl bromide by the beginning of 2002 and on ten more CFCs and methyl chloroform by 2003; these restrictions will become increasingly severe in the years that follow until, by 1 January 2040, even the use of hydrochlorofluorocarbons (HCFCs) will have been phased out.

The Vienna Convention and the Montreal Protocol are successful examples of implementation of the 'precautionary principle'. They also show the results that a worldwide vision and partnership can achieve to address a global issue threatening the future of our planet.



Source: UNEP Ozone Secretariat, Nairobi

### Dumping of old technologies

*Resolving the issue to meet the 1999 freeze targets*

**DUNCAN BRACK**

*Senior Research Fellow, Royal Institute of International Affairs*

The problem of 'technology dumping' is a relatively new one in the history of the Montreal Protocol. It is essentially a by-product of the differential phase-

out schedules which apply to Article 5 and non-Article 5 Parties. As total phase-out of CFCs approached in industrialized countries, an export trade

developed in CFC-using equipment which was soon to become redundant. The destination? Developing countries, where supplies of CFCs were still available for servicing and maintenance.

The issue was first raised within the Protocol in 1995. The trigger was a hotel chain, which had removed air-conditioning equipment from its hotels in an industrialized country as it used

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## Dumping of old technologies

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refrigerants which were about to become unobtainable there (they were due for phase-out on 1 January 1996), and had installed it in hotels belonging to the same chain in a developing country.

It became clear during later discussions that this was a matter of widespread concern to many developing countries. Instances were cited of second-hand CFC-using refrigerators from European countries (where markets for hydrocarbon-using refrigerators have expanded rapidly) being imported and sold at low prices in developing countries. Even worse, it was suggested that some second-hand equipment from Europe was being illicitly shipped to developing countries by firms paid to break it up and dispose of the refrigerants.

In some cases, the transfer of old technology may make sense. Few developing countries are manufacturers of such goods and must import them from somewhere, and extending the lifetime of machinery is often environmentally beneficial. There are, however, two major problems. First, since the machinery is more or less unusable in its country of origin, it can be 'dumped' (in the true economic sense of the word) at artificially low prices, disrupting local markets. Secondly, it clearly undermines the efforts of the growing number of Article 5 Parties which are trying to implement phase-out schedules faster than those required by the Protocol.



*Andy Crump/Still Pictures*

The 1995 meeting of the Parties in Vienna accordingly resolved to recommend Parties 'to take legislative and administrative measures, including labelling of products, to regulate the export and import, as appropriate, of products containing substances listed in Annexes A and B of the Protocol and of technology used in the manufacturing of such products' (Decision VII/32). The matter was raised again at the Costa Rica meeting in 1996, where calls were made for the countries of origin to implement controls on exports, and for producers to take responsibility for their products. And in the run-up to the Montreal meeting this year, a number of African countries proposed amending Decision VII/32 to recommend non-Article 5 Parties to 'restrict the export to African countries of used products and equipment containing substances listed in Annexes A and B'.

What, then, can be done to restrict this trade in obsolete technology? There is a variety of solutions:

- **Introduce labelling requirements** for all technology containing ODS, as envisaged in Decision VII/32. A relatively straightforward step, this can be implemented through national legislation, and may well be a desirable component of Article 5 Parties' efforts to achieve the 1999 freeze and subsequent phase-out. Labels only provide information; they cannot stop customers buying CFC-using equipment if they want to – and unless they are accompanied by public education and awareness campaigns, customers may not even realize what they are doing.
- **Impose restrictions** on the import (Article 5 Parties) or export (non-Article 5 Parties) of CFC-containing products. Restrictions could include a total or partial ban on trade, or the imposition of tariffs or taxes at the border. Trade restrictions have in fact been used in a number of cases as components of phase-out strategies. If they are used in isolation, however, they might run a risk of challenge under the multilateral trading system administered by the World Trade Organization (WTO). WTO members are not permitted to discriminate between 'like products' on the basis of their country of origin, or between domestic and international production. So banning

imports from non-Article 5 Parties, but not from Article 5 producers, for example, might not be acceptable under the WTO.

Restrictions on imports would be acceptable as long as similar restrictions were imposed on the same kind of domestic machinery. In the case of a ban, what we are talking about here is effectively a total phase-out, jumping straight to the 100 per cent reduction which is not required under the Protocol until 2010. Article 5 Parties could certainly bring that phase-out date forward, and impose a total ban on imports from the earlier date – but treating imports differently from domestic goods in the interim period could cause problems. Taxation or licensing requirements, however, as long as they were applied in a non-discriminatory way, would be acceptable and might provide a sufficient disincentive. (Having introduced potential WTO problems, it should be noted that these would only arise in the context of a complaint raised by one WTO member against the actions of another. If all governments concerned were happy with the trade restrictions, no real problem need arise.)

- **Extend the licensing approach** to a prior informed consent (PIC) procedure. PIC procedures are increasingly used, for example, for shipments of hazardous chemicals, and are similar in practice to the requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); both exporter and importer must give written permission for the trade in advance. Provided all governments involved are satisfied with the procedure, this could provide an important component of a strategy to control the movement of obsolete technology.

The problem of technology dumping is an inevitable result of the existence of differential phase-out schedules. It is made worse by the desire of some developing countries to accelerate their own phase-out schedules – which in itself is clearly a desirable goal. It will not be eliminated completely until total phase-out of all ODS, and the technology which uses them, is achieved throughout the world.

# The Network for ODS Officers

## *Its importance for the successful implementation of the Montreal Protocol*

**INGRID KOKERITZ**

*Stockholm Environment Institute*

It is now ten years since the Montreal Protocol was signed. What has been achieved in these ten years is significant. Legal imports and production of CFCs, halons, 1,1,1-trichloroethane and carbon tetrachloride have ceased in most developed countries, except for certain exempt applications. In developing countries, many projects to convert plants using large quantities of ozone-depleting substances (ODS) to alternative technologies have been started with assistance from the Multilateral Fund.

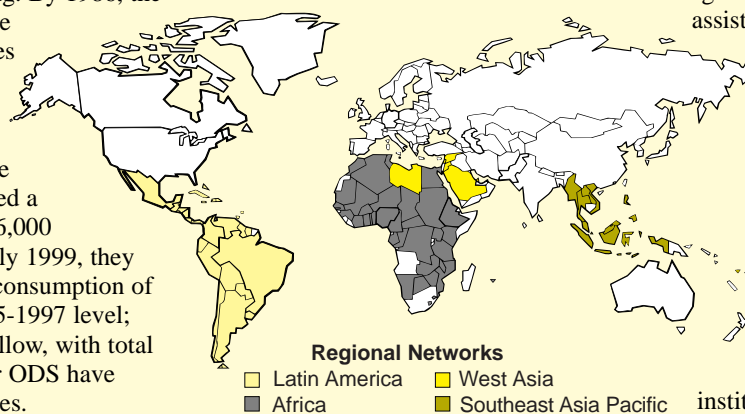
But the real challenge lies ahead. The consumption of CFCs in developing countries is still increasing. By 1986, the developing countries were consuming 110,000 tonnes of CFCs a year. By 1995, 79 of the over 100 developing countries that are now Parties to the Montreal Protocol reported a consumption of some 156,000 tonnes of CFCs. As of July 1999, they will have to freeze their consumption of CFCs at the average 1995-1997 level; further reductions will follow, with total phase-out by 2010. Other ODS have similar reduction schedules.

The main challenge for developing countries will not be to freeze consumption in 1999, even if this will be difficult enough in countries with booming economies, but rather the following reduction steps and the final elimination. These steps require well-structured planning of regulations, training and implementation, which takes considerable time.

This is a major task. A substantial part of the ODS is consumed by small enterprises and individual users. For instance, in many developing countries CFC refrigerants to service mobile and stationary refrigeration and air-conditioning equipment account for 65 per cent or more of total CFC consumption. This consumption is unlikely to disappear by itself, certainly not according to the timetable set out in the Montreal Protocol. Experience from developed countries shows that

consumption in this sector is difficult to control as long as the demand exists.

The capability of developing country governments to control and eliminate their ODS consumption, in particular scattered use by small enterprises and individuals, will therefore be a key to the successful implementation of the Montreal Protocol. Compared to projects to convert individual factories, only limited activities have so far been assigned to assist developing country governments in this task. One of the most important is UNEP's Networks for cooperation between government



officers in charge of coordinating and proposing ODS strategies (ODS Officers' Network, ODSOINET).

The first Network was established in 1993 in Southeast Asia (ODSONET/SEAP), funded by the Swedish Government. ODSOINET/SEAP has become a model for Networks in other regions funded by the Multilateral Fund. At present, there are two Networks in Latin America, two in Africa, one for the Caribbean islands and one for the West Asian countries. Funding was also recently approved for the South Asian countries. Each Network consists of ODS officers from 10 to 20 developing countries (see map) and 2 to 3 developed countries. The Networks meet twice a year. The agenda is decided by the members themselves. These meetings allow ODS Officers to discuss and exchange detailed experience on potential

governmental actions to solve difficult issues, assisting them in designing solutions which are tailor-made for their own country, while at the same time the example from colleagues in the same position creates a powerful leverage and inspiration to achieve results. One example: a regulation controlling distribution and use of CFCs in the Australian state of Victoria, presented at the 1993 ODSOINET/SEAP meeting, is now used as a model for similar regulations in the Philippines and for governmental guidelines in Malaysia.

The collaboration also works between meetings. For instance, the Malaysian ODS Officer participated actively in a national workshop in Viet Nam and influenced the decision on phase-out schedules in Viet Nam. ODS Officers from Malaysia, Thailand and the Philippines have visited Sweden to study the Swedish system for accreditation and training of refrigeration technicians.

Activities are coordinated by a Regional Network Coordinator who assists in identifying and transferring experience between countries.

All Networks are coordinated by a Network Manager at UNEP IE's office in Paris, which enables transfer of experience between the networks.

Some issues require more extensive discussions and involve other parties such as other governmental officers, trade associations and training institutes. UNEP is then asked to request funding for special projects on such issues. One example: UNEP's recent workshop for English-speaking African countries on control and monitoring of ODS consumption, with special emphasis on import and export licensing systems, had its origin in requests from ODSOINET meetings and will serve as a model for similar workshops in other regions. This is very timely as the ninth meeting of the Parties to the Montreal Protocol is likely to require all Parties to introduce import and export licensing systems.

Continued and increased resources for such non-investment related assistance to developing country governments will be critical for the success or failure of the Montreal Protocol itself. This, in turn, will also be of key importance for other treaties because the Montreal Protocol is considered a model for many global environmental agreements.

# The 1999 freeze

## *A first step towards phase-out*

**DR LAMBERT KUIJPERS**

*Chair, UNEP Technology and Economic Assessment Panel*

The 1999 freeze of Annex A, Group I substances – all CFCs – is an important milestone for Article 5 countries along the road to ODS phase-out. This article deals with the freeze and what it means; what needs to be done after 1999; the impact of the funding mechanism and the role of domestic policies in individual developing countries.

The Montreal Protocol Parties decided upon a ten-year grace period for the developing countries with respect to the control schedule as amended by the Parties in London in 1990. Instead of one reference year they agreed on the average consumption over the period 1995-1997 as the maximum for CFC consumption over the period 1 July 1999 to 1 July 2000, the so-called freeze. However, the freeze in 1999 is only the first step towards a complete phase-out; the next control step is a 50 per cent reduction in consumption in 2005. Similar control schedules exist for other ODS after 1999. The freeze is important because it will demonstrate whether the developing countries are able to meet their first commitment under the Montreal Protocol control regime. As July Moyo, Zimbabwe's Secretary for

the Environment, stated in *OzonAction*, now is the time to act. He stressed that 'we are confident that through the coordinated efforts of government and industry, and the assistance provided by the Multilateral Fund, we will meet our targets under the 1999 freeze'.

Is confidence enough? Certainly, there are other issues to be underlined – particularly the fact that the freeze is not a control measure by itself, and that all types of domestic efforts need to be made to cope with the requirements of the Protocol, both for 1999-2000 and for the years thereafter.

A number of difficulties lie ahead. Developing countries' CFC consumption during 1997 will be reported in the course of 1998 which means that one cannot determine earlier than during 1998 what the freeze level will be for the period starting 1 July 1999. Since consumption in 1999 will not be reported earlier than during the year 2000, it will not be possible to determine earlier whether countries were in compliance. It is even more important to stress that the phase-out process has already started: even during the period 1997-1999, the developing countries will have to make

every possible effort to reduce CFC consumption. The Technology and Economic Assessment Panel (TEAP), in its 1996 replenishment report, determined that over the period 1997-1999, US\$436.5 million would be needed for the replenishment of the Multilateral Fund. About US\$200 million would be required for investment projects in the CFC consumption sector; however, of this, US\$50 million should be used to help developing countries meet the freeze, the rest being required to help them reduce consumption. This is obvious given that projects approved in 1998 and 1999 will not affect CFC consumption patterns by 1 July 1999 because of the time required for implementation. However, the choice of technologies for projects approved in 1997 may influence consumption in 1999 since the duration of implementation is technology-dependent. An extra amount of about US\$60 million was recommended by the TEAP to maintain momentum in those developing countries where the reduction in ODS consumption is already under way. This amount will therefore not support countries whose first requirement is to meet the freeze in consumption. The year 1997 is thus the year when countries should have begun to make every possible effort to reduce CFC consumption and meet the 1999 freeze. Fittingly, 1997 is also the tenth anniversary of the Montreal Protocol – a landmark in a continuing process that started in 1987. By the end of 1997, developing countries should put in place, if they have not already done so, domestic policies and regulatory regimes aimed at reducing consumption.

While Investment projects are very important, effective policies are also essential. Considerable amounts of CFCs are consumed in the maintenance of existing refrigeration and air-conditioning equipment. Refrigerant Management Plans, including recovery and recycling, are important tools for reducing consumption in all developing countries but, above all, for low-volume consuming countries. However, these will not work if effective regulatory regimes have not been put in place via appropriate policies before the date of the freeze. Support from the Multilateral Fund, for all types of projects, should be seen as additional to effective policy. At the tenth anniversary of the Montreal Protocol, the most important message for developing countries is this: the freeze is but the first step in a continuing process of putting effective instruments in place to control ODS consumption.

### **HOW MALAYSIA IS REDUCING CFC USE IN MOBILE AIR-CONDITIONING**

Malaysia has successfully reduced CFC use in mobile air-conditioning (MAC) thanks to a recycling project funded by the Multilateral Fund of the Montreal Protocol. The project, which cost US\$0.91 million and was implemented by the World Bank, involved the distribution of recycling equipment, storage tanks and accessories to 200 MAC service workshops. The equipment is intended to recycle CFC-12, the refrigerant most commonly used in MAC units. Hands-on training was given to workshop staff in four phases over the period May to August 1995. A retraining programme is now being carried out to help new operators understand and maintain their recycling machines. A survey in March 1997 showed that most workshops were satisfied with the way the project had been run. The project had been beneficial to them since the machines are profit-making. Many workshops have therefore purchased a second machine, and several workshop owners have suggested expanding the scheme to more workshops and including recycling of HFC-134a. The survey also showed that there had been a 20 per cent reduction in CFC purchased by the workshops, which means that at least 20 per cent of the CFCs in the vehicles serviced are being recycled. The project is eventually expected to prevent the venting to the atmosphere of 200 to 350 tonnes of CFC-12 a year.

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# Refrigerant Management Planning

*A key strategy for LVCs to meet the 1999 freeze*

**STEVE GORMAN and RUMA TAVORATH**

*UNEP IE OzonAction Programme*

Of the 114 Article 5 countries in 1996, 86 were classified as low-volume ODS-consuming countries (LVCs). LVCs are those countries whose consumption of ODS is less than 360 tonnes per annum. Very low volume ODS-consuming countries (VLVCs) are those whose consumption is less than 60 tonnes per annum.

Financial assistance under the Multilateral Fund is provided through Investment projects and Non-Investment projects (including Country Programmes, Institutional Strengthening, Technical Assistance and Training, Networks and Information Dissemination). Though the number and costs of the different types of projects vary considerably, each constitutes a critically important element for Article 5 countries in reaching the 1999 freeze targets and in obtaining their goal of complete ODS phase-out by 2010.

LVCs and VLVCs consume small amounts of ODS, but this is usually in critical sectors, especially export and foreign exchange earning sectors. Around 69 to 100 per cent of ODS consumption is concentrated in the refrigeration sectors, mostly in the servicing and maintenance sub-sectors. There are several barriers to phase-out of ODS in LVCs and VLVCs, including inadequately skilled manpower, institutional constraints, a large and diverse informal sector, lack of information and training on ozone issues, low economies of scale of phase-out projects and lack of sufficient involvement by all major stakeholders.

By July 1999, Article 5 countries are committed to freeze their consumption of Annex A CFCs at the average of 1995-1997 levels. It is therefore imperative to find innovative measures and approaches whereby LVCs and VLVCs can meet their freeze commitments and further phase-out obligations.

To overcome these inefficiencies, the Executive Committee of the Multilateral Fund decided to institute a coherent multi-criteria approach at the national level. A Refrigerant Management Plan (RMP) comprises

such a comprehensive phase-out approach for the refrigeration and air-conditioning sectors. It constitutes an integrated national strategy for cost-effective phase-out of CFCs, which will help countries to meet their freeze commitments and phase-out obligations.

The RMP entails prudent retrofits and timely replacements and is expected to be a critical management tool for LVCs for a smooth transition to non-ODS refrigerants. It is expected to include Training (refrigeration technicians and customs officials), Recovery and Recycling, establishment of Policy instruments including economic instruments and, if required, Investment projects. This phase-out package will take into consideration all existing approved projects and the timing of the initiatives will be planned for the most effective impact on CFC phase-out.

The RMP will enhance the efficiency of project implementation and accelerate the progress of ODS phase-out through improved management and coordination of national activities, and by synchronizing policy-setting with phase-out activities.

The steps for formulating the RMP include the following:

Undertaking country-specific review and analysis of:

- i) Sector and sub-sector background
- ii) Consumption of CFCs
- iii) Production of refrigeration and air-conditioning equipment
- iv) Enterprises undertaking servicing and maintenance

Characterization of the relative importance of sub-sectors on the basis of:

- i) Level of ODS consumption
- ii) Economic importance
- iii) Trade orientation

Assessment of the available and feasible options, including:

Technical options such as:

- i) Emission reduction through good practices
- ii) Recovery and recycling
- iii) Conversion

*Continued on page 16*

## MEETING THE 1999 FREEZE IN GHANA

Ghana is well on the way to phasing out ODS use, thanks to assistance from the Multilateral Fund to strengthen the Ozone Office of Ghana's Environmental Protection Agency (EPA) and the institution of an ODS monitoring and control system. In 1992 Ghana adopted a Country Programme to phase out the use of ODS by the year 2010. Since the Programme began, a number of enforcement, regulatory and legislative measures have been given high priority. The Environmental Protection Agency Act of 1994 and the Pesticide Control and Management Act of 1996 require all importers of industrial chemicals and pesticides to obtain an import permit from the EPA (no ODS are produced in the country). This import permit system includes all the ODS defined under the Montreal Protocol and its Amendments. Two types of import permits are issued: an annual import permit which is valid for one year (January-December) and a single import permit which is valid for the clearance of one consignment of chemicals. Applications received from prospective importers and users of chemicals are screened by the Ozone Office to ensure that no banned chemicals are allowed into the country. Twice a year, the Ozone Office undertakes a survey to collect data on ODS imports and distribution outlets throughout the country. Follow-up visits are made to the distribution outlets and other end-users to ascertain the authenticity of the figures supplied by the distributors. These follow-up visits and the analysis of other data have enabled the Ozone Office to estimate illegal ODS imports and to record the names of those companies and individuals which have not registered with the EPA as chemical importers. With the institutionalization of this ODS monitoring and control system, it is envisioned that no major difficulties will be met in phasing out ODS use in Ghana by 2010.

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## Ten years of the Protocol: good news, favourable trends and issues to watch

With the Montreal Protocol now nearly ten years old, it is a good time to take stock.

### First, the good news:

- CFCs, halons, carbon tetrachloride and methyl chloroform have been phased out in developed countries;
- as a result, the growth rates of CFCs and methyl chloroform in the stratosphere have slowed down;
- industry, government and NGOs have evolved effective forms of partnership for tackling ozone issues; and
- the trend of making decisions based on science and technology assessments has been established.

### Second, the favourable trends:

- 87 Article 5 countries have set up National Ozone Units and prepared phase-out plans;
- more than US\$500 million has been allocated to Article 5 countries and as much again has been pledged until 1999;
- 20,000 tonnes a year of ODS have been phased out in individual projects under the Multilateral Fund, well ahead of target, and a further 75,000 tonnes will be phased out once all approved projects are implemented;
- some Article 5 countries are phasing out ODS faster than required under the Protocol.

### Third, the issues to watch:

- the project-by-project approach has proved complicated in some situations;
- consumption of ODS is still increasing in some Article 5 countries;
- significant work needs to be done to mobilize SMEs and LVCs in phase-out activities;
- policy-making and enforcement still lag behind phase-out progress;
- while the implementation of approved projects has recently been accelerated, it is still slower than Parties would like.

Overall, however, prospects are good for completion of the phase-out schedule for Article 5 countries (see timeline) on schedule.

### Phase-out schedule for Article 5 countries

1 July 1999	2002	2003	2005	2007	2010	2015	2016	2040
freeze of annex A CFCs at 1995-1997 levels	freeze of halons at 1995-1997 and MeBr at 1995-1998 levels	annex B CFCs reduced by 20% from 1998-2000 levels; freeze in methyl chloroform at 1998-2000	annex A CFCs and halons reduced by 50% from 1995-1997; methyl chloroform reduced by 30% from 1998-2000	annex A and B CFCs reduced by 85% from 1995-1997 and 1998-2000 respectively	100% phase-out of CFCs, halons and CCl <sub>4</sub> ; methyl chloroform reduced by 70% from 1998-2000	100% phase-out of methyl chloroform	freeze of HCFCs at 2015 levels	HCFCs phased out

### Refrigerant Management Planning: *Continued from page 15*

Policy options such as:

- Voluntary programmes/agreements
- Legislation and regulations
- Economic instruments

Evaluation of the alternative options for:

- Cost-effectiveness
- Feasibility
- Maximum impact

Formulation of a Refrigerant Management policy.

Development of a Training programme for refrigeration technicians for improving operations, service and maintenance practices.

Establishment of a Recovery and Recycling system.

Conceiving an improved system for collection, monitoring and control of ODS consumption data.

The implementing agencies are assisting some LVCs and VLVCs in the development of their national RMPs. In certain regions UNEP, in cooperation with interested bilateral agencies, is initiating measures for the cost-effective implementation of national RMPs within a regional context. The countries involved will be those that share trade zones and agreements to ensure the effective implementation of customs training programmes and establishment and enactment of legislations.

After a number of RMPs have been completed, an analysis of this strategic approach to assist LVCs will be undertaken.

*OzonAction*, a quarterly publication, is available in Arabic, Chinese, English, French, Portuguese and Spanish.

The contents of this Special Supplement to *OzonAction* are provided for information and do not necessarily represent the policy of UNEP.

**Please send comments and material for publication to Mr. Rajendra Shende, Coordinator, UNEP IE OzonAction Programme.**

## OzonAction

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