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OzonAction

A newsletter dedicated to the protection of the ozone layer and implementation of the Montreal Protocol

UNEP IE quarterly publication

OzonAction Programme under the Multilateral Fund

Thailand and Japan share phase-out success

Thien Mekanontchai, Director General, Department of Industrial Works, Thailand

In January 1997, Thailand became the first developing country in the world to phase out the use of CFCs in refrigerator manufacture, and to use trade controls to protect the global environment. It is important to recognize the corporate leadership and global cooperation that brought about this success.

Four years ago, a Japan-Thai-US trilateral conference was held to promote the transfer of technology necessary to achieve an accelerated phase out of ozone-depleting substances (ODS) in the Thai factories of multinational corporations. More than 30 European, North American and Japanese companies pledged to phase out ODS use in their Thai factories by the end of 1996. The conversion has not been easy. New compressors were developed and subjected to rigorous reliability testing. But the effort was successful because of strong cooperation and commitment to global environment protection by the partners. The facilitative role played by UNEP through the Network of ODS Officers in Southeast Asia and the Pacific, supported by the Government of Sweden, helped forge the successful cooperation.

The Thai government is taking other strong measures to satisfy the obligation to phase out ODS use, and to prevent the accumulation of obsolete CFC refrigerators from abroad. Government regulations banned the import and production of CFC refrigerators in Thailand after 1 January 1997, and reduced import taxes on some materials used in the production of CFC-free refrigerators. Thailand thanks its partners for their initiative and continued assistance throughout this project.

Mr Susumu Shirakawa, Director General, Basic Industries Bureau, MITI, Japan

Japan's Ministry of International Trade and Industry (MITI) congratulates the Government of Thailand on its phase out of CFCs in the manufacture of domestic refrigerators. MITI is proud to be a member of the cooperative team, together with the US Environmental Protection Agency (US EPA) and the Thai Department of Industrial Works, that made this possible.

This success was realized through strong partnership between government and industry, and support from the Japan Industrial Conference for Ozone Layer Protection, the Japan Electrical Manufacturers' Association (JEMA) and the International Cooperative for Environmental Leadership. The voluntary transfer of technology by JEMA to the Thai compressor manufacturer Kulthorn Kirby was especially generous, and played a crucial role in resolving technical problems. Eight JEMA technical missions have been sent to Bangkok since 1993 to assist with compressor tests and to propose improvements in design, materials, manufacturing specifications and quality control standards.

MITI hopes the Thai early phase out will serve as a model, and will inspire other developing countries to seek partnerships with multinational companies as a means of accelerating their ODS phase out.

'I would particularly like to quote the extraordinary success story of Thailand. This is a wonderful cooperation within the framework of the Montreal Protocol. I urge both the developed and developing countries to emulate this example.'

Ms Elizabeth Dowdeswell
Executive Director, UNEP
(from her speech at the 4th Conference of the Parties to the Vienna Convention and the 8th Meeting of the Parties to the Montreal Protocol, San José, Costa Rica, 25 November 1996)

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Parties agree on replenishment at their 8th Meeting

More than 470 representatives from 107 Governments, 10 UN organizations and 38 non-governmental organizations (NGOs) attended the 4th Meeting of the Parties to the Vienna Convention and the 8th Meeting of the Parties to the Montreal Protocol, held in San José, Costa Rica, 25–27 November 1996. The Parties agreed to allocate US$540 million (including US$74 million carried over from the period 1994–96) to the Multilateral Fund to eliminate substantially more than 30 000 tonnes of ODS over the next three years (1997–99).

The representatives of industrialized nations pledged to contribute to the Multilateral Fund and act to protect the ozone layer, while the Group of 77 and China promised to use the money effectively to reduce ozone depletion.

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News from international agencies

Fund Secretariat

The Secretariat distributed the report of the 20th Meeting of the Executive Committee (ExCom) and notified the governments of Article 5 countries of projects and other activities approved for them.

The Secretariat convened a meeting of the Expert Group on the Production of Substitutes for ODS on 14–15 November 1996, which focused on guidelines on compensation for closure of ODS-producing plants. The Secretariat also organized a coordination meeting with the Implementing Agencies, 12–13 December 1996, which discussed the agencies' business plans for 1997 and the actions needed to implement Executive Committee decisions in a coordinated and expeditious manner. The Secretariat began preparations for the 21st ExCom Meeting scheduled for 18–19 February 1997.

The Secretariat participated in the 8th Meeting of the Parties where it assisted the meetings of the Contact Group on the 1997–99 replenishment of the Fund.

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UNEP IE OzonAction Programme

The following five documents were published: three *Sourcebooks of Technologies for Protecting the Ozone Layer* for the foams, aerosol and specialized solvents sector; and two guidebooks (*Regulations to Control Ozone-Depleting Substances* and *Monitoring Imports of Ozone-Depleting Substances*).

UNEP's annual Roundtable Discussion on Knowledge-Sharing Networks for ODS Phase Out was organized during the 1996 International Conference on Ozone Protection Technologies, held in Washington DC in October 1996. This forum focused on the policy requirements of Article 5 countries (see page 9).

Meetings of the ODS Officers Networks for French-speaking Africa and for Latin America South were held in Abidjan, Côte d'Ivoire, and San José, Costa Rica. The 20th ExCom approved eight country programmes and institutional-strengthening projects in seven countries. The OzonAction Programme now has a portfolio of 70 country programmes (49 approved and 21 ongoing) and is implementing 42 institutional-strengthening projects.

Contact: Mrs Jacqueline Aloisi de Larderel, UNEP IE, 39–43 quai André Citroën, 75739 Paris Cedex 15, France
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Internet: http://www.unepie.org/ozonaction.html

UNEP Ozone Secretariat

The Secretariat organized and serviced the Fourth Conference of the Parties to the Vienna Convention and the Eighth Meeting of the Parties to the Montreal Protocol and their Preparatory Meetings, the 15th Meeting of the Implementation Committee (18 November 1996) and the first joint meeting of the Bureaux of the Vienna Convention and the Montreal Protocol.

One of the main issues agreed upon was the amount of the replenishment of the Multilateral Fund for the period 1997–99—US$540 million (see page 1). The Parties to the Vienna Convention also endorsed the recommendations of the Ozone Research Managers that Parties should develop monitoring and archiving of data on ozone, and invited the Global Environment Facility to support increased research and routine monitoring of UV-B radiation.

Contact: Mr K. M. Sarma, UNEP Ozone Secretariat, PO Box 30552, Nairobi, Kenya
Tel: (254) 2 623 885 Fax: (254) 2 623 913
E-mail: madhava.sarma@unep.no
Internet: http://www.unep.org/unep/secretar/ozone/home.htm

UNDP

The 20th ExCom Meeting approved US$13.35 million in new UNDP projects, with US$11.85 million for 33 investment projects in 16 countries which will eliminate 2095 tonnes per year of CFCs. Twenty of these projects will eliminate CFCs in the foam sector, 11 projects will eliminate CFCs in the refrigeration sector (and will also promote CFC recovery and recycling), and 2 projects will eliminate CFCs used in precision cleaning. US$1.5 million was approved to support national ozone units in China, Ghana, India, Malaysia, Mexico, Trinidad and Tobago, Uruguay and Venezuela.

UNDP's cumulative work programme is now US$139 million, comprising 490 projects (including 287 investment projects) in 49 countries which will eliminate 18 137 ODP tonnes. The 136 completed activities have already eliminated 2678 ODP tonnes.

Contact: Mr Frank Pinto, UNDP, 1 United Nations Plaza, New York, NY 10017, United States
Tel: (1) 212 906 5042 Fax: (1) 212 906 6947
E-mail: frank.pinto@undp.org

UNIDO

UNIDO had 26 projects approved at the 20th ExCom meeting, for a value of some US$12.45 million. These included six projects in the refrigeration sector, five in the foams sector, seven each in the solvents and aerosols sector, and one institutional-strengthening project. One project approved for Turkey will use a new refrigeration technology based on liquid carbon dioxide.

UNIDO presented its report on methyl bromide to the 20th ExCom meeting, as a result of which the ExCom was able to adopt interim guidelines on methyl bromide. Furthermore, the ExCom made an allocation of US$100 000 to the three implementing agencies and asked them to prepare demonstration projects using alternatives to methyl bromide, and to present them to the 21st ExCom meeting.

Contact: Mrs A. Tcheknavorian, UNIDO, PO Box 300, A-1400 Vienna, Austria
Tel: (43) 1 211 31 3782 Fax: (43) 1 230 7449
E-mail: mwathie@unido.org

World Bank

At the 20th ExCom meeting, US$19.5 million was approved for World Bank projects in Brazil, Chile, China, India, Indonesia, Jordan, Thailand, Uruguay and Zimbabwe. These projects will eliminate 2710 tonnes of ODS in the aerosol, foam, refrigeration and solvent sectors.

The Bank organized a workshop for its financial agents during 24–25 October 1996 in Washington DC. The meeting was attended by 28 participants from 13 countries, who recommended, among other things, that the Bank speed up its disbursement rate for Bank projects.

Contact: Mr Ken Newcombe, World Bank, 1818 H. Street, N.W. Washington D.C. 20433, USA
Tel: (1) 202 477 1234 Fax: (1) 202 522 3256
E-mail: knewcombe@worldbank.org

Industry and technology updates

FIRE FIGHTING

Halon alternatives for worldwide distribution

The Italian firm Safety Hi-Tech is marketing a range of extinguishing agents based on blends of HCFCs and HFCs with an additive that minimizes the level of breakdown products generated during use.

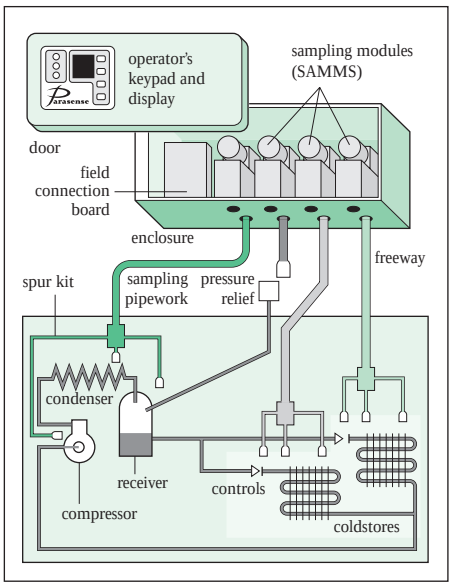
NAF P IV (HCFC-123, 90 percent and HFC-125, 8 percent) is marketed as a substitute for halon-1211 in portable extinguishers, and can be used in halon-based extinguishers with only a change to the nozzle orifice and seals.

NAF S III (HCFC-22, 82 percent; HCFC-123, 4.75 percent; and HCFC-124, 9.5 percent) is marketed as a substitute for halon-1301 in total flooding systems. In most retrofits, only the nozzles and seals need be changed, with the pipework remaining unaltered. In some cases, additional storage cylinders are needed. It can be used in situations where an inert, electrically non-conducting medium is essential or preferable.

Contact: Safety Hi-Tech, fax: (39) 6 8713 4426; e-mail: Safety.HiTech@PN.ITnet.it

REFRIGERANTS

A range of refrigerant leak detection systems is being manufactured by Parasense in the United States and the United Kingdom. The kit includes a monitor, which can house up to 16 sampling modules, plus coloured pipework to draw samples of possibly CFC-polluted air from areas where chillers or other refrigeration equipment are situated.



The Parasense leak detection kit consists of a control panel and key pad, sampling modules, and pipework to draw air samples to the sampling modules.

The equipment includes a control system with a liquid crystal display and a keypad control panel. This allows the display of a history of previously recorded events, adjustment of sampling times, the setting of alarm levels and selection of different refrigerant types. The system can detect refrigerant concentrations of only 40 ppm. An internal relay contact can be used as a control device—for example, to activate a ventilation system.

The kits are suitable for self-installation and the larger systems include a port for connection to a microcomputer and software to control the system.

Contact: Parasense, fax: (1) 804 897 4456

CFC-free fridge for vaccines

The Institute of Cryogenics at Southampton University, United Kingdom, is developing a CFC-free portable refrigerator intended primarily for vaccine transport. Building on recent research into hydrocarbon refrigerants, the Institute has designed what is claimed to be a small and efficient 'environmentally-friendly' refrigerator that could prove useful in a wide range of applications.

The design is based on a conventional vapour compression cycle but uses a hydrocarbon refrigerant and a miniature compressor. In combination with high performance insulation blown with cyclopentane, a peak power requirement of less than 50 Watts and an equilibrium input of less than 20 Watts are feasible while still maintaining a temperature of 2°C against an ambient of 40°C. Development is still at the prototype stage with a range of power sources and configuration options being investigated. Since the power demand is so low, power sources such as solar cells and vehicle alternators are options.

Contact: Institute of Cryogenics, fax: (44) 1703 593053

Promising outlook for R-407C

The refrigerant R-407C (a blend of 25 percent HFC-125, 52 percent HFC-134a and 23 percent HFC-32) looks set to replace R-22 in many air-conditioning applications, according to many experts. The National Research Council of Canada and ICI Klea have investigated R-407C and R-410A as alternatives for R-22 in residential heat pumps. The only change made in the test that replaced R-22 with R-407C was the installation of an electronic expansion valve in place of a fixed orifice. However, the R-410A conversion involved changing the original reciprocating compressor. According to AKA in Sweden, R-407C is a viable substitute for R-22 in direct-expansion systems and is being widely used in Sweden in commercial systems.

Contacts: NRC, fax: (1) 613 954 1235
ICI Klea, fax: (1) 302 887 7706
AKA, fax: (46) 31 26 02 74

Drop-in replacement for R-12

ISCEON 49 is a drop-in replacement for R-12 in refrigeration systems based on mineral oil. Its performance is similar to

Web site for HTOC

The UNEP Halons Technical Options Committee (HTOC) has established a Home Page on the World Wide Web. HTOC is preparing a report for presentation to the Parties to the Montreal Protocol in 1997. The following draft chapters of this report are available on the Web site:

1: Introduction;
2: Gaseous alternatives for fixed systems;
3: Alternatives for halon portable fire extinguishers;
4: Guidance on alternatives for halon 1301 and halon 1211;
8: Halon recovery and bank management;
11: Critical and essential uses and their needs;

Appendix C: Country specific halon bank management programmes.

Contact: Internet: http://www.taylorwagner.com

UNEP IE welcomes information from industry and will mention as many new technologies and products as possible in this newsletter

R-12, and requires no oil change.

ISCEON 49, which is manufactured by Rhône Poulenc, is a mixture of HFC-134a, FC 218 (C_3H_8) and HC 600a (isobutane). ASHRAE has designated the refrigerant as R-413a.

Contact: Rhône-Poulenc, fax: (33) 1 47 68 23 18

FOAMS

New ODS-free foam for food industry

EarthShell Corporation in the United States has developed a new foam for disposable packaging for the food business as a substitute for paper, plastic and polystyrene foam materials. The packaging was designed using a Life Cycle Inventory model to determine the ingredients that would produce the best environmental result, improve performance and be competitively priced. EarthShell is a subsidiary of EKI, a research and development company that develops new products using low cost and abundant inorganic ingredients such as sand and clays.

The EarthShell foam material is a composite of limestone, potato starch, water and a small amount of cellulose fibre. It can be used to manufacture rigid foamed disposable packaging which has similar characteristics to foamed polystyrene but is claimed to be stronger and more rigid. Furthermore, the material can be easily composted or added directly to soil after being blended with water in a kitchen blender. EarthShell is made without ODS and is blown with steam. The Life Cycle Inventory reports show that fluted paper and polystyrene containers require significantly more energy to produce and distribute than EarthShell. EarthShell will market a line of disposable products including hot and cold cups, sandwich containers, plates, bowls and trays. The sandwich container is currently being tested by McDonalds.

Contact: EarthShell, fax: (1) 703 243 2874

METHYL BROMIDE

Chilled aeration a promising alternative

Air-conditioned grain storage areas may prove to be a promising alternative to fumigation with methyl bromide. Reducing temperatures to below 13°C can control infestations of grain pests such as the grain weevil and the flying moth. Traditionally, such cooling has been done by blowing outdoor air into grain storage areas—but the technique is effective only during temperate zone winters when outdoor air is cool.

More sophisticated technology that employs a refrigerant-based air-conditioning system has been used in Europe for some time and now researchers at Purdue University in the United States have developed a commercial-scale system that is being tested in the United States. Initial results suggest that the technology is economically competitive with fumigation—costs for the chilled aeration system were about US$0.01 per bushel (about 35 litres) of grain, compared with US$0.01–0.02 for methyl bromide fumigation. As a bonus, the aeration also controls humidity levels, reducing mould growth and preserving grain quality.

Contact: Purdue University, fax: (1) 317 496 1107

RECOVERY AND DESTRUCTION

Recovered CFCs marketed in Australia

Refrigerant Reclaim Australia (RRA) has released its first batch of reclaimed refrigerant for wholesalers who supplied the material for reprocessing. The consignment includes several tonnes of CFC-12 reprocessed to ARI 700 standard. CFCs are already in very short supply in Australia and RRA will become the only supplier in the country. RRA hopes that the release of its batch of reclaimed refrigerant will encourage other wholesalers and contractors to return used refrigerant.

Contact: RRA, fax: (61) 6 239 5653

Disposing of refrigerator foam insulation

The Dutch Environment Minister has ordered a government study of CFC emissions from refrigerator recycling facilities following evidence that recyclers burned the insulation from one-fifth of discarded Dutch fridges in 1995 using low-temperature incineration, thus releasing to the atmosphere most of the CFCs in the appliances (in older refrigerators, the CFC content of the insulating foam is two to three times greater than that of the refrigerant). In 1995, Dutch recyclers recovered CFCs from both the foam and the refrigerant in 49 percent of the refrigerators they recycled but incinerated 20 percent without recovering the foam.

However, a new report from the Danish Environmental Protection Agency (*Plant for Pre-treatment of Refrigerators and Freezers from Households before*

Coming soon!

Saving the Ozone Layer: guidelines for the phase out of ODS in UN Offices (UNEP IE OzonAction Programme, Paris, 1997)

Protecting the Ozone Layer, Volume 6: Methyl Bromide (UNEP IE OzonAction Programme, Paris, 1997)

Happy New Year

to all **OzonAction** *News* readers from the UNEP IE **OzonAction** Programme

Members of Japan's 'Save the Ozone Network' (NGO) singing "What's the Ozone Layer" at the inauguration of the 8th meeting of the Parties in San José, Costa Rica, 25–27 November 1996

The Chinese Ministry of Chemical Industry's ODS Alternatives Engineering and Technical Centre, the Zhejiang Chemical Industry Research Institute in Hangzhou, Zhejiang, is engaged in research and development of CFC and halon alternatives.

Incineration) actually recommends incineration of refrigerator carcasses, claiming that at least 99.94 percent of the CFC-11 in the polyurethane foam is destroyed by incineration and is thus not released into the atmosphere. The recommended disposal technique involves dismantling shelves and drawers, removal of CFC-12 for recycling, dismantling the compressor and the evaporator, and cutting the refrigerators into pieces of not more than 80 cm in length. A special plant has been set up to prepare refrigerators from Copenhagen for incineration. It treated 6000 units in its first 8 months of operation and in the process recovered some 360 kg of CFC-12 for recycling and destroyed 1320 kg of CFC-11 by incineration.

Contact: Dutch Environment Ministry (VROM), fax: (31) 70 339 13 51; Danish Ministry of Environment and Energy, fax: (45) 33 92 76 90

SOLVENTS

An alternative to the CFCs used in police fingerprinting

An alternative to the CFC-113 used as a solvent in fingerprinting may have been found. The CFC is used to enhance fingerprints on porous surfaces such as paper. It is used as a solvent for a chemical reagent called ninhydrin, which reacts with amino acids in the fingerprints to provide a purple stain. The use of the CFC, in a formulation which includes ethanol and acetic acid, has greatly increased the number of fingerprints that can be recognized. Scientists in the United Kingdom have successfully tested a number of HFCs on thousands of fraudulent cheques. As a result police forces all over the world have been calling the UK Home Office's Police Scientific Development Branch for more information.

Contact: Fingerprint Development Group, fax: (44) 1727 850 642

New water-based detergent alternatives

The Japan-based company DKS International Inc. has developed a range of 13 phosphorous-free water-based detergents as substitutes for cleaning products containing CFC-113 and 1,1,1-triochloroethane. The range, known as DK BE-CLEAR, includes 11 products for cleaning parts and printed circuit boards, plus a high purity cleanser (4130) and one non-aqueous cleanser (9107) for maintenance cleaning for use with all types of cleaning equipment.

Contact, DKS, fax: (8) 3 3274 4128

New range of HCFC-based solvents

AGA Chemicals in the United States has announced its AsahiKlin AK225 range of non-flammable, SNAP-approved cleaning products for the precision cleaning and electronics industries. Based on HCFC-225, the range includes five formulations.

Contact: AGA, fax: (1) 212 687 4663

Eco-labelling follow-up

John Mate—Greenpeace International's Ozone Campaign Coordinator—points out that since OAN 20 went to press the situation on eco-labels for the European Union changed. The Eco-Labelling Regulation Committee of the European Commission in a 3 October 1996 draft decision stated that the 'Ecolabel' should be applied only to refrigerators that have: (a) completely eliminated ODS in use or manufacture of insulating materials and the operation of the cooling system; and (b) use refrigerants and foaming agents that have less than or equal to 15 GWP over a 100-year period.

The Committee's recommendation thus rules out all refrigerators using HCFC-141b or HFC-134a. Refrigerators using the hydrocarbon-based Greenfreeze technology will qualify for the 'Ecolabel'.

This decision is expected to be ratified by the College of Commissioners within the next few weeks, and the European Ecolabel programme is expected to be in place by March 1997.

Contact: EC DGXI, fax: (32) 2 29 69 559

UNEP and US EPA to make CD for children

UNEP and the US EPA are to record a CD of songs to promote environmental awareness among children around the globe. The CD, *HOPE (Helping Our Planet's Environment) Among Us*, will be completed in 1997 to commemorate the 10th anniversary of the signing of the Montreal Protocol and the 25th anniversary of UNEP.

The announcement of the project was made at the 1996 International Conference on Ozone Protection Technologies. The CD will include original arrangements as well as music from current artists with themes promoting environmental protection. Songs will be performed in a number of languages. by the US-based World Children's Choir which includes singers from more than 20 countries.

Contact: UNEP IE Ozone Secretariat fax: (254) 2 521 930

Updates of three technology sourcebooks that address the aerosols, foams and specialized solvents sectors are now available from the OzonAction programme. Originally released in 1994, these sourcebooks now include up-to-date data provided by companies that supply non-ODS technologies. For more information, please contact UNEP IE.

Network news

UNEP IE OzonAction Programme operates networks of ODS Officers in English- and French-speaking Africa, Southeast Asia and the Pacific, and in South and Central America to promote information and knowledge sharing. New networks are planned for the Caribbean and for West Asia later this year. All are funded from the Multilateral Fund except that for Southeast Asia which is funded by Sweden.

Non-Spanish speaking Caribbean network

A mission visited the Bahamas, Barbados and St Lucia to to help set up the Network for ODS Officers in the non-Spanish speaking Caribbean region during 7–11 October 1996. The mission was mounted to facilitate cooperation among ODS officers in the region, identify the special needs of the Caribbean and determine the issues that needed more detailed analysis if phase-out targets are to be met in the region. The mission also identified the possibility of having the Organization of Eastern Caribbean States (OECS) collaborate with UNEP in providing technical assistance to its member states through this new network.

Contact: UNEP IE OzonAction Programme, fax: (33) 1 44 37 14 74

Latin America South

The third workshop of the Central America, Mexico and Spanish-Speaking Caribbean ODS Officers was held in San José, Costa Rica, in November 1996. Participants included representatives from 10 countries in the region and from the Fund Secretariat, UNIDO, a number of NGOs and industries.

Several countries reported increases in the consumption of ODS in refrigeration, an increase in the dumping of used refrigerators, and great interest in the use of hydrocarbons in domestic refrigerators. Cuba gave an account of its experience in using liquefied petroleum gas (LPG) as a 'drop in' for the domestic refrigeration sector; the use of LPG in the commercial sector is still being tested. Cuba also reported that it had introduced UV-sensitive bracelets to the public in order to make people aware of the ozone problem. Guatemala reported on a survey that showed that 94 percent of the sample were aware of the ozone problem.

Contact: UNEP ROLAC, fax: (52) 5 202 0950

French-speaking Africa

The annual meeting of ODS Officers was held on 4 November 1996 in Abidjan, Côte d'Ivoire, and was attended by representatives of 17 countries in the region, and of France, Switzerland, United States, the Fund Secretariat, World Bank, UNDP and UNIDO. The meeting clarified data reporting requirements to the Ozone Secretariat, visited a foam project to help ODS Officers identify such projects, and provided guidance on how to set-up a MAC recycling programme by having a one-day workshop organized by USEPA and UNDP.

Contact: UNEP ROA, fax: (254) 2 623 928

CEIT countries meet to discuss Protocol

UNEP organized a two-day meeting for Countries with Economies in Transition (CEITs) on the Montreal Protocol in Riga, Latvia, 4–5 November 1996. The meeting was hosted by the Ministry of Environment and Regional Development of the Republic of Latvia, supported by UNDP, and funded by the Global Environment Facility (GEF).

Officials from Albania, Armenia, Estonia, Georgia, Hungary, Latvia, Lithuania, Moldova and Poland explored ways of accelerating ratification of the Montreal Protocol and its amendments.

One important outcome was a statement by the participating countries which expressed their commitment to protect the ozone layer and their concerns about the financial obligations under the Protocol and the London amendment.

Note: the application of Georgia as an Article 5 country was accepted at the 8th meeting of the Parties, which noted that Georgia was already classified as such by the World Bank and OECD, and as a net recipient country by UNDP.

Contact: UNEP IE OzonAction Programme, fax: (33) 1 44 37 14 74

Ozone, ultraviolet radiation and health

A workshop on the ozone layer, ultraviolet radiation and health was held in Ushuaia, Argentina (the most southern city in the world), during 23–25 October 1996. It was organized by the Argentine Government with support from the Ozone Secretariat and the UNEP IE OzonAction Programme. It was attended by some 40 scientists from Argentina, Australia, Chile, the United States and Uruguay. The main topic discussed was the effects of the high levels of ultraviolet radiation being experienced at medium and high latitudes in the Southern Hemisphere, and ways of protecting the populations involved. Foremost among these was the need to inform the general public about the risks of over-exposure to sunlight.

Contact: Ministerio de Economia y Obras y Servicios Publicos, fax: (541) 349 3502

9th OORG meeting

The 9th meeting of the World Bank's Ozone Operations Resource Group was held on 28 October 1996 in Washington DC, United States. Participants discussed spot CFC shortages and the low rate of retrofitting for mobile air conditioning in the United States, the promise of n-/iso-pentane technology and liquid carbon dioxide in the foams sector, the role of hydrocarbons in refrigeration, and the reasons for increased electrical and chemical costs in some conversion projects to alternative solvents. It was reported that, if funded and implemented, production plant closure projects in the Russian Federation would phase out 40 000 tonnes of ODS production a year over the next two to three years. However, a further US$25 million was still needed. Participants were given details of the conversion of the Mexican supermarket chain Gigante to non-ODS technology.

Contact: World Bank, fax: (1) 202 522 3256

Home pages

UNEP IE's home page can be found at http://www.unepie.org.
The OzonAction Programme is at http://www.unepie.org/ozonaction.html

Phase-out successes

Thailand bans use of CFCs in refrigerators from 1997

Thailand has become the first developing country to phase out the use of CFCs in refrigerators, with effect from 1 January 1997 (see page 1). Seven refrigerator factories, producing 2 million refrigerators a year, have been converted, with the elimination of 800 tonnes a year of CFC-11 and 400 tonnes of CFC-12. This was achieved through close cooperation between government, the Multilateral Fund, the implementing agencies and industry which resulted in successful technology transfer, notably with Japan. Thailand benefited first from US$1.6 million provided by the Multilateral Fund investment projects, and approval is awaited for the funding of additional costs incurred by the projects.

Contact: Thai Ministry of Industry, Ozone Focal Point, fax: (66 2) 202 4015; UNEP ROAP, fax: (66) 2 280 3829

'The Government of Thailand will be widely praised for its cooperation with business in rapidly halting the use of CFCs in refrigerators. Other countries will want to study Thailand's leadership initiative, legislation and the importance of UNEP IE's OzonAction Programme.'

Dr Stephen O. Andersen
Co-Chair, TEAP

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'The project demonstrates the importance of global cooperation and technology transfer in ensuring a quick phase out of ODS. UNEP is very pleased to have contributed to its success.'

Ms Jacqueline Aloisi de Larderel
Director, UNEP IE

Philippine refrigerator firms phase out CFC-11 and -12

Three UNDP phase-out projects were commissioned in the Philippines in late 1996:

- Unimagna Philippines eliminated 23 tonnes a year of CFC-11 and 6.5 tonnes a year of CFC-12, replacing them with cyclopentane and HFC-134a, in its production of commercial refrigerators and ice boxes;
- Matsushita Electric Philippines Company phased out 40 tonnes a year of CFC-11 and 17.4 tonnes a year of CFC-12 (using HCFC-141b and HFC-134a) in its production of domestic refrigerators; and
- the Himalaya Manufacturing Company eliminated 17 tonnes a year of CFC-11, replacing it with water-blown technology, in its production of commercial refrigerators.

Contact: UNDP, fax: (1) 212 906 6947

UK CFC phase out successful but HCFC use triples

Most end users in the United Kingdom have successfully phased out their consumption of CFCs, according to a recent government report. The report reveals that consumption of CFCs fell from 58 000 tonnes in 1986 to 1700 tonnes in 1995—a decrease of 97 percent. Over the same period, however, consumption of HCFCs tripled.

Status of the financial contributions to the Multilateral Fund for 1996*
(as at 22 November 1996)

	agreed contributions (US$1000)	*outstanding contributions (US$1000)*
Australia	2578	163
Austria	1507	15
Azerbaijan	63	63
Belarus	509	509
Belgium	1755	0
Brunei Darussalam	35	35
Bulgaria	144	144
Canada	5403	5191
Cyprus	52	0
Czech Republic	453	0
Denmark	1250	0
Finland	1075	112
France	11,159	1121
Georgia	110	110
Germany	15,749	0
Greece	662	(300)
Hungary	244	0
Iceland	52	52
Ireland	366	52
Israel	466	0
Italy	9052	5398
Japan	26,882	21,717
Kuwait	110	110
Latvia	144	144
Lichtenstein	17	0
Lithuania	148	148
Luxembourg	122	0
Malta	0	0
Monaco	17	0
Netherlands	2765	2765
New Zealand	418	0
Norway	975	0
Panama	0	0
Poland	588	588
Portugal	479	479
Russian Federation	7750	7750
Singapore	0	0