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OzonAction

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

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>>>> SPECIAL FEATURE

The success of the Montreal Protocol to date is putting the ozone layer on the road to recovery, but it will take 50 more years before it is fully repaired. During that time, our children must be protected from the health effects of ultraviolet radiation and they must be taught to be environmentally-informed citizens who continue our actions to protect the global commons. It is in this spirit that UNEP DTIE's OzonAction Programme brings you this special feature on the WHO-UNEP partnership to protect our children from UV radiation. - Rajendra Shende, Head, UNEP DTIE Energy and OzonAction

Every year, there are between 2-3 million new cases of non-melanoma skin cancers and more than 130,000 new melanoma skin cancer cases worldwide. An estimated 66,000 deaths occur annually from melanoma and other skin cancers. The cause of many of these skin cancers is ultraviolet radiation (UV) from the sun and children, who are both most vulnerable and most exposed, are disproportionately affected.
In response to the problem, the World Health Organization (WHO), the United Nations Environment Programme (UNEP) and other partners in the INTERSUN Project launched a set of new educational materials on the occasion of the world ozone day on 16 September 2003.
"As ozone depletion becomes more marked and as people around the world engage more in sun-seeking behaviour, the risk of developing health complications from over-exposure to UV radiation is becoming a substantial public health concern," said WHO Director General Dr Lee Jong-wook.
"Recent scientific findings have shown that the ozone layer is on the road to recovery, but we must remain vigilant and more needs to be done before we can say that the problem is solved for good," said Klaus Toepfer, UNEP's Executive Director. "The phase-out of the ozone depleting pesticide methyl bromide, combating the illegal trade in CFCs and full implementation of the Montreal Protocol in developing countries are all issues that need to be tackled. Only then can we say that the sky above our heads will be safe for our children and their children to come."
UNEP Press Release 16.9.2003

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Children well protected against UV exposure

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BREAKING NEWS

Success Remotely Sensed

SAGE II satellite

Satellite Findings Hint a First Signs of Ozone Layer Recovery

NASA satellite observations have revealed the first hard evidence that the rate of ozone depletion in the Earth's upper atmosphere is decreasing, suggesting that the ozone layer may be entering an early phase of recovery from depletion caused by human activities.
Scientists analysing ozone observations logged by instruments on board satellites carrying NASA's Halogen Occultation Experiment (HALOE) and its two-phase Stratospheric Aerosol and Gas Experiment (SAGE) found that depletion of ozone in the upper stratosphere began slowing down in 1997, around ten years after the Montreal Protocol entered into force.
A report based on these results, due to appear in the American Geophysical Union Journal of Geophysical Research, concludes that the decrease is consistent with falls in atmospheric levels of man-made chemicals containing chlorine and bromine, indicated by various existing measurements taken from satellites, balloons, aircraft and ground-based instruments. The NASA team also used international ground networks to confirm their new–found ozone data.
"Ozone is still decreasing but just not as fast," said Mike Newchurch, associate professor at the University of Alabama and lead scientist on the study, quoted in a NASA press release, "we are still decades away from total ozone recovery." He added that uncertainties remain, not least the effect on ozone recovery of climate change, that make it essential to continue with precise, long-term data recording initiatives such as the past and ongoing NASA studies.

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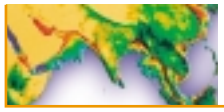

Asia and the Pacific

Mission to Pakistan breaks new ground

On 25 June the four Multilateral Fund Implementing Agencies briefed Pakistan's Minister of Environment, H.E. Mr. Tahir Iqbal, on his country's compliance status. This visit was part of the first-ever joint mission launched by UNEP Compliance Assistance Programme (CAP) team at the Regional Office for Asia and the Pacific and the first time all four Agencies have visited a country as a team to confer at top level with national stakeholders on developing their action plan for control measures. The mission apprised its hosts of the country's compliance status, along with problem areas requiring priority focus and action on the part of Pakistan and the international community.

During the three-day mission (24 to 26 June) the World Bank delegate was Mr Steve Gorman and UNIDO was represented by Ms Seniz Yalcindag and Dr Carlos E. Chanduvi Suarez, Country Representative of UNIDO in Islamabad. Mr Abdul Qadir of the Sustainable Development Division in the Islamabad office of UNDP and Mr Atul Bagai, representing UNEP, completed the mission team. Besides the Minister, the joint mission met high-level officials from the Ministry of Environment, the Ministry of Industries and Production, the Ministry of Commerce, the Central Board of Revenue, the NCPC and the Ozone Cell.

The mission called on Pakistan's policymakers to sustain compliance through 2010 and gave early-warning signals on compliance in respect of carbon tetrachloride (CTC)and methyl bromide. Other issues discussed included progress on country programme updating, presentation of a refrigerant management plan, data collection, use of HCFCs, policy options, halon management, strengthening the implementation strategy and a future phase-out schedule.

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»COMPLIANCE NEWS

China and Carrier launch ozone protection award

The State Environmental Protection Administration of China (SEPA) and Carrier Corporation have announced the launch of a Stratospheric Ozone Protection Award. At a joint press conference inBeijing, Ms. Song Xiaozhi, Head of SEPA's International Division said the purpose of the award is to "promote protection of the ozone layer, reduce discharge of ozone-depleting substances (ODS) and promote the use of non-ozone depleting alternatives by awarding organizations and individuals that have made outstanding contributions to ozone layer protection" within China. Recipients of the Gold Award include: the Foam Replacement Project team, for its new model of industry reconstruction; Tang Xiaoyan, professor at Beijing University, who as one of the first professors involved in China's environmental protection study led the effort to shape the State Scheme of Ozone Layer Protection and participated in mapping out all nine of the current industry schemes; Sun Lun, former director general of the Firefighting Bureau of the Ministry of Public Security, for formulating the first ozone layer protection plan for Chinese industry; the China Electronic Home Appliances Association for its excellent work in promoting ozone protection; and, Qingdao Aucma Co., Ltd., a large-scale corporation that has made outstanding achievements in using ODS alternatives in refrigerators and freezers.

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Philippines workshop tackles methyl bromide phaseout

On 17 July the Philippines Ozone Desk (POD) and the Fertilizer and Pesticide Authority (FPA) brought together methyl bromide (MB) importers, fumigators, pesticide users and other stakeholders for a one-day workshop meeting to discuss ways forward for developing an MB Phase out Strategy for the Philippines. In 2002 Philippines reported 42.8 ODP tonnes of consumption of methyl bromide. The 39th meeting of the Executive Commitee approved funds for the preparation of this strategy, to be implemented by the World Bank. The workshop was the first to bring together all the key players in the MB sector. UNEP led the discussions at the workshop and provided expert advice on specific issues such as reconciliation of Article 7 data for the Philippines and on definitions of quarantine and pre-shipment and how these are applied in the Philippines. One of the meeting's outcomes was a formal agreement to organize a Methyl Bromide Working Group that will serve in an advisory capacity to the POD and FPA for the purpose of strategy development.

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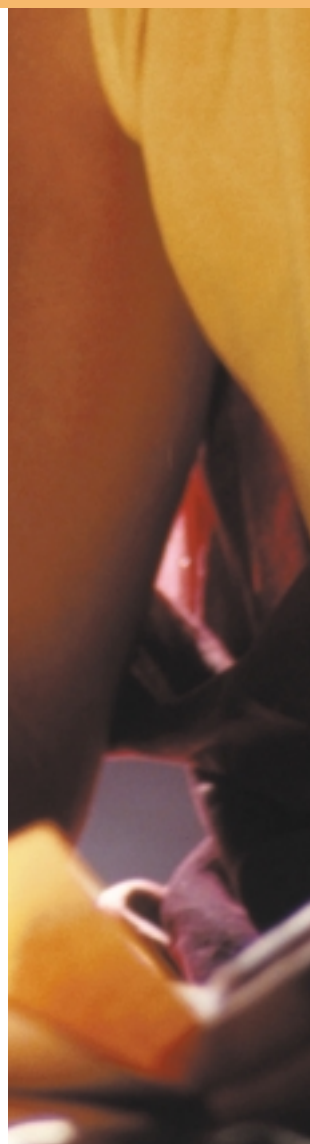

Latin America

Small islands – high stakes

The Hon. Dr. Earl Asim Martin, Minister of Health and Environment, St. Kitts and Nevis opened the main meeting of the Caribbean Ozone Officers network on 16 June 2003. He urged delegates on the dangers of underestimating the health impacts of ozone layer depletion. No matter how limited their use of CFCs, the region's states all held a big stake in reducing consumption levels that went beyond environmental protection concerns, he said.

'Tourism, our main economic generator, will be the first to be affected [by] inaction and disregard of our environment', he added. 'We are already facing the reality of having our tourists stay at home because of warmer climes in their regions. We certainly do not need the added challenge of having to advise them that it is completely unwise to enjoy our sunny climate.'

Greeting the choice of venue as tangible recognition of the CFC reduction efforts of the National Ozone Unit, the Minister noted that: 'St. Kitts and Nevis may be the smallest territory represented here but we do not have the smallest levels of consumption – nor of commitment'. St Kitts and Nevis reported in 2002 that their CFC consumption was 5.3 ODP tonnes.

UNEP held bilateral meetings with all Caribbean network members. As a result, a number of institutional strengthening projects were re-activated and data reporting updated. It also served to motivate Surinam to complete data collection and consequently its CP-RMP has been submitted to the 41st Executive Commitee meeting (ExCom).

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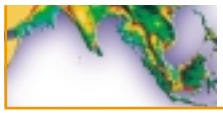

West Asia

Cooler training in Oman

From 5 to 9 July, a training workshop on the good practices of cooling equipment took place in Muscat, Oman under the auspices of the Regional Municipalities, Environment and Water Resources Ministry, which organized the event in cooperation with UNIDO. The workshop was opened by Hamad bin Sulaiman Al Ghuraibi, Undersecretary for Regional Municipalities Affairs. It set out to train specialist operators on how to run coolers using methods compatible with a management plan currently being implemented by the Sultanate in cooperation with UNIDO, as part of national efforts to improve monitoring of ODS. Oman's CFC consumption was 179.5 ODP tonnes in 2002. Mohammed bin Abdullah Al Mahrami, Director-General of Environment at the Ministry, said the Sultanate shared the international community's concern over protecting the ozone layer.

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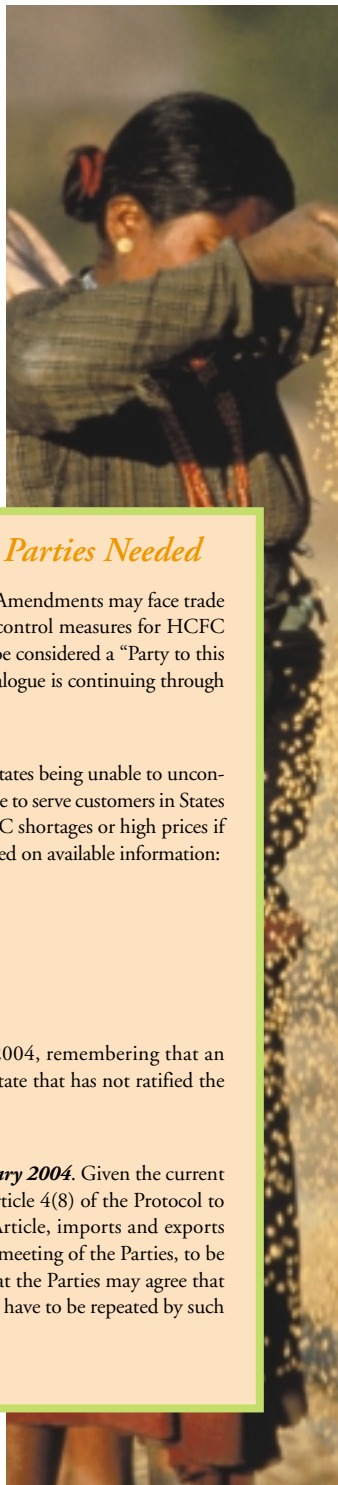

HCFC Trade Restrictions Take Effect 1 January 2004: Ratification or Intrepretation by Parties Needed

Hydrochlorofluorocarbon (HCFC) manufacturers and consumers in many States which are currently non-Parties to the Protocol and/or some of its Amendments may face trade barriers from 1 January 2004 under Article 4(1 quin.) and Article 4(2 quin.) of the Montreal Protocol. The Copenhagen Amendment introduced control measures for HCFC consumption while the Beijing Amendment introduced control measures for HCFC production. So which of the Amendments must a State ratify to be considered a "Party to this Protocol" for HCFCs so that it can continue to import/export HCFCs? This issue was discussed at the July 2003 Open-ended Working Group and dialogue is continuing through an ad hoc experts meeting that will craft a decision for the consideration of the 15th Meeting of the Parties (MOP) in Nairobi, 10-14 November.

What are the implications for your country of the trade barriers on HCFCs?

Whatever the final decision, given the significant number of States that have not ratified the relevant Amendments, this situation could result in some States being unable to unconditionally import and/or export HCFCs after 1 January 2004. HCFC manufacturers in States that have ratified the relevant Amendment(s) may be unable to serve customers in States that have not ratified their relevant Amendment(s). And importing companies in States that have ratified the relevant Amendment(s) may face HCFC shortages or high prices if insufficient production capacity is available in States that ratified the relevant Amendment(s). Each State and enterprise can explore their own status based on available information:

1) National locations of particular HCFC uses, current supply, and alternative supply.
2) Ratification status of Parties (http://www.unep.org/ozone/ratif.shtml).
3) National sources of particular HCFC production.
4) Interpretation to be considered at the MOP.
5) List of countries submitting letters to the Secretariat with data proving full compliance as specified under Article 4(8)

What can States do to prepare for 1 January 2004?

The safest course for a State to take is to ensure that both the Copenhagen and Beijing Amendments enter into force for it before 1 January 2004, remembering that an Amendment would enter into force for it on the 90th day following its ratification. This would exempt the State from trade restrictions. So every State that has not ratified the Amendments should immediately set in motion the process of ratifying the Amendments.

What can be done if ratification is not completed in time?

It is possible that, in some States, the process of ratification making the Amendments enter into force for them may not be completed before ***1 January 2004***. Given the current uncertainties surrounding this issue, it is useful to note that under certain circumstances, it may be possible for some non-Parties to make use of Article 4(8) of the Protocol to continue their import/export of HCFCs till their ratification process is complete. **Article 4(8) states**: "Notwithstanding the provisions of this Article, imports and exports referred to in paragraphs 1 to 4 ter of this Article may be permitted from, or to, any State not party to this Protocol, if that State is determined, by a meeting of the Parties, to be in full compliance with Article 2, Articles 2A to 2I and this Article, and have submitted data to that effect as specified in Article 7." It is possible that the Parties may agree that Non-Parties submitting the required data to the 15th MOP may then be exempted from the trade ban by a decision of the MOP. This procedure will have to be repeated by such non-Party States every year till the ratifications are complete.

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>> SPOTLIGHT ON MALAYSIA

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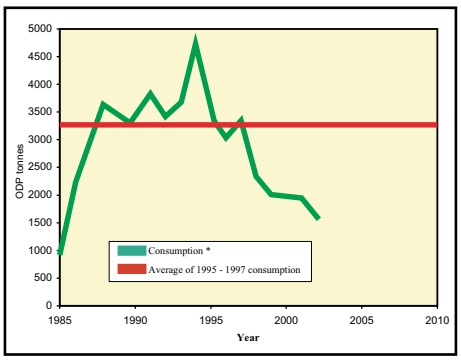
Trend in CFC production and consumption in Malaysia



Source: OzonAction, Article 7 data

As part of a question and answer (Q&A) series featuring the views of national ozone units and ODS officers, Mr Ismail Ithnin, Principal Assistant Director and Chief of the Ozone Protection Section in Malaysia's Department of Environment outlines his country's progress and prospects.

Q. Malaysia is implementing a performance-based National CFC Phaseout Plan, under which it will eliminate remaining CFC consumption and some TCA consumption over the period 2002-2010. The plan uses a series of instruments (investment, non-investment, legislation and capacity building) to manage the supply and demand of CFCs to achieve this goal. What has the NOU learned to date about the timing and best mix of these different instruments?

A. As a developing country, we need more time to comply with Montreal Protocol obligations. Without a 'grace period' we may find it difficult to comply with all obligations under the Protocol. Assistance from the Multilateral Fund gives Malaysia innovative scope to set and achieve a target date for phasing-out CFCs. The establishment of the Malaysian Incorporated and Smart Partnership, as interface between government and industry, provides tools for ensuring that the different instruments agreed on can operate in a smooth and effective manner. Regulations are another important tool for achieving agreed targets. But more important is commitment by government and industry alike to making sure the country remains on course.

Q. As analysis of Malaysia's CFC consumption trend (left) shows, your country is comfortably below the freeze level. Given this favorable position relative to CFCs, what are the main compliance challenges facing Malaysia in the 2003-2005 period?

A. Like other Article 5 countries, Malaysia is now entering the compliance phase of activities under the Protocol. The latter is legally binding and its big challenge to us is how the Government will be able to comply over the next 6 years. Almost all CFC manufacturing production will be phased out by the end of 2004. But the service sector, particularly in the area of mobile air conditioning (MAC) is crucial. With many programmes being carried out now and supporting by regulation we believe this sector can be monitored and controlled in a proper manner.

Q. Like other countries in the South-East and Asia Pacific (SEAP) region, Malaysia developed a MAC awareness programme as part of the regional awareness project. To what extent have these materials been effective in reducing CFC emissions in this sector? How useful was such regional cooperation in awareness generation and what role did the SEAP Regional Network play?

A. It is hard to specify how far the MAC programme effectively aided implementation as compared to CFC investment phase-out projects. Nevertheless, awareness has increased tremendously in the car workshop sector since the regulation entered into force in 2000. The SEAP Network is very important for all countries in the region as a way of sharing experience and awareness. Programme support from the Swedish Government and the Multilateral Fund can help the region become more cooperative and interactive in its efforts to guard against ozone depletion. We managed to convince each other how vital it was for each country to sign up to the Protocol and comply with its obligations. Sharing experiences and information is key to tracking the Regional Network's impact on ODS.

Q. For 2001, Malaysia has reported growing methyl bromide consumption (72.2 ODP tonnes) relative to its baseline (14.6 ODP tonnes). What steps are underway to reduce the portion of this consumption that is not attributable to quarantine and pre-shipment (QPS)?

A. The significant rise in usage of methyl bromide (MB) is mainly due to steps to exploit the potential of exporting wood-based products, a sector that yields huge revenues. Pre-shipment treatment by fumigation of agricultural products is maintained at exit and entry points throughout the country. Systematic surveillance of warehouse premises and grain processing centres has also been stepped up to monitor and eradicate exotic pests. As far as MB use for soil treatment is concerned, we don't have much of a problem. Alternative methods and technologies are being actively promoted. A recent survey by the Department of Environment and the Department of Agriculture found that only 8 percent of MB use was attributable to non-QPS in 2002.

Multilateral Fund Secretariat

At its 40th meeting in Montreal in July, the ExCom approved US$ 25 million for investment projects and work programme activities to stimulate compliance in 25 Article 5 countries. It partly covers initial steps under agreements with India for overall funding of US$ 52 million to phase out production and consumption of CTC, with Mexico for funding of US$ 32 million for a halt to CFC production, and with DPR Korea and Trinidad and Tobago for phase-out of CFC consumption. Funding committed in July will lead to additional phase-out of some 12,000 tonnes of consumption and 9,000 tonnes of production of ODS. The ExCom discussed criteria for project funding to speed and bolster phase-out activities. It looked into proposals for the Fund's information strategy, ideas for restructuring its own work, and steps to boost CFC phase-out by re-thinking the way refrigerant management plans are designed and implemented. The ExCom expressed deep gratitude to Dr. El-Arini, who retired 1 September, for his outstanding contribution to the Fund, granting him the title Honorary Chief Officer.

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UNEP Ozone Secretariat

The Ozone Secretariat prepared for the following meetings: 31st meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol will consider cases of non-compliance with the Montreal Protocol, with particular focus on reporting requirements and control measures.
• A session of the Bureau of the 14th Meeting of the Parties to the Montreal Protocol will look into actions taken on decisions by the Parties at that Meeting and consider documents for the 15th Meeting of the Parties.
• The Contact Group on implications of entry into force of the Beijing Amendment, will meet to discuss how best to interpret article 4, paragraph 9 of the Montreal Protocol, which relates to trade in and supply of HCFCs. The Contact Group will re-examine the issue with a view to presenting fresh recommendations to the 15th Meeting of the Parties.
The 15th Meeting of the Parties to the Montreal Protocol will deliberate and rule on (among other issues) critical use exemptions for methyl bromide, metered dose inhalers, process agents, laboratory and analytical uses, together with proposals for adjusting and amending existing provisions.

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UNEP DTIE

The OzonAction Programme joined the Ozone Secretariat to support National Ozone Units in their celebrations of Ozone Day on 16 September. A new documentary video "Sky Pirates" and a re-designed website with a new service "Montreal Protocol at Work" were launched. The programme teamed up with WHO for a global press release and press conference which received wide coverage (see www.uneptie.org/ozonaction/events/ozoneday).
The OzonAction Programme organized a training workshop for Regional Network Coordinators and Policy and Enforcement Officers and CAP Advisory Group meeting during the second week of September 2003 in Paris. To date, UNEP has organized 96 training courses in all regions. The first network meeting was organized for Eastern European and Central Asian NOUs in Ohrid, Macedonia from 6 to 9 October 2003.

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»News from International Agencies

UNDP

In April – July 2003, UNDP stepped up efforts to put implementation modalities into place for the large multi-year ODS phase out agreements approved in 2002 for Brazil, India, Indonesia, Mexico and Nigeria. At the 40th ExCom meeting, new funding for the China-solvents plan was approved, worth US$ 5.75 million. In addition, a TPMP was approved for Trinidad and Tobago whereby the Government has agreed to eliminate all remaining CFCs used in refrigeration servicing by January 2008. Work in methyl bromide programmes has also continued with countries such as Argentina, Chile, Lebanon and Malawi achieving MB phase out targets as stipulated by the agreements. Negotiations with technology providers for the MDI conversation project in Cuba have continued, which UNDP hopes to finalize in time for the 41st ExCom.

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UNIDO

The 40th ExCom approved projects for UNIDO implementation valued at US$ 675 million to phase out 105.6 ODP tonnes. Besides traditional conversion projects, the ExCom approved a number of sectoral phase-out plans. The lion's share went to CFC-11 and CFC-12 production sector phase out in Mexico. Of US$ 31.85 million set aside for this project, the first tranche approved amounts to US$ 5.3 million. Mexico has agreed to fast-track reduction of its total Group I Annex A and Group I Annex B substances production (scheduled for completion by 2010) by the end of 2005. For DPR Korea, US$ 1.36 million were set aside for a sectoral phase-out in domestic refrigeration. Project preparation funds were approved for a halon sector phase-out plan in Pakistan, and for a national CFC phase-out plan in the manufacturing sector in Serbia and Montenegro. The ExCom also agreed to extend Phase V of Egypt's IS programme.

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World Bank

In June the World Bank participated in a meeting involving all four implementing agencies (see p.2), to discuss compliance issues with Pakistan's Minister of Environment, Local Government and Rural Development and other Government officials. Outcomes included a renewed commitment by the Government to its methyl bromide phase-out obligations. Multilateral Fund approvals amounted to US$ 592.63 million by the end of June and the amount approved for phase-out so far this year is 7.789 ODP.
The 40th ExCom meeting approved in principle US$ 52 million for India's CTC consumption and production phaseout plan and US$ 2 million was approved for Malaysia's Annual Programme under its National CFC Phase-out Plan. IS projects in Jordan and Thailand were also renewed, along with project preparation and other work program activities for NCPPs in Antigua and Barbuda and Vietnam. Argentina, Chile, China, the Philippines and Tunisia also gained Fund support for similar backup measures.

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>> SPECIAL FEATURE

WHO steps up efforts to alert children to UV radiation risks

The United Nations Convention on the Rights of the Child states that children have the right to a safe environment and enjoyment of the highest attainable standard of health. Children are in a dynamic state of growth and more vulnerable than most adults to environmental hazards of all kinds. In particular, children and young people require special protection from over-exposure to ultraviolet (UV) radiation from the sun. INTERSUN is a campaign set up by the WHO, UNEP and other partners to flag this issue where it counts – in the schoolroom.

There is evidence that over-exposure to UV radiation can trigger development of both melanoma and non-melanoma skin cancer in later life. Much of any person's lifetime exposure occurs before the age of 18. Children have more time to develop such afflictions and other conditions linked to UV radiation exposure, more years of life to be lost and more suffering to be endured from ill-health. WHO believes sun protection education at school can make a difference to these problems, and also offer a cost-effective way to ease the high and growing burden they impose on our health systems.

Schools are geared to introducing new skills and knowledge, so are ideal places for children to gain a healthy respect for sun protection that will safeguard them against overexposure to UV radiation for the rest of their lives. In many parts of the world, fashion marketing promotes a suntanned skin as a healthy and attractive feature. Young people tend to be easily persuaded by such marketing as well as by pressure from their age-group peers. By dispelling preconceived notions like these, schools and schoolteachers can play a key role in modifying children's ideas, attitudes and behaviour along healthier lines. As children spend a lot of time at school, exposure to sun in the schoolyard and on the way to and from school accounts for a large dose of total lifetime exposure – one reason in itself to protect schoolchildren from the threat.

Schoolchildren are also well positioned to transfer better sun-protection behaviours to their home and family surroundings and thus to enhance standards of protection in the wider community. WHO recommends that school programmes for sun protection should adopt an integrated approach to helping students, teachers, and their communities to avoid health risks of UV radiation exposure. They should incorporate :

- sun protection education, with curriculum and games activities
- a healthy school environment
- a school-endorsed sun protection policy, and
- community and family involvement.

Not all schools will have the resources to integrate the full range of these components from the beginning. Even so, it is more important (in WHO's view) to start with small, feasible changes, than wait until resources become available to address all components simultaneously. Activities in school are most effective if they have a practical focus and relate to the students' own experiences. Sun protection can be integrated into a range of curriculum areas. Teaching modules should draw on a wide range of different educational methods to increase knowledge, build positive attitudes and values, dispel myths, increase skills, and provide support for a healthy lifestyle.

Games and activities that have the UV Index (UVI) as their focus could be a useful element of any school programme. The UV index is a simple measure of the intensity of the sun's UV rays at the earth's surface and is usually presented as an add-on feature of weather forecasts. It was developed by WHO, UNEP, the World Meteorological Organization and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) to raise international public awareness of childhood risks of UV exposure.

WHO recommends that school programmes should be evaluated at regular intervals so that successful implementation can be demonstrated and strengths and weaknesses identified that can help programmes improve further. The SunSmart Campaign of The Cancer Council for the state of Victoria in Australia is an example of an effective programme for schools that has had a big impact on public health, raising general awareness of issues surrounding sun protection and skin cancer, as well as encouraging risk-aware lifestyle changes among the state's students. Such examples deserve to be emulated or adapted by other programmes, say INTERSUN's experts.

Besides publicizing best practice, WHO has developed an all-in package of online materials for educating children in sun protection, under the following main headings:

- Sun Protection and Schools: How to Make a Difference describes the importance of sun protection in schools, and outlines steps for launching a school programme;
- Sun Protection: A Primary Teaching Resource provides suggestions and ready-made teaching activities for primary school teachers;
- Evaluating School Programmes to Promote Sun Protection is intended for schools and educational and health authorities at local and national level.

The package can be found online at http://www.who.int/uv and a handbook is also available, published jointly by WHO, UNEP, WMO, and ICNIRP (Geneva, 2002) entitled Global Solar UV Index – A Practical Guide with plain-language explanations and recommendations for harmonized reporting of the UV index and its use as a tool for spreading the message about sun protection and skin cancer prevention.

SAFETY FIRST

Potential ill-effects of solar ultraviolet radiation on human health

Effects on skin
- Malignant melanoma
- Non-melanocytic skin cancer – basal cell carcinoma, squamous cell carcinoma
- Sunburn
- Chronic sun damage
- Photodermatoses

Effects on the eye
- Acute photokeratitis and photoconjunctivitis
- Climatic droplet keratopathy
- Pterygium
- Cancer of the cornea and conjunctiva
- Lens opacity (cataract) - cortical, posterior sucapsular
- Uveal melanoma
- Acute solar retinopathy
- Macular degeneration

Effect on immunity and infection
- Suppression of cell mediated immunity
- Increased susceptibility to infection
- Impairment of prophylactic immunization
- Activation of latent virus infection

Other effects
- Cutaneous vitamin D production
  - prevention of rickets, osteomalacia and osteoporosis
  - possible benefit for hypertension, ischaemic heart disease and tuberculosis
  - possible decreased risk for schizophrenia, breast cancer, prostate cancer
  - possible prevention of Type 1 diabetes
- Non-Hodgkin's lymphoma
- Altered general well-being
  - sleep/wake cycles
  - seasonal affective disorder
  - mood swings

Indirect effects
- Effects on climate, food supply, infectious disease vectors, air pollution, etc

Sources : Climate Change and Human Health - Risks and Responses. WHO, Geneva, 2003.

THE UV THREAT

Ultraviolet (UV) radiation is one component of solar radiation. UVC rays (wavelengths of 100-280 nm) are absorbed by atmospheric ozone, water vapor and gases such as oxygen and carbon dioxide, but most radiation in the UVA range (315-400 nm) and about 10 percent of UVB rays (280-315 nm) reach the Earth's surface where they can have significantly harmful effects on human health. As the ozone layer becomes depleted by specific chemicals, the protective filter activity of the atmosphere is reduced and more UV radiation, in particular the more harmful UVB, reaches the Earth's surface, intensifying UV effects on human health.

Small amounts of UV are not harmful. On the contrary, they are essential for the production of vitamin D in people everywhere. Overexposure to solar UV radiation can, however, result in sunburn (erythema) of the skin, the best-known acute effect. Over the longer term, UV radiation induces degenerative changes of the skin and inflammatory eye conditions. In the most serious cases, skin cancer and cataracts can occur (see table, above). According to WHO estimates, between 2 and 3 million non-melanoma skin cancers (basal and squamous cell carcinoma) are diagnosed each year, but are rarely fatal and can be surgically removed.

Fig.1: Malignant melanoma can result from excessive UV radiation exposure

Some 132,000 malignant melanomas (Fig. 1) occur globally each year, especially in fair-skinned populations. Worldwide, around 12 to 15 million people become blind from cataracts every year and up to 20 percent of these cases may be caused or worsened by sun exposure. A growing health concern is that UV radiation can reduce the effectiveness of the human immune system. Hence sun exposure may multiply the risk of infection and could limit the efficacy of immunization against diseases. Both hazards endanger the health of poor and vulnerable groups, especially children in developing regions. Many developing countries are located near the equator and people living in these regions are especially at risk from the raised levels of UV radiation that occur there.

SUN PROTECTION

Messages for Tourists

The following tips have been produced by the UNEP-supported Tour Operators' Initiative and WHO to help vacationers prevent sunburns from sun exposure.

You've planned for it, saved for it and probably waited months for your holiday escape. Now there is only one priority - to enjoy it!! Sunburn can really put a stop to your holiday fun. First there is the pain, and then you end up missing out on some of the activities you were really looking forward to. Taking some precautions to protect your skin doesn't have to get in the way of a great time. Get into the habit of protecting your skin before you go outside. These simple precautions are all that is required:

- **Avoid the peak ultraviolet radiation period.**

Reduce exposure to the sun or seek shade during periods when the sun's ultraviolet radiation is at its most intense. If you avoid the sun during the 2 hours either side of solar noon, you could avoid up to 60% of the day's ultraviolet radiation. Ultraviolet radiation is part of the sun's rays that causes sunburn, eye damage and leads to skin cancer and skin ageing.

- **Wear a Hat.**

A hat with a wide brim offers good sun protection for your eyes, ears, face, and the back of your neck - areas that are particularly prone to overexposure to the sun.

- **Wear Protective Clothing.**

Wear lightweight, loose-fitting clothing as much as possible. Tightly woven cloth is best, but any clothing is better than none at all.

- **Use Sunscreen.**

Apply at least a SPF 15+ broad spectrum sunscreen to all exposed areas of the skin as the last line of defence against the sun. Sunscreen should not be relied upon as the only form of sun protection and should be reapplied liberally every two hours.

- **Wear Sunglasses that Block 99-100% of UV Radiation.**

Sunglasses can help protect your eyes from sun damage. The ideal sunglasses don't have to be expensive, but they should block 99-100% of UVA, and UVB radiation. Check the label to see if they do. Wraparound sunglasses are best because they can protect your eyes from all angles.

- **Look out for the UV Index.**

The UV Index provides a forecast of the expected risk of overexposure to the sun and indicates the degree of caution you should take when working, playing, or exercising outdoors. The UV index will provide you with guidance as to how strong the UV will be for the day.

Contact: Giulia Carbone, UNEP Sustainable Tourism, email: giulia.carbone@unep.fr

TECH

Tech Talk showcases commercially-available technologie
currently under research. Without seeking to endorse any technology or produ
including those using transitional substances (HCFCs) and not-in-kind alterna

HALONS

Great Lakes Develops Flame Retardants for Fast-Evolving Polyrethane Market

A higher reactivity flame retardant for rigid polyurethane and polyisocyanurate foam applications, Firemaster 520, has been developed by Great Lakes Chemical Corp. in close consultation with foam manufacturers who need to change their formulations to accommodate alternative blowing agents. These agents are quickly replacing HCFC, listed for phase-out under the Montreal Protocol. Firemaster 520, with its primary hydroxyl reactive groups, offers faster reaction rates, lower viscosity, and improved compatibility in water blown foams. In many applications, a higher reactivity flame retardant is preferred to reduce cycle time and surface friability. Reducing friability helps to improve adhesion of facing sheets to the foam surface. In spray foam, a less viscose, more reactive flame retardant is needed to prepare low-viscosity, fast-curing spray foam systems.

Contact: Janet Gilboy, Great Lakes Chemical Corporation, email: jgilboy@glcc.com,www.pa.greatlakes.com

Netherlands-US Military: Trans-Atlantic Cooperation in War against Halons

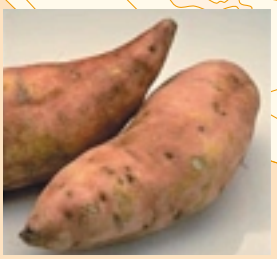
The Ministry of Defence of the Kingdom of the Netherlands and the United States Department of Defense have agreed procedures for collecting, reclaiming and storing halons, CFC and other ODS from US bases throughout Europe. The agreement was reached in co-operation with the Netherlands Ministry of Housing, Spatial Planning and Environment, the USEPA and the Netherlands Halon Bank.

Both countries will share expertise and collaborate on developing and documenting the best environmental practices for safe processing and long-term banking of halon for critical uses, along with storage of other ODS pending ultimate disposal. The materials will be shipped to the Netherlands from US military bases in Europe for processing, storage and disposal. Halons required by the US for critical military uses will be stored in the Netherlands Halon Bank under leak-proof conditions. CFCs and other ODS will be consolidated in special containers for shipment to destruction facilities within the European Union.

Contact: Julia Williams-Jacobse, Netherlands Ministry of Environment, email: julia.williams-jacobse@minvrom.nl

METHYL BROMIDE

Irradiation of Sweet Potaoes From Hawaii



Sweet potatoes

Effective 26 June, the Animal and Plant Health Inspection Service of the United States Department of Agriculture (USDA) is amending a key regulation (7 CFR Part 318) to provide for use of irradiation as a treatment for sweet potatoes to be moved interstate from Hawaii, in place of methyl bromide. The crop will also have to meet additional requirements, including inspection and packaging rules.

Contact: USDA APHIS, email: APHIS.Web@aphis.usda.gov

Wave Power to Kill Storage Pests

Almond Moth

US packers of dried fruit and nuts looking for an alternative to methyl bromide and other fumigants to kill insect pests like codling and Indian-meal moths in storage bins, might soon be able to do it with a flip of a switch. At present, packers typically spray stored nuts in a large room and leave the chemical on for three days before the nuts are shipped off – with dead bugs inside. Researchers are testing electromagnetic radio waves that can make molecules vibrate and heat up in the same way that microwaves heat food, to assess their ability to kill pests without harming quality. They hope the method, which is already used to dry cereal, crackers, clothing and plywood, can be used as an alternative to chemical treatments. They are also trying to devise a radio frequency machine that would allow nuts to be run rapidly through a conveyor belt for treatment. Industrial-size radio frequency machines will be tested at a large packing house next January and could be available for commercial use by late 2004.

Contact: Kim Baca, Associated Press, www.dailydemocrat.com/articles/2003/06/18/news/news1.txt

New Ways to Control Insects in Wood

Sitophilus

Scientists at Virginia Polytechnic Institute and State University's (Virginia Tech) College of Natural Resources recently announced the development of a vacuum-drying insect control project for wood that promises to eliminate the need for a heating system and avoid release of ozone-depleting chemicals into the atmosphere.

"Plant sanitary measures currently require that wood pallets and containers used to pack goods that are imported or exported, have to be heat-treated or fumigated," said Virginia Tech researcher Zhangjjng Chen. But a "low pressure, achieved by applying a vacuum to a system," will create an oxygen-poor environment "that will eliminate insects in several hours to days" without using methyl bromide. The system, if successful, stands to benefit wood pallet and container manufacturers and hardwood sawmill businesses.

Contact : Lynn Davis, Virginia Tech, davisl@vt.edu

Good Guys – Bad Guys: Alternative to Methyl Bromide

Researchers from Auburn University, Alabama, USA say they have developed a substitute for methyl bromide to control pests, weeds and plant diseases. SEP-100, a liquid formula of sodium azide, significantly outperforms methyl bromide in all these applications, claims Auburn plant pathologist Rodrigo Rodriguez-Kabana. The formula is delivered by drip irrigation under plastic sheeting without spraying or release into the atmosphere. It has been field-tested on crops in south Alabama. "As sodium azide decomposes in the soil, it breaks down into fertilizer and leaves the soil healthier than it was before the sodium azide was applied," Rodriguez-Kabana reports. He adds that while methyl bromide kills all nematodes and insects, both 'good' and 'bad', in the soil, sodium azide doesn't harm beneficial organisms.

The Auburn research has been largely funded by the USA's sole sodium azide manufacturer, American Pacific, which is trying to register SEP-100 with the USEPA. This formulation of sodium azide will still have to undergo the process of pesticide registration before it can be available commercially.

TALK

s that reduce or replace ODS, as well as technologies
ct, Tech Talk covers all technologies permitted under the Montreal Protocol,
tives. We welcome information and contributions from all interested parties.

Contact: Rodrigo Rodriguez-Kabana, Alabama Agricultural Experiment Station, email: rrodrigu@acesag.auburn.edu, www.ocm.auburn.edu/news_releases/chem.htm

REFRIGERATION & AIR CONDITIONING

Showa Denko to Shift Roll-Bond Evaporator

With effect from July, Showa Denko K.K. (SDK) has shifted production of Roll-Bond evaporators from Oyama, Japan, to the plant of Thai Refrigeration Components Co. Ltd. (TRC) near Bangkok, Thailand. These evaporators are used in direct-cooling refrigerators for home use and SDK's Oyama Plant has produced more than 100 million units in the past 40 years. The plant is now supplying them mainly to the southeast Asian market where demand for direct cooling refrigerators is growing fast.

As well as producing evaporators for refrigerators in Thailand, the Philippines and Indonesia, SDK is now producing automotive heat exchangers in the United States, Thailand and the Czech Republic. In the Philippines, SDK is producing evaporators for CFC-free, large-capacity refrigerators for Japanese manufacturers, and evaporators for refrigerator manufacturers in Australia and several southeast Asian countries.

Contact: www.sdk.co.jp

LG Expands Line of Non-CFC Fridges

LG Electronics has embarked on full scale mass production of its popular side-by-side refrigerators adopting state-of-the-art, linear technology compressors. The step marks a first-of-its-kind production move from a white goods maker in the world.
Major home appliance makers in Japan, the United States, and Europe have been developing 'linear technology' as core next-generation standard since the early 1990s. However, this is the first time the technology has been commercially applied to side-by-side refrigerators.The refrigerator is currently being manufactured for the Korean market in Changweon, Korea. The product will be exported to European and US markets.

LG's new side-by side fridge

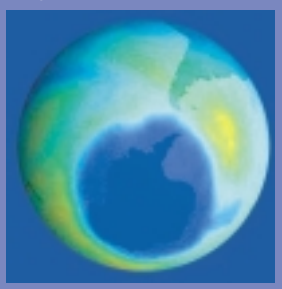
Additional global markets will see the product sometime during 2004. "Linear side-by-side compressor technology activates direct linear movement, unlike existing compressors which convert rotational movement into linear," said Mr. M. B. Shin, President, LG Electronics Middle East and Africa.
"With the adoption of a linear compressor, the new side-by-side reduces electricity consumption by 30 percent. It also uses natural refrigerant and a next-generation blowing agent, ensuring zero levels of ozone depletion potential (ODP) and global warming potential (GWP)."
LG believes that the environmental regulations present an opportunity for products using 'green technology'.

Contact: Jonathan MacPherson, MCS/Action FZ LLC, email: jonathan@mcsaction.com, www.lgegulf.com

>>Science News

Ozone Hole over Antarctic

The size of the hole in the protective ozone layer over the Antarctic decreased at the beginning of October, receding from the near record level it reached last month. The World Meteorological Organisation (WMO) said in a statement on 16 October 2003 that the hole had declined to an area of less than 18 million square kilometers (7.2 million square miles) during the first two weeks of October. It had reached 28-million square kilometers in September, a similar size to the one in 2000, and the decline was in line with normal seasonal changes. WMO said the southern Argentinean city of Ushuaia had been under the hole on four occasions this year, and had been exposed to "very high" UV levels on 6 October 2003.



Contact: Victoria Hanson, WHO, Email: VHANSON@wmo.int, www.wmo.ch

Ozone Hole Situation

Recent reports in the media suggest that the ozone layer over Antarctica is now recovering. This message is a little confused. Recent measurements at surface monitoring stations show that the loading of ozone destroying chemicals at the surface has been dropping since about 1994 and is now about 6% down on that peak. The stratosphere lags behind the surface by several years and the loading of ozone depleting chemicals in the ozone layer is at or near the peak. Satellite measurements show that the rate of decline in ozone amount in the upper stratosphere is slowing, however the total ozone amount is still declining. The small size of the 2002 ozone hole was nothing to do with any reduction in ozone depleting chemicals and it will be a decade or more before we can unambiguously say that the ozone hole is recovering. This assumes that the decline in ozone depleting chemicals continues and that there are no other perturbations to the ozone layer. It will be the middle of this century or beyond before the ozone hole ceases to appear over Antarctica. What we saw in 2002 is just one extreme in the natural range of variation in the polar stratosphere and is the equivalent of an extreme in 'stratospheric weather'.

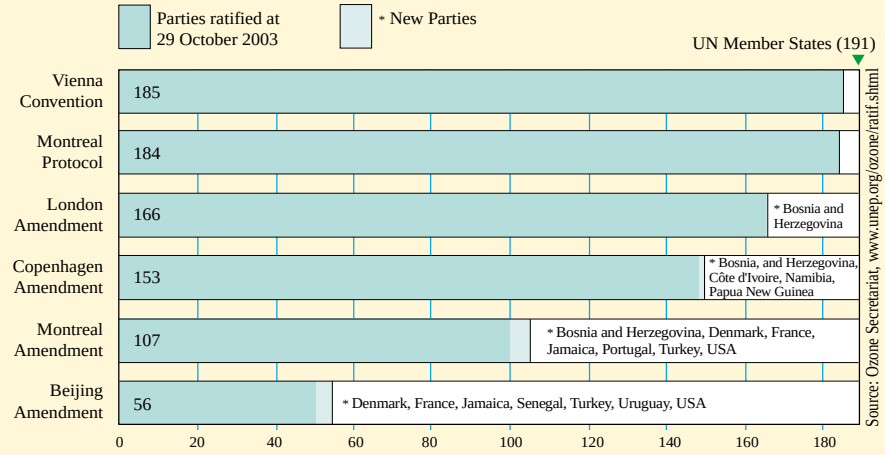
Contact: Jonathan Shanklin, British Antarctic Survey, www.antarctica.ac.uk/met/jds/ozone

Key Messages on Ozone Depletion

After a decade of implementation, the Montreal Protocol community still needs to ensure the continued support of civil society (public, policymakers, industry) to protect the ODS phase out successes already achieved and sustain the momentum until the job is done. The UNEP DTIE OzonAction Programme, in collaboration with international agencies with world-renowned public awareness programmes (WHO, UNICEF, etc) and national communication experts, developed the Communication Strategy for Global Compliance with the Montreal Protocol under the Multilateral Fund to address this communication challenge. The following priority messages were indentified in the Strategy. UNEP encourages Ozone Officiers to incorporate these messages into publications, events, and press releases being developed as part of national awareness-raising campaigns.

- The ozone layer in the upper atmosphere is a filter preventing harmful quantities of the sun's ultraviolet (UV) rays from reaching us.
- A few dozen man-made chemicals when released to the air damage the protective ozone layer. When ozone layer is thinned, more harmful UV will fall on the earth.
- These ozone-damaging chemicals are used in refrigerators, air conditioners and fire fighting equipment. Some are used in industrial processes and also in agriculture.
- Ultraviolet causes skin cancer, and can also wrinkle your skin to make you look older than you are.
- Ultraviolet causes cataracts, and can lead to preventable blindness.
- Ultraviolet rays weaken the human body's natural resistance to disease (immunity).
- Children are particularly at risk of cancer, blindness and illness from ultraviolet rays.
- Ultraviolet rays harm plants - particularly food crops - as well as animals.
- Alternative, affordable chemicals exist for all the ozone-damaging chemicals, and these substitutes don't harm the ozone layer.
- Countries of the world have made a legal commitment to phase-out using all main types of ozone-damaging chemicals through the Montreal Protocol.Industrialised countries have already met these targets, and developing countries have time till 2010.
- The ozone layer will heal in about 50 years if no further ozone-damaging chemicals are released to the atmosphere. Meanwhile, we all need to cut down on time spent in the sun, or cover ourselves as much as possible when we have to work or play outdoors. Sunglasses, sun protection lotions and large hats can all help protect us from harmful ultraviolet rays.
- The Montreal Protocol is succeeding, but it is not yet a final "success": there is still much work left to do before this environmental treaty is "finished".
- The Montreal Protocol is an example of an international environmental treaty that works. It has many lessons that could be shared with other environmental issue areas. These include: meaningful commitment by both developing and developed countries, avoiding problems by taking precautionary measures, and the providing international support for national actions.
- The benefits of the Montreal Protocol, including avoided cancers, cataracts and crop damage, exceed the cost of the investments in this issue by the international community.

The progress in ratification of the Montreal Protocol and its amendments



NOU AWARDS

The OzonAction Programme congratulates the winners of the 2003 NOU awards: **China, Fiji, Jamaica and Senegal,** which will be presented during the 15th Meeting of the Parties. This award recognises the work of outstanding NOUs and encourages others to make similar efforts to reach and expand their compliance targets.

Forthcoming Meetings

15th Meeting of the Parties to the Montreal Protocol
10-14 November 2003, Nairobi, Kenya.
www.unep.org/ozone

15th Annual Earth Technologies Forum
13-15 April 2004, Washington, USA.
www.earthforum.com

This newsletter is available online at:
www.uneptie.org/ozonaction

OzonAction, a tri-annual publication, is available in Arabic, Chinese, English, French, Russian and Spanish.

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